NATIONAL HIGHWAY AUTHORITY

Procurement & Contract Administration Section

28 Mauve Area, G-9/I, Islamabad ☎ 051-9032727, 🖷 051-9260419

No. 6(493)/DIR-III(P&CA)/NHA/19/302 — 20th November, 2019

Director General
Public Procurement Regulatory Authority
1st Floor FBC Building near State Bank,
Sector G-5/2, **Islamabad**

Subject: **ANNOUNCEMENT OF EVALUATION REPORT (PPRA RULE-35): Consultancy Services for Feasibility Study and Detailed Design of Sharda – Noori Top – Jalkhad (SNJ) Road (KM 00+000 to 49+000) Length: 49 KM**

Reference: PPRA Rule-35

Kindly find attached the duly filled and signed Evaluation Report along with Bid Evaluation Criteria (Annex-I) pertaining to the procurement of subject Services in compliance of above referred PPRA Rule-35, for uploading on PPRA website at the earliest, please.

20/11/19

(SAJJAD ALI SHAH)
Director (Consultancy) P&CA

Encl: Evaluation Report along with **Annex-I**

Copy for kind information to:

- Member (Planning), NHA, Islamabad;
- General Manager (P&CA), NHA, Islamabad;
- Director (MIS), NHA, Islamabad.

EVALUATION REPORT
(As Per Rule 35 of PP Rules, 2004)

1.	Name of Procuring Agency:	National Highway Authority
2.	Method of Procurement:	Single Stage Two Envelope Procedure
3.	Title of Procurement:	Consultancy Services for Feasibility Study and Detailed Design of Sharda – Noori Top – Jalkhad (SNJ) Road (KM 00+000 to 49+000) Length: 49 KM
4.	Tender Inquiry No.:	6(493)
5.	PPRA Ref. No. (TSE):	TS399598E
6.	Date & Time of Bid Closing:	7th October, 2019 at 1130 hours local time
7.	Date & Time of Bid Opening:	7th October, 2019 at 1200 hours local time
8.	No of Bids Received:	Seven (07) Proposals were received
9.	Criteria for Bid Evaluation:	Criteria of Bid Evaluation is attached at Annex-I
10.	Details of Bid(s) Evaluation:	As below

Name of Bidder	Marks			Evaluated Cost (EC)* (PKR)	Rule/Regulation/SBD** /Policy/ Basis for Rejection / Acceptance as per Rule 35 of PP Rules, 2004.
	Technical (if applicable)	Financial (if applicable)	Total (out of 1000)		
1) M/s Associated Consulting Engineers-ACE Limited in JV with M/s PAVRON	614	200	814	14,561,096	Top scoring firm in combined evaluation (PPRA Rule 36(b) (ix))
2) M/s Prime Engineering and Testing Consultants (Pvt.) Ltd. in JV with M/s. Associated Consultancy Centre (Pvt.) Ltd. and M/s. Babar's Associates	622	175	797	16,605,807	2nd
3) M/s REC (Pvt.) Ltd. in JV with M/s PEAS Consulting (Pvt.) Ltd. and M/s Partners in Developments (PID)	592	190	782	15,356,522	3rd
4) M/s NESPAK (Pvt.) Ltd. in JV with M/s New Vision Engineering Consultant (Pvt.) Ltd.	612	133	745	21,912,004	4th

EVALUATION REPORT
(As Per Rule 35 of PP Rules, 2004)

Name of Bidder	Marks			Evaluated Cost (EC)* (PKR)	Rule/Regulation/SBD** /Policy/ Basis for Rejection / Acceptance as per Rule 35 of PP Rules, 2004.
	Technical (if applicable)	Financial (if applicable)	Total (out of 1000)		
5) M/s Finite Engineering (Pvt.) Ltd. in JV with M/s Infrastructure Consulting and Engineering	Not Evaluated (Ineligible)	Financial Proposal not opened			PPRA Rule 36(b) (v)
6) M/s ABM Engineers in JV with M/s ESS-I-AAR	Not Evaluated (Ineligible)	Financial Proposal not opened			PPRA Rule 36(b) (v)
7) M/s Asif Ali & Associates (Pvt.) Ltd. in JV with M/s A.A. Associates	Not Evaluated (Ineligible)	Financial Proposal not opened			PPRA Rule 36(b) (v)

**EC is the Evaluated Cost used for evaluation purpose and includes only the cost of competitive component (i.e. Remuneration and Direct Non-Salary Cost) and is exclusive of Provisional Sum, Contingency and Indirect Taxes.*

Top Ranked Bidder: **M/s Associated Consulting Engineers-ACE Limited in JV with M/s PAVRON**

11. **Any other additional/supporting information, the procuring agency may like to share**: The Procurement was carried out in line with PPRA Rules & Regulations. The bidding was done on QCBS method with 80:20 Technical to Financial Proposals ratio. The Contract is being awarded to M/s Associated Consulting Engineers-ACE Limited in JV with M/s PAVRON at the evaluated consultancy cost of Pak. Rs.18,061,096/-.

Signature:.....

Official Stamp:.....*General Manager (P&CA)*
National Highway Authority
Islamabad

*****Standard Bidding Documents (SBD).***

National Highway Authority

Annex-I

Criteria

FOR

Bid Evaluation

Consultancy Services for Feasibility Study and Detailed Design of Sharda – Noori Top – Jalkhad (SNJ) Road (KM 00+000 to 49+000) Length: 49 KM

November, 2019

NATIONAL HIGHWAY AUTHORITY

Procurement & Contract Administration Section
28 Mauve Area, G-9/I, Islamabad ☎ 051-9032727, 🖷 051-9260419

Ref: 6(493)/Dir-III (P&CA/NHA/2019/224 Dated:3rd October, 2019

To

All Prospective Consultants

Subject: **CONSULTANCY SERVICES FOR FEASIBILITY STUDY AND DETAILED DESIGN OF SHARDA – NOORI TOP – JALKHAD (SNJ) ROAD (KM 00+000 TO 49+000) LENGTH: 49 KM**

"MINUTES OF PRE-PROPOSAL MEETING "

Reference: Pre-Proposal meeting on the subject held on 25th September, 2019.

Minutes of Pre-Proposal Meeting alongwith, Addendum No.1 being integral part of RFP for the subject services are enclosed herewith for necessary action, please.

3/x/19

(SAJJAD ALI SHAH)
Director (Consultancy)P&CA

Enclosure:

- **Minutes of Pre-Proposal Meeting (04 Pages)**
- **Addendum No.1 (02 Pages)**

Copy for information to:

- Member (Planning), NHA, Islamabad
- Member (Engineering-Coordination), NHA, Islamabad.
- General Manager (Planning), NHA, Islamabad.
- General Manager (P&CA) NHA, Islamabad
- General Manager (Design) NHA, Islamabad.
- Dy.Director (P&CA-II) NHA, Islamabad.
- AD (P&CA-I) NHA, Islamabad.

MINUTES OF PRE-PROPOSAL MEETING HELD ON 25th September 2019

Consultancy Services for Feasibility Study and Detailed Design of Sharda – Noori Top – Jalkhad (SNJ) Road (KM 00+000 to 49+000) Length: 49 Km

A Pre-Proposal Meeting was held in NHA Auditorium at 1100 hours on 25th September 2019 to discuss the Request for Proposal (RFP) for the Subject Services. Following NHA officers and representatives of prospective consultants attended the meeting:

- **National Highway Authority**
  - Ikramus Saqlain Haider ... General Manager (Planning)
  - Mr. Zulfiqar Ali Janjua ... General Manager (Design)
  - Mr. Sajjad Ali Shah ... Director (P&CA)-III
  - Ms. Saadia Rehman ... Deputy Director (P&CA)-II

- **Consultants**
  - Mr. Aamir Ghauri ... M/s NESPAK (Pvt.) Ltd.
  - Mr. Naeem Mehmood Khan ... M/s EGC (Pvt). Ltd

2. The queries submitted during the above mentioned pre-proposal meeting and their clarifications/ replies are summarized below for information of all prospective bidders:

Sr. No.	Queries	Reply
1.	Refer to page 52 and 53 under Chapter 2 of the RFP, the location and plan of the is not vivid and hence not readable or visible.	Please refer to **Annexure-I.**
2.	Keeping in view Clause 4.4 of Data Sheet, it is requested that the date of submission of proposal may kindly be extended for another two weeks for preparation of sound and be-fitted proposal document in order to make the arrangements of collaboration/JV with other experienced firms.	Please proceed as per RFP.
3.	Please refer to Clause 2.3 of Chapter-2 of RFP. In our opinion, the completion time period of 4 months for the assignment is very short for rendering complete technical services in the light of given huge scope of work, approval of EINIEE report by the EPA and numerous submittals as indicated in the TOR. It is requested that the same may be extended to atleast 6 months which appears to be rational in view of difficult site conditions.	Please proceed as per RFP.
4.	It is our understanding that all primary /secondary data would be delivered to the successful Consultant prior to commencement of the assignment in case of award of contract and access to the site shall be ensured without any halt.	No data for this project is available with the Client. The Client will facilitate in accessing the site, however, it may not be considered as the responsibility of Client.

National Highway Authority Govt. of Pakistan

Sr. No.	Queries	Reply
5.	Please refer to section 3.1.4 of Data Sheet on page 13 and 14 of the RFP for "Key Personnel "where-in the Input of Environment Expert and Traffic Engineer is missing to cover the scope of given work for Environmental Impact Assessment of Roads and conducting Traffic Surveys and its Analysis including allied activities. It is also recommended that appropriate staff-months of 4 and 3 respectively be allocated by the Client.	Lump sum for EIA Study is provided in Form A-16 wherein cost of EIA study can be adjusted.
6.	We also propose and request 1 additional man-month to Soil Stabilization Expert, Hydrology & Drainage Engineer Geo-Technical Expert and Economist to cover their assigned tasks appropriately.	Please proceed as per RFP.
7.	What is the estimated budget of this project and what facilities would be provided by the Client to the Design Consultant, during execution of the assignment in terms of transport, office building and other logistics etc.?	Please refer to Form A-16 where communication expenses are provided.
8.	The criteria for academic qualification and their professional experience of consultant's staff as mentioned in the RFP / TOR appears to be stringent to meet the requirements which may kindly be reviewed and relaxed to acceptable/workable limits.	Please proceed as per RFP.
9.	Interfacing arrangements with the concerned agencies for relocation of existing utilities or any-other useful data for the purpose of detailed design and other associated activities shall be ensured by the Client.	NHA will fulfill their responsibility as per Standard procedure and policy.
10.	The minimum technical qualifying score as indicated Clause 5.2(a)of the TOR may please be relaxed to 65% from 70% against evaluation criteria in order to facilitate the bidding Consultants for more open contest.	Please proceed as per RFP.
11.	The area is prone to land slide and avalanches and study requires the detailed input of Geologist as well, in addition to slope stability expert. Therefore, a Geologist as a key person may also needs to be included in the Key professional staff.	Input of Geologist for one month is added. Please refer to **Addendum No.1**
12.	It is suggested that provision of "Avalanche Galleries" may be included in the TOR to make the road all weather as much as possible.	The successful consultant is at liberty to propose whatever measures are required to make road all-weather after due consultation with the Design Section.
13.	On page 86 of 138, a footnote requires that the Pavement Specialist is also responsible for preparing Traffic Studies after conducting Traffic Survey, Axle Load Surveys, Traffic Projections, Traffic Demand and Forecast, LOS calculations etc., which is beyond his professional expertise. Instead, it is suggested that a LS item may be added for Traffic studies in	Please proceed as per RFP.

National Highway Authority Govt. of Pakistan

Sr. No.	Queries	Reply
	Form A-16 on page 47 of 138.	
14.	The geo-rectified cadastral maps in UTM with WGS84 datum as mentioned on page 54 of 138 are not available for this area. This requirement may be deleted from the TOR.	Road already existed and being maintained by Pak Army.
15.	A provisional sum item PS of 500,000 is kept for Hydrology Study. It is suggested that this should be converted into LS item for quoting its cost.	Please proceed as per RFP.
16.	The specification of the DEM to be procured for Hydrology as mentioned on page 75 of 138 is missing. It is suggested that a 2.5 tri-stereo image and 5 DEM for an area of about 1000 sq.km for its use in the Hydrology study should be mentioned.	The DEM data of the requisite area for Hydrology shall be made available to the successful consultant.
17.	The requirement of "Composite pavement" on page 74 of 138 may be deleted from the TOR.	Please proceed as per RFP
18.	The bullet item "Highway safety Audit by a Team nominated by the Employer" on page 56 of 138 is in conflict with the TOR on page 74 of 138 and may be deleted.	The Consultant shall seek prior approval of the Highway Safety Audit Team from the Client.
19.	It is suggested that a LS item may be included in Form A-16 on page 47 of 138 for quoting the cost for conducting the Highway safety Audit, arrangement for the site visits for third party safety Experts and facilitation charges as mentioned on page 76 of 138.	The cost of highway safety audit is deemed included in other payable items
20.	Please clarify that the placement of ROW markers upon request as mentioned on page 76 of 138 "is additional work to be done for additional cost".	The cost of Placement of ROW markers is deemed included in other payable items.

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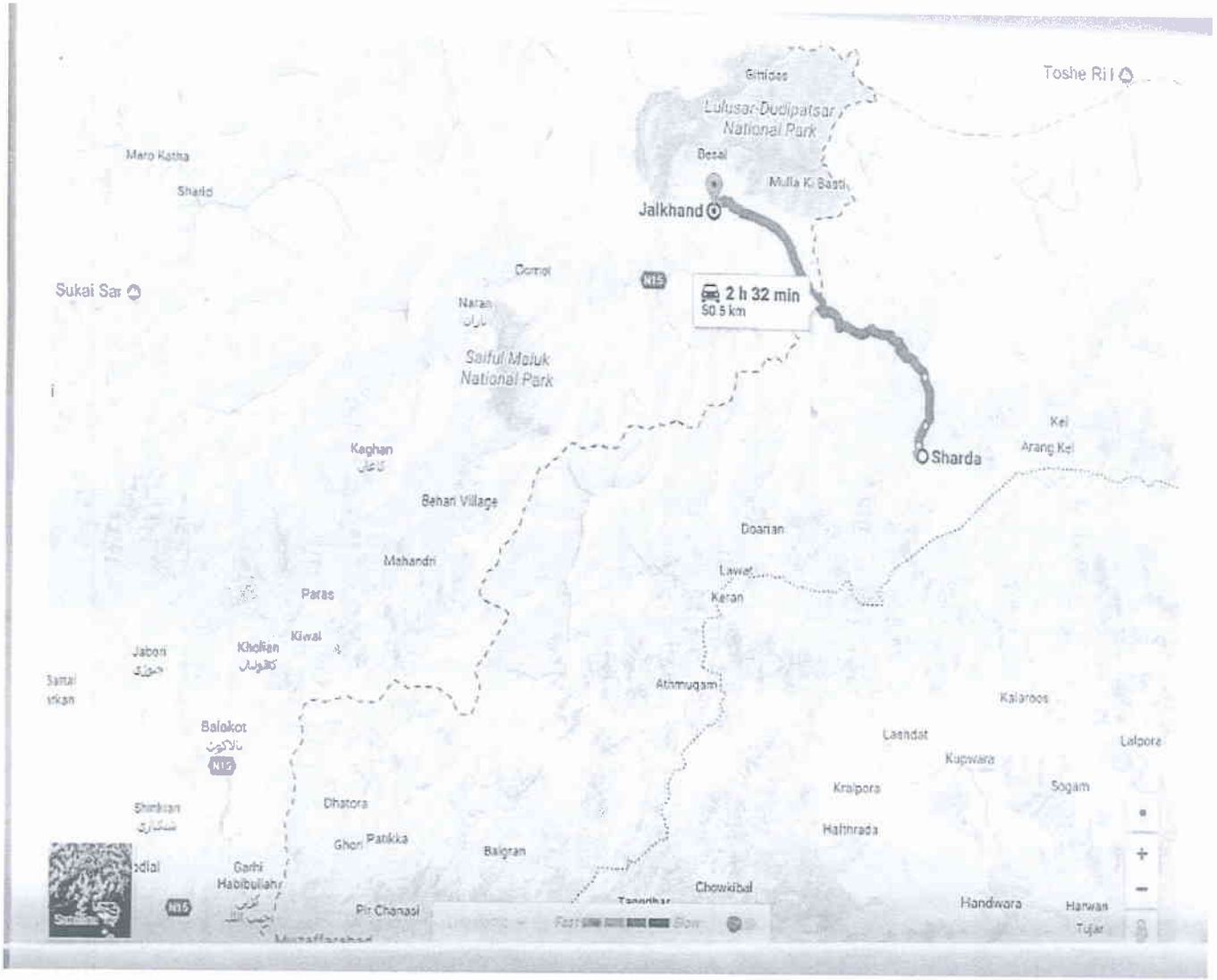
Annexure-I



National Highway Authority
Govt. of Pakistan

ADDENDUM No.1

Consultancy Services for Feasibility Study and Detailed Design of Sharda – Noori Top – Jalkhad (SNJ) Road (KM 00+000 to 49+000) Length: 49 Km

Following amendments have been made in the Request for Proposal (RFP) for the subject services under this Addendum No.1, which shall be read and construed as an integral part of RFP and shall take precedence in case of any conflict(s)/ ambiguity(s) amongst this Addendum No.1 and other provisions of the RFP.

1. **DATA SHEET**

Refer to page 13 of the RFP; LOI Clause 3.1.4(d), Geologist is added with minimum required experience as below:

Geologist	Minimum B.Sc. (Civil Engineering) or Master in Geology with minimum twenty (20) years' relevant experience [proven fifteen (15) years' design experience as Geologist on major Highway Projects]; -OR- M.Sc. (Soil Engineering/Material Engineering/ Geotechnical Engineering of equivalent with minimum eighteen (18) years' relevant experience [proven thirteen (13) years' design experience as Geologist on major Highway Projects].

e. The minimum number of person-months of Key Personnel is:

Total Expatriates: ___ Person-Months (Not used)

Total Local Experts: **17 Person-Months**

2. **TERMS OF REFERENCE:**

Table provided in TOR representing 'Minimum Personnel Proposed by the Client' is modified and attached as **Attachment-1 to Addendum No. 01.**

3. All other terms and conditions shall remain same.

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National Highway Authority ★ Govt. of Pakistan ★

Attachment-1 to Addendum No. 01

MINIMUM PERSONNEL PROPOSED BY THE CLIENT

S.No.	Position	Nos.	Months	Person-Months[1]
A. KEY PERSONNEL				
1.	Team Leader/ Sr. Highway Engineer	1	4	4
2.	Pavement Specialist*	1	1.5	1.5
3.	Structural Engineer	1	3	3
4.	Slope Stabilization Expert	2	1	2
5.	Hydrology & Drainage Engineer	1	2	2
6.	Geo-Technical Engineer	1	2	2
7.	Economist	1	1.5	1.5
8.	Geologist	1	1	1
	Sub-Total (A):	***9***	**-**	***17***
B. NON KEY PERSONNEL				
9.	Quantity Surveyor	1	2	2
10.	Chief Surveyor	1	2	2
11.	Surveyors	2	3	6
12.	CAD Operators	2	3	6
	Sub-Total (B):	***6***	**-**	***16***
C. SUPPORT STAFF				
13.	Computer Operators	2	3	6
14.	Helpers	15	2	30
	Sub-Total (C):	***17***	**-**	***36***
	Total (A + B + C):	**32**	**-**	**69**

* *Pavement Specialist will also carry out traffic studies and surveys.*

National Highway Authority Govt. of Pakistan

[1]The proposed person-months are as per Client's assessment; if the consultant has reservation/opinion/suggestion regarding proposed person-months it may convey same in writing during Pre-Proposal Meeting or even after Pre-Proposal Meeting but before the last date for seeking clarification, for review and decision of NHA which will be communicated to all the prospective bidders.

National Highway Authority

REQUEST FOR PROPOSAL

for

Consultancy Services
for
Feasibility Study and Detailed Design of Sharda – Noori Top – Jalkhad (SNJ) Road (KM 00+000 to 49+000) Length: 49 KM

Tender No. 6(493)

Pages (1 to 138)

September, 2019

Table of Contents

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

LETTER OF INVITATION (LOI)

To,

All prospective consultants

Gentlemen!

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

General Manager (P&CA)
Telephone: +92-51-9032727,
Fax: +92-51-9260419
E-mail:gmpca@nha.gov.pk,
Website: www.nha.gov.pk

ATTACHMENTS

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

Annex A

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.

National Highway Authority Govt. of Pakistan

1.9 **Conflict of Interest**

The Consultant is required to provide professional, objective, and impartial advice, at all times holding the Client's interests paramount, strictly avoiding conflicts with other assignments or its own corporate interests, and acting without any consideration for future work.

The Consultant has an obligation to disclose to the Client any situation of actual or potential conflict that impacts its capacity to serve the best interest of its Client. Failure to disclose such situations may lead to the disqualification of the Consultant or the termination of its Contract and/ or debarring by the Client.

Without limitation on the generality of the foregoing, and unless stated otherwise in the **Data Sheet**, the Consultant shall not be hired under the circumstances set forth below:

a) Conflicting activities

Conflict between consulting activities and procurement of goods, works or non-consulting services: a firm that has been engaged by the Client to provide goods, works, or non-consulting services for a project, or any of its Affiliates, shall be disqualified from providing consulting services resulting from or directly related to those goods, works, or non-consulting services. Conversely, a firm hired to provide consulting services for the preparation or implementation of a project, or any of its Affiliates, shall be disqualified from subsequently providing goods or works or non-consulting services resulting from or directly related to the consulting services for such preparation or implementation.

b) Conflicting assignments

Conflict among consulting assignments: a Consultant (including its Experts and Specialist Sub-consultants) or any of its Affiliates shall not be hired for any assignment that, by its nature, may be in conflict with another assignment of the Consultant for the Client.

c) Conflicting relationships

Relationship with the Client's staff: a Consultant (including its Experts and Specialist Sub-consultants) that has a close business or family relationship with a professional staff of the Client, who are directly or indirectly involved in any part of (i) the preparation of the Terms of Reference for the assignment, (ii) the selection process for the Contract, or (iii) the supervision of the Contract, may not be awarded a Contract, unless the conflict stemming from this relationship has been resolved in a manner acceptable to the Client throughout the selection process and the execution of the Contract.

d) Any other types of conflicting relationships as indicated in the **Data Sheet**.

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 may 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.

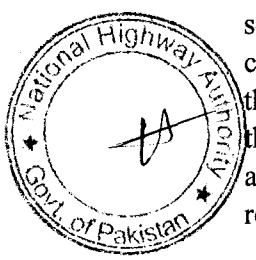
3.1.3 While preparing the Technical Proposal, consultants are expected to examine all terms and instructions included in the RFP. Failure to provide all requested information shall be at consultant's risk and may result adversely in the scoring of the proposal. The proposal should be prepared as per 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.

Penalty against non-compliance with the maximum page requirement based in the **'CHECKLIST OF REQUIRED FORMS'** provided in the Section of Technical Proposal Forms will be one (01) score point per excess page to be deducted from the total technical score. The consultants are instructed to submit the CVs of Key Personnel by truly following the format attached at Form A-5. The CV's submitted on format in deviation to that specified are susceptible of scoring low.

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. Consultant may utilize the services of expatriate experts but only to the extent for which the requisite expertise is not available with any Pakistani firm. In case of JV, the proposal should state clearly partners will be "Jointly and Severally" responsible for performance under the Contract and One (Representative) partner will be solely responsible for all dealings with the Client on behalf of the JV. 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 discouraged and only individual Specialist Sub-Consultants (having unique expertise which is not available with others) 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 estimated number of Key Personnel person-months required for the Assignment is stated in the Data Sheet. The proposal should be based on a number of Key Personnel person-months substantially in accordance with the above number. However, consultants may propose changes in the light of their experience through particular comments on the TOR.

f. 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. A Technical Proposal containing any financial information will be treated as non-responsive resulting in to rejection of the 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. Your 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 Bye-Laws 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 word and figures the formers will prevail. In addition to the above corrections, activities and items described in the Technical Proposals but not priced, in the Financial Proposals shall be assumed to be included in the prices of other activities or items. In case

an activity or item is quantified in the Financial Proposal differently from the Technical Proposal, the evaluation committee shall correct the quantification specified in the Financial Proposal so as to make it consistent with that specified in the Technical Proposal.

4. SUBMISSION OF PROPOSALS

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

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

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

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

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

5. PROPOSAL EVALUATION

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

5.2 Technical Proposal

5.2.1 The evaluation committee appointed by the Client shall carry out its evaluation for all the projects as listed in Para 1.1, applying the evaluation criteria and point system specified in the Data Sheet. Each responsive proposal shall be given a technical score: St. The

Consultants scoring less than seventy (70) percent points shall be rejected and their financial proposals returned un-opened.

5.3 Financial Proposal

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

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

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

(F = amount of specific financial proposal)

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

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

6. NEGOTIATION

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

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

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

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

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

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

7. AWARD OF CONTRACT

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

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

8. CONFIRMATION OF RECEIPT

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

(i) That you received the letter of invitation;

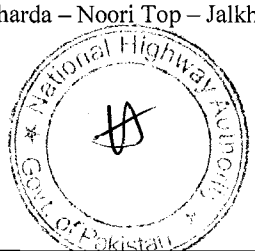
(ii) Whether you will submit a proposal; and

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

Annex-B

DATA SHEET

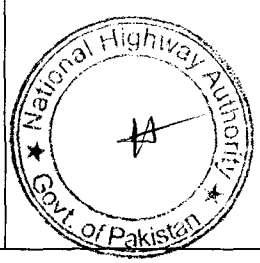
LOI Clause No.	DESCRIPTION OF CLAUSE
1.1	The name of Assignment is: Consultancy Services for **"Feasibility Study and Detailed Design of Sharda – Noori Top – Jalkhad (SNJ) Road (KM 00+000 to 49+000) Length: 49 KM"** The Client's Name is:- **National Highway Authority**
1.2	The description and the objectives of the assignment are: **As per TOR**
1.3	Phasing of the Assignment (if any): **Nil** The Consultant shall commence the assignment upon signing of Contract Agreement between NHA and the successful Consultant.
1.5	Pre-Proposal Conference: **Yes** ___√___ **No** _____ The name(s) and address(es) of the Official(s) is (are): **General Manager (P&CA)** National Highway Authority 28, Mauve Area, G-9/1 Islamabad Date, Time and Venue for Pre-Proposal Conference: **Date: 25th September, 2019** **Time: 1100 hours** **Venue: NHA Auditorium (HQ)** National Highway Authority 28, Mauve Area, G-9/1 Islamabad.
1.6	The Client shall provide the following inputs: **As per TOR and Appendix D.**
1.7	Following sub-clauses are added: iii. The Consultant may please note not to suggest names of key staff already proposed in other proposals with the Client or awarded recently. This will affect adversely marking of these professionals in evaluation of the technical proposal. Their secured points are liable to be reduced by 50% if their name appears in more than 1 previous proposal in which they are ranked No.1. Also the existing load of work with a firm shall be considered as one of the factors for the consideration in the award of the work.



	iv. 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. v. Consultants may form a Joint Venture (JV) to qualify for the Assignment in which case the contract will be signed between the Client and all members of the JV on the prescribed Form included in Appendix E (copy of Model Agreement) subject to the ranking and successful negotiations. A JV may include at the most four members. 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 JV with a new / less experienced firm by sharing at least 20% of Assignment with them.
1.8	The Invited Consultants / Eligible Consultants are: Any firm meeting the following requirements: (a) Valid Registration Certificate of Pakistan Engineering Council with relevant Project Profile Codes. Foreign consulting firms shall make JV in accordance with Bye-Law 6(2) and Bye-Law 9 of the Pakistan Engineering Council (Conduct and Practice of Consulting Engineers) Bye-Laws 1986. Failure to provide valid Registration Certificate (license) of the firm (each member in case of JV) by the PEC will entitle the Client to reject the proposal. (b) Affidavit in original bearing the subject with project name 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 (By all member firms in case of JV and/or sub-consultant). (c) Facilities available with the Consultant to perform their functions effectively (proper office premises, software, hardware, record keeping etc.) (d) Client's satisfaction certificates (Performance Reports) for the last three relevant assignments from the respective Clients. Moreover, any adverse report regarding performance of Consultant on NHA projects received from NHA's any relevant quarter may become basis for its disqualification from the services above named in clause 1.1. (e) Signing and certification of the Checklist for Completeness of the Proposal as per attachment at the end of Data Sheet. (f) Man-months of staff and Project Duration as per TOR.
2.1	The Documents are: (a) Letter of Invitation (LOI). (b) Instructions to Consultants (ITC). (c) Data Sheet.

	(d) Technical Proposal Forms. (e) Financial Proposal Forms (f) Appendix – A: TOR and Background Information. (g) Appendix – B: Man-Months and Activity Schedule (h) Appendix – C: Client's Requirements from the Consultant. (i) Appendix – D: Personnel Equipment, Facilities and Other Services to be Provided by the Client. (j) Appendix – E: Copy of Model Agreement/ Draft Form of Contract & Appendices etc. (k) Form of Contract *(For Consultants to perform services as a Joint Venture)*
2.2	The words "Twenty-one (21)" is deleted in its entirety and replaced with "Five (05)" The address for seeking clarification is: **General Manager (P&CA)** National Highway Authority 28, Mauve Area, G-9/1, Islamabad E-mail: gmpca.nha@gmail.com
3.1.1	Add following: The proposals should be bound in the 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. Any proposal found not adhering to these requirements will be **rejected** at the time opening.
3.1.4	d. Proposed key staff shall preferably be permanent employees who are employed with the consultants at least six months prior to submission of Proposal. **Yes** ___√___ **No** _____ The minimum required experience of proposed Key Personnel are given below:

FOR KEY PERSONNEL	
Team Leader/ Senior Highway Engineer	Minimum B.Sc. (Civil Engineering) with minimum twenty (20) years' relevant experience [proven fifteen (15) years' design experience as Highway/ Geometric Design Engineer on National Highways Projects]; -OR- M.Sc. (Transportation Engineering) with minimum eighteen (18) years relevant experience [proven thirteen (13) years' design experience as Highway/ Geometric Design Engineer on National Highways

		Projects]. He/she must also have performed as Team Leader for at least three (03) major Highway Design Projects.
	Pavement Specialist	Minimum B.Sc. (Civil Engineering) with minimum twenty (20) years' relevant experience [proven fifteen (15) years' design experience as Pavement Specialist on major Highway Projects]; -OR- M.Sc. (Traffic Engg./ Transportation Engg./ Highway Engg.) with minimum eighteen (18) years' relevant experience [proven thirteen (13) years' design experience as Pavement Specialist on major Highway Projects].
	Structural Engineer	Minimum B.Sc. (Civil Engineering) with minimum twenty (20) years' relevant experience (proven fifteen (15) years' design experience as Structure Engineer on National Highways Projects); -OR- M.Sc. (Structural Engineering) with minimum eighteen (18) years relevant experience [proven thirteen (13) years' design experience as Structure Engineer on National Highways Projects];
	Slope Stabilization Expert	Minimum B.Sc. (Civil Engg./ Geo-Tech Engg.) with minimum twenty (20) years' relevant experience [proven fifteen (15) years' design experience as Slope/Soil Stabilization Expert on major Highway and Bridge Projects]; -OR- M.Sc. (Soil Mechanics/ Geo-Tech Engg.) with minimum eighteen (18) years' relevant experience [proven thirteen (13) years' design experience as Slope/ Soil Stabilization Expert on major Highway and Bridge Projects];
	Hydrology & Drainage Engineer 	Minimum B.Sc. (Civil Engineering) with minimum twenty (20) years relevant experience [proven eighteen (18) years' design experience as Hydrology & Drainage Engineer on major Highway and Bridge Projects]; -OR- M.Sc. (Hydrology/ Drainage/ Hydraulic Engineering) with minimum eighteen (18) years relevant experience [proven sixteen (16) years' design experience as Hydrology & Drainage Engineer on major Highway

		and Bridge Projects];
	Geo-Technical Engineer	Minimum B.Sc. (Civil Engg./ Geo-Tech Engg.) with minimum twenty (20) years' relevant experience [proven fifteen (15) years' design experience as Geo-Technical Engineer on major Highways and Bridges Projects]; -OR- M.Sc. (Geo-Tech Engg.) with minimum eighteen (18) years' relevant experience [proven thirteen (13) years' design experience as Geo-Technical Engineer on major Highways and Bridges Projects];
	Economist	Minimum B.Sc. (Transportation Engineering) or M.Sc. (Economics with specialization in Transportation) with minimum twenty (20) years' relevant experience [proven fifteen (15) years' experience as Transport Economist in highway sector]
	Quantity Surveyor	DAE (Civil); preferably having Bachelor's in Civil Engineering; In case of DAE having minimum eighteen (18) years post-qualification experience in Highway Sector which includes proven ten (10) years' experience as Quantity Surveyor on Highway Projects; -OR- In case of Bachelor's Degree having minimum fifteen (15) years post-qualification experience in Highway Sector including seven (7) years' experience as Quantity Surveyor on Highway Projects;
	Chief Surveyor	DAE (Civil); preferably having Bachelor's in Civil Engineering. In case of DAE having minimum eighteen (18) years post-qualification experience in Highway Sector which includes proven ten (10) years' experience as Chief Surveyor on Highway Projects. -OR- In case of Bachelor's Degree having minimum fifteen (15) years post-qualification experience in Highway Sector including seven (7) years' experience as Chief Surveyor on Highway Projects;
	Surveyor	DAE (Civil); preferably having Bachelor's in Civil Engineering. In case of DAE having minimum eighteen (18) years post-qualification experience in Highway Sector which includes proven ten (10) years' experience as

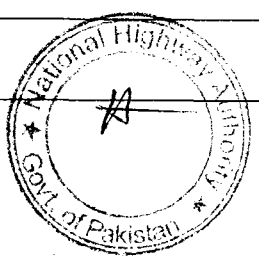
National Highway Authority Govt. of Pakistan

		Surveyor on Highway Projects. -OR- In case of Bachelor's Degree having minimum ten (10) years post-qualification experience in Highway Sector including seven (7) years' experience as Surveyor on Highway Projects.
	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	
	e. The minimum number of person-months of Key Personnel is: Total Expatriates: ___ **Person-Months (Not used)** Total Local Experts: **16 Person-Months** f. Training is an important feature of this Assignment: **Yes** √ **No** _____ If Yes, details of training are given in TOR	
3.2.3	Professional liability, insurances (description or reference to appropriate documentation): i. The Consultants shall be responsible for Professional Indemnity Bond of the required amount at their own cost. This bond shall be in the joint name of Consultant and the Client. ii. The Consultants are required to insure their Employees and Professionals for Hospitalization/ Medical, Travel and Accident Cover for the duration of the Contract. The details provided in Para 3.5 of Special Conditions of Contract in Model Contract.	
4.1	The number of copies of the Proposal required is: **Technical Proposal:** **One Original and Three copies with CD** (soft form of complete Technical Proposal in PDF Form) in sealed envelope. **Financial Proposal:** **One Original with CD** (soft form of complete Financial Proposal in PDF as well as MS Word/Excel Forms) in sealed envelope. The address for writing on the proposal is: **General Manager (P&CA)** National Highway Authority 28, Mauve Area G-9/1 Islamabad Telephone: +92-51-9032727 Facsimile: +92-51-9260419	

4.4	The date and time of proposal submission is: Date: **7th October, 2019** Time: **1130 hours** Location of Submission: **NHA Main Auditorium** National Highway Authority 27, Mauve Area G-9/1 Islamabad.
4.5	Validity period of the proposal is: **180 days** The bid shall remain valid up to: **4th April, 2020** The location for negotiation of proposal is: **General Manager (P&CA)** National Highway Authority 28, Mauve Area G-9/1 Islamabad Telephone: +92-51-9032727 Facsimile: +92-51-9260419
5.2	The evaluation of technical proposal shall be based on following criteria:

	Description / Items	**Points**
1.	**Experience of the Firm**	**100**
1-a)	General Experience in road Transport Sector	(25)
1-b)	Specific Experience related to particular Assignment	(75)
2.	**Approach & Methodology**	**250**
2-a	Appreciation of the Project	(70)
(i).	*Evidence of Site Visit with Photographs*	*(30)*
(ii).	*Clarity of appreciation*	*(20)*
(iii).	*Comprehensiveness of appreciation*	*(20)*
2-b	Problem Statement/ Understanding of Objectives	(50)
(i).	*Identification of Problems/ Objectives*	*(30)*
(ii).	*Components of Proposed Services*	*(20)*
2-c	Methodology	(80)
(i).	*Proposed Solutions for this Project*	*(30)*
(ii).	*Quality of Methodology*	*(20)*
(iii).	*Conciseness, clarity and completeness of proposal*	*(30)*
2-d	Suggested changes for improvement in TOR	(10)
2-e	Work Program	(20)
2-f	Staffing Schedule	(20)
3.	**Key Staff**	**450**
4.	**Performance Certification from clients**	**100**
5.	**Present Commitments (current engagement and available strength – justification)**	**50**

	6. Transfer of Knowledge * (Methodology/ Plans)	**50**
	Total Points:	**1000**
	Minimum qualifying technical score:	**700**
	* Transfer of knowledge would be in the form of joint venture with new/ less experienced firm(s) by sharing at least 20% of Assignment with them for promoting the consultancy industry in the country.	
	The points earmarked for evaluation sub-criteria (3) for suitability of Key Staff are:-	
	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 LOI Clause 3.1.4 (d))	**10**
	Total Points:	**100**
5.3.1	Following is added: The words "three top-ranking qualifying consulting firms" is deleted in its entirety and replaced with the words "qualifying consultants" The date, time, and address of the financial proposal opening are: After evaluation and approval of technical proposals **(TO BE INFORMED LATER).**	
5.3.3	The weights given to the Technical and Financial Proposals are: **Technical: 80%** **Financial: 20%**	
6.3	Add following at the end of this Para: The final person-months of each expert are subject to adjustment at the stage of contract negotiation in line with demonstrated approaches methodology and need basis.	
7.2	The assignment is expected to commence in: **December, 2019**	
8	The Clause is deleted in its entirety	



Checklist for Completeness of Proposal

S. No.	Description	Must attach Documents	
		In case of Single Entity	**In case of JV/ Sub-Consultants**
1.	Power of Attorney to submit the Proposal **(Original, scanned copy is not acceptable)**	a. By the owner/owners of Firm to authorized representative. b. In case of more than one owner, legal authority of issuing Power of Attorney of Executant itself.	a. By the owner/ owners of each Firm to authorized representative. b. In case of more than one owner, legal authority of issuing Power of Attorney of Executant itself. c. Power of Attorney by the duly authorized representative(s) of member firm(s)/ sub-consultant(s) to the authorized representative of Lead Firm
2.	Power of Attorney to sign the Proposal **(Original, scanned copy is not acceptable)**	a. By the owner/owners of Firm to authorized representative. b. In case of more than one owner, legal authority of issuing Power of Attorney of Executant itself.	a. By the owner/ owners of each Firm to authorized representative. b. In case of more than one owner, legal authority of issuing Power of Attorney of Executants itself. c. Power of Attorney by the duly authorized representative(s) of member firm(s)/ sub-consultant(s) to the authorized representative of Lead Firm
3.	Letter of Intent to form JV on firm's letterhead/ JV agreement on stamp paper **(Original, scanned copy is not acceptable)**	N.A.	Each Firm (all JV members), including the Lead Firm, to sign through its authorized representative (along with authorization)
4.	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)***	Must provide	Must provide
5.	Valid Registration Certificate of Pakistan Engineering Council with relevant Project Profile Codes	Must provide	Must provide
6.	Foreign consulting firms shall make JV in accordance with Bye-Law 6(2) and Bye-Law 9 of the Pakistan Engineering Council (Conduct and Practice of Consulting Engineers) Bye-Laws 1986	Must provide	Valid PEC License(s) must be provided at the time of submission of the proposal
7.	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	Must provide	Must be provided by all member firm(s) including the Lead firm (and sub-consultant(s) if applicable)
8.	Lists of facilities available with the Consultant to perform their functions effectively (proper office premises, software, hardware, record keeping etc.)	Must provide	Must be provided for each JV member including the Lead firm separately. In case of involvement of sub-consultant(s), will also be provided
9.	Affidavit on stamp paper duly attested by the Oath Commissioner to the effect that the proposed Personnel shall be available as per their proposed inputs in the Personnel Schedule and TOR	Must provide	Must be provided for each JV member including the Lead firm separately who has proposed Personnel. In case of involvement of Specialist sub-consultant(s), the affidavit will be signed by the individual himself
10.	Performance Certificate/ Assignment Completion Certificate (All completed projects mentioned under TECHNICAL PROPOSAL FORM A-2 CLIENT'S	Must provide	Must be provided for completed projects of each member including Lead firm

S. No.	Description	Must attach Documents	
		In case of Single Entity	In case of JV/ Sub-Consultants
	REFERENCE **Note:** Any project mentioned completed under Form TEC-2B will not be considered for evaluation unless Performance Certificate/ Assignment Completion Certificate with satisfactory remarks by the client's representative is not attached. The Client NHA reserves the right to verify the Performance/ Assignment Completion Certificates.		
11.	Integrity Pact Document duly filled in the blank spaces with requisite information and signed/ stamped	Must provide	Must provide
12.	FINANCIAL PROPOSAL FORMS FIN-1 to FIN-7 duly completed as per Instructions to Consultants/ Data Sheet and requirements of TOR **(To be attached with Financial Proposal)**	Must provide	Must provide
13.	Audit Reports of the firm for past three years duly certified by Chartered Accountant **(To be attached with Financial Proposal)**	Must provide	Must be provided for each firm who proposes Personnel for the Assignment
14.	Sequential page numbering of Proposal. Signing and stamping of proposal (Technical and Financial) wherever indicated as well as initial/ signature and seal on all other pages of proposals. The Proposal is bound as hard book to deny addition/ removal of pages	Must fulfill the requirement	Must fulfill the requirement

Certification:

I, the undersigned, certify to the best of my knowledge and belief that all above mentioned documents (as applicable), Sr. No.1 to 13 have been attached to our proposal (technical and financial) and signed and stamped as per requirements mentioned at Sr. No.14. In the event of any sort of falsification of this certification, the Client NHA may at its sole discretion disqualify our firm/JV from bidding for the Assignment named under Data Sheet Sub-Clause 1.1.

_____

Signature of authorized representative of the firm(s) Date: _____
Day/Month/Year

Full name of authorized representative: _____

For and on behalf of: _____{Name of the bidder}_____

_____
(Seal)

Note: copy or scanned signatures are not allowed

SUMMARY EVALUATION SHEET FOR FULL TECHNICAL PROPOSALS (QCBS)

EVALUATION CRITERIA		Max. Weight	Firm 1		Firm 2	
			Rating	Score	Rating	Score
1. *Firms Experience*		**100**				
	General Experience in road Transport Sector	25				
	Specific Experience related to particular Assignment	75				
2. Approach and Methodology		**250**				
	2-a. *Appreciation of the Project*	70				
	(i) Evidence of Site Visit with Photographs	(30)				
	(ii) Clarity of appreciation	(20)				
	(iii) Comprehensiveness of appreciation	(20)				
	2-b. Quality of Methodology	50				
	(i) Identification of Problems/ Objectives	(30)				
	(ii) Components of Proposed Services	(20)				
	2-c. Methodology	80				
	(i) Proposed Solutions for this Project	(30)				
	(ii) Quality of Methodology	(20)				
	(iii) Conciseness, clarity and completeness of proposal	(30)				
	2-d. Suggested Changes for Improvement in TOR	10				
	2-e. Work Program	20				
	2-f. Staffing Schedule	20				
3. Key Personnel		**450**				
	i. Team Leader/ Senior Highway Engineer	100				
	ii. Pavement Specialist	50				
	iii. Structural Engineer	50				
	iv. Slope Stabilization Expert-I & II	2 x 50				
	v. Hydrology & Drainage Engineer	50				
	vi. Geo-Technical Engineer	50				
	vii. Economist	50				
4. Performance Certification from clients		**100**				
5. Present Commitments (current engagement and available strength – justification)		**50**				
6. Transfer of Knowledge (Methodology/ Plans)		**50**				
	TOTAL:	**1000**				

Excellent - 100% Very Good - 90-99% Above Average – 80-89% Average – 70-79% Below Average – 1-69% Non-complying – 0%
Score: Maximum Weight x rating / 100.
Minimum qualifying score is 70% or 700 marks.

PERSONNEL EVALUATION SHEET

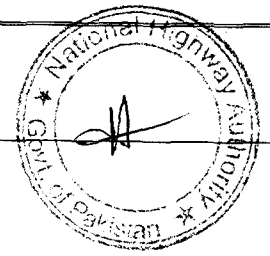
POSITION / AREA OF EXPERTISE	Name	Academic and General Qualification* Weight 30%		Project related Experience Weight 60%		Status with the Firm** 10%		OVERALL RATING (Sum of Weighted Ratings)
(Show all experts to be evaluated)		Percentage Rating	Weighted Rating (A)	Percentage Rating	Weighted Rating (B)	Percentage Rating	Weighted Rating (C)	(A+B+C)
i. Team Leader/ Senior Highway Engineer								
ii. Pavement Specialist								
iii. Structural Engineer								
iv. Slope Stabilization Expert-I & II								
v. Hydrology & Drainage Engineer								
vi. Geo-Technical Engineer								
vii. Economist								

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

Score: Maximum Weight X rating / 100.

* CRITERIA FOR ACADEMIC AND GENERAL QUALIFICATION

Personnel	Sub-Criteria for Sub-Division of the indicated Weightage 30% herein above	Additional Marks
a. Team Leader/ Senior Highway Engineer	Q: Minimum B.Sc. (Civil Engineering) with minimum twenty (20) years' relevant experience [proven fifteen (15) years' design experience as Highway/ Geometric Design Engineer on National Highways Projects] **(Marks: 70%)**	M.Sc. (Transportation Engineering) with minimum eighteen (18) years relevant experience [proven thirteen (13) years' design experience as Highway/ Geometric Design Engineer on National Highways Projects] **(Marks: 30%)**
b. Pavement Specialist	Q: Minimum B.Sc. (Civil Engineering) with minimum twenty (20) years' relevant experience [proven fifteen (15) years' design experience as Pavement Specialist on major Highway Projects] **(Marks: 70%)**	M.Sc. (Traffic Engg./ Transportation Engg./ Highway Engg.) with minimum eighteen (18) years' relevant experience [proven thirteen (13) years' design experience as Pavement Specialist on major Highway Projects] **(Marks: 30%)**
c. Structural Engineer	Q: Minimum B.Sc. (Civil Engineering) with minimum twenty (20) years' relevant experience (proven fifteen (15) years' design experience as Structure Engineer on National Highways Projects) **(Marks: 70%)**	M.Sc. (Structural Engineering) with minimum eighteen (18) years relevant experience [proven thirteen (13) years' design experience as Structure Engineer on National Highways Projects] **(Marks: 30%)**
d. Slope Stabilization Experts	Q: Minimum B.Sc. (Civil Engg./ Geo-Tech Engg.) with minimum twenty (20) years' relevant experience [proven fifteen (15) years' design experience as Slope/Soil Stabilization Expert on major Highway and Bridge Projects] **(Marks: 70%)**	M.Sc. (Soil Mechanics/ Geo-Tech Engg.) with minimum eighteen (18) years' relevant experience [proven thirteen (13) years' design experience as Slope/ Soil Stabilization Expert on major Highway and Bridge Projects] **(Marks: 30%)**



Personnel	Sub-Criteria for Sub-Division of the indicated Weightage 30% hereinabove	Additional Marks
e. Hydrology & Drainage Engineer	Q: Minimum B.Sc. (Civil Engineering) with minimum twenty (20) years relevant experience [proven eighteen (18) years' design experience as Hydrology & Drainage Engineer on major Highway and Bridge Projects] **(Marks: 70%)**	M.Sc. (Hydrology/ Drainage/ Hydraulic Engineering) with minimum eighteen (18) years relevant experience [proven sixteen (16) years' design experience as Hydrology & Drainage Engineer on major Highway and Bridge Projects] **(Marks: 30%)**
f. Geo-Technical Engineer	Q: Minimum B.Sc. (Civil Engg./ Geo-Tech Engg.) with minimum twenty (20) years' relevant experience [proven fifteen (15) years' design experience as Geo-Technical Engineer on major Highways and Bridges Projects] **(Marks: 70%)**	M.Sc. (Geo-Tech Engg.) with minimum eighteen (18) years' relevant experience [proven thirteen (13) years' design experience as Geo-Technical Engineer on major Highways and Bridges Projects] **(Marks: 30%)**
g. Economist	Q: Minimum B.Sc. (Transportation Engineering) or M.Sc. (Economics with specialization in Transportation) with minimum twenty (20) years' relevant experience [proven fifteen (15) years' experience as Transport Economist in highway sector] **(Marks: 100%)**	-

** Regular Employee - 100%;
First time for this assignment- 0%

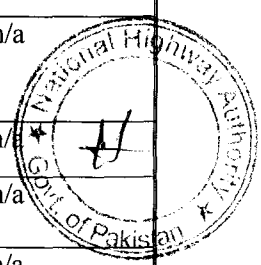
TECHNICAL PROPOSAL FORMS

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 or a copy of an existing agreement.	
"√" If applicable	A-1 Attachment Power of Attorney	No pre-set format/form. In the case of a Joint Venture, several are required: a power of attorney for the authorized representative of each JV member and a Special power of attorney for the representative of the lead member to represent all JV members.	
√	A-2	Consultant's Organization and Experience.	As given below
√	A-2A	A. Consultant's Organization	3
√	A-2B	B. Consultant's Experience/ Client's Reference	20
√	A-3	Approach Paper on Methodology proposed for Performing the Assignment	50
√	A-4	Comments/ Suggestions of Consultant	*[See footnote]*[1]
√	A-4A	A. On the Terms of Reference	n/a
√	A-4B	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	n/a
√	A-10	Current Commitments of the Firm	n/a



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

[1] The total number of pages for combined forms A-3 and A-4 should not exceed 50. A page is defined as one printed side of A4 or letter-size paper with font size of 10 or more.

Form A-1

TECHNICAL PROPOSAL SUBMISSION FORM

{Location, Date}

To: [Name and address of Client]

Dear Sirs:

We, the undersigned, offer to provide the consulting services for **[Insert theProject Name]**in accordance with your Request for Proposals dated [Insert Date]. 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 {insert: "of our letter of intent to form a joint venture" or, if a JV is already formed, "of the JV agreement"} signed by every participating member, 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 may be sanctioned by the Client.

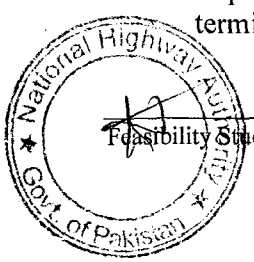
(b) Our Proposal shall be valid and remain binding upon us for the period of time specified in the Data Sheet, Clause 4.5.

(c) We have no conflict of interest in accordance with LOI 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 Experts. We accept that the substitution of Key Experts for reasons other than those stated in Letter of Invitation, Clause 6.5 may lead to the termination of Contract negotiations.



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

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

We undertake, if our Proposal is accepted and the Contract is signed, to initiate the Services related to the Assignment 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 is not bound to accept any or all Proposal(s) that the Client receives.

We remain,

Yours sincerely,

Authorized Signature {In full and initials}: _____

Name and Title of Signatory: _____

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

In the capacity of: _____

Address: _____

Contact information (phone and e-mail):_____

{For a joint venture, either all members shall sign or only the representative member, in which case the power of attorney to sign on behalf of all members shall be attached}

Form A-2

CLIENT'S REFERENCE

Relevant Services (as per RFP notice) Carried Out in the Last Ten Years Which Best Illustrate Qualifications

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

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

Consultants' Name: _____

Form A-3

APPROACH PAPER ON METHODOLOGY PROPOSED FOR PERFORMING THE ASSIGNMENT

[In this part of the Technical Proposal, explain understanding of the objectives of the Assignment, approach to the services, methodology for carrying out the activities and obtaining the expected output, and the degree of the detail of such output. You should explain your methodology to complete the project within time and budget.

The approach must be indigenous project specific approach of Consultant and not a generic one or copy of the TOR.

Based on the specific approach, describe Work Plan which is consistent with inputs provided in Forms A-8 and A-9.

In case of JV, the role of each member must be clearly highlighted. Likewise, role of Specialist Sub-consultant, if any, along with necessity must be highlighted.]

Form A-4

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 A-4A and A-4B respectively.]

A. On the Terms of Reference (TOR):

1.

2.

3.

Etc.

B. On the Counterpart Staff and Facilities (data & services to be provided by the Client as indicated in the TOR):

1.

2.

3.

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 (e) 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 A-4A and the change should not be incorporated in the Proposal. Enumerate each suggestion in Form A-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 PERSONNEL AND SPECIALIST SUB-CONSULTANT (IF ANY)

1. Proposed Position: _____
2. Name of Firm [2]: _____
3. Name of Staff: _____
4. Profession: _____
5. Date of Birth: _____
6. Years with Firm: _____
7. Nationality: _____
8. C.N.I.C Number: _____
9. Cell Number (functional): _____
10. Membership in Professional Societies: _____
    (Membership of PEC is Mandatory [3])
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].

- 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

---

[2] Clearly mention that the Personnel is a permanent employee of the firm or is a freelancer. If vague statement given, the Personnel will be considered a freelancer.

[3] The status of the candidate will be verified from PEC's website (online), if the firm mentions the Personnel to be permanent employee, then status of the employee must appear accordingly on the PEC's website otherwise the statement of the firm will be considered misrepresentation of facts and will be dealt with in accordance with PPRA Rule-19.

held and location of assignments. For experience in last ten years, 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 has been attached with the CV.

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

_____

Signature of expert or authorized representative of the firm

Date: _____
Day/Month/Year

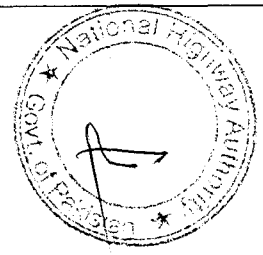
Full name of authorized representative: _____

NOTE: COPY OR SCANNED SIGNATURES ARE NOT ALLOWED

Form A-6

COMPLETION AND SUBMISSION OF REPORTS AS PER TOR

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

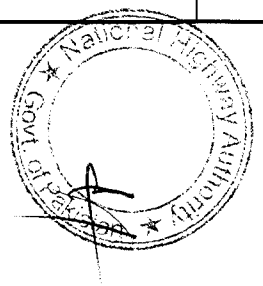


Form A-7

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

1. Technical/Managerial Staff

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



Form A-8

WORK PLAN /ACTIVITY SCHEDULE

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

Form A-9

WORK PLAN AND TIME SCHEDULE FOR KEY PERSONNEL

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

Full Time: _____
Part Time: _____ Activities Duration _____

Yours faithfully,

Signature _____
(Authorized Representative)

Full Name _____
Designation _____
Address _____

Form A-10

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

FINANCIAL PROPOSAL FORMS

Form A-11

FINANCIAL PROPOSAL SUBMISSION FORM

{Location, Date}

To: [Name and address of Client]

Dear Sirs:

1. 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.

2. 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}.

3. As indicated and reasoned in Form A-4 of our Technical Proposal, in accordance with Note 2 under Form A-4 of the RFP, a separate attachment for incremental cost(s) is included/ not included in our Financial Proposal *{if attached, strike out "not included" and vice versa}.*

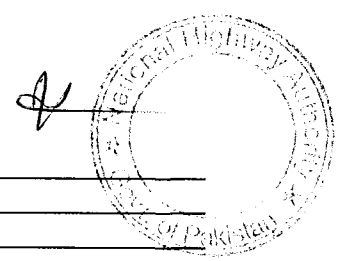
4. Our Financial Proposal shall be binding upon us subject to the modifications resulting from Contract negotiations, up to expiration of the validity period of the Proposal, i.e. before the date indicated in Clause 4.5 of the Data Sheet *(or the date extended with the written consent of consultant in case of delay in procurement process).*

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

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

We remain,

Yours sincerely,



Authorized Signature {In full and initials}: _____
Name and Title of Signatory: _____
In the capacity of: _____
Address: _____
E-mail: _____

{For a joint venture, either all members shall sign or only the lead member, in which case the Power of Attorney to sign on behalf of all members shall be attached.}

Form A-12

BREAKDOWN OF RATES FOR CONSULTANCY CONTRACT

Project: _____ Consultant: _____

Name	Position	Basic Salary per Cal. Month	Social Charges (%age of 1)	Overhead (%age of 1+2)	Sub-Total (1+2+3)	Fee (%age of 4)	Rate per Month for project Office	Field Allow. (%age of 1)	Rate per Month for Field Work
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

Notes:

Item No. 1 Basic salary shall include actual gross salary before deduction of income tax. Payroll sheet for each proposed personnel should be submitted at the time of negotiations.

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 firm to the employee. Breakdown of proposed percentage charges should be submitted and supported (see Form A-13).

Item No. 3 Overhead shall include general administration cost, rent, clerical and junior professional staff and business getting expenses, corporate tax and insurances, etc. Breakdown of proposed percentage charges for overhead should be submitted and supported (see Form A-14).

Item No. 5 Fee shall include firm's profit and share of salary of partners and directors {if not billed individually for the project} or indicated in overhead costs of the firm.

Item No. 7 Normally payable only in case of field work under hard and arduous conditions.

Note 1 The minimum percentage of item (1) should be preferably 50% of (8).

Note 2 The consultant is to provide appointment letters and affidavits/ undertakings duly signed by each of the individual Personnel showing salary rates as above. Further during execution each invoice will also be provided showing that the Personnel have been paid their salaries as per basic rates mentioned therein; failing to which, NHA will take punitive action against the consultant and shall deduct the deficient amount from its monthly invoice. Moreover, it will be considered as a negative mark on the Consultant's performance that will be considered for future projects.

Note 3 The Consultant shall provide its audited financial statements of latest three fiscal years, during negotiations.

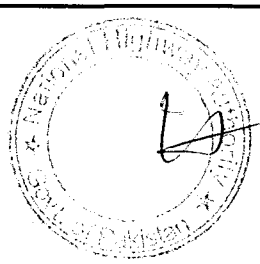
National Highway Authority ★ Govt. of Pakistan ★

Full Name: _____
Signature: _____
Title: _____

Form A-13

BREAKDOWN OF SOCIAL CHARGES

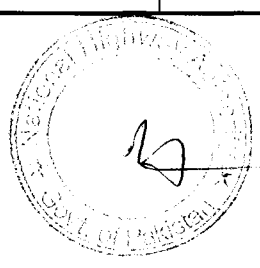
Sr.No.	Detailed Description	As a %age of Basic Salary



Form A-14

BREAKDOWN OF OVERHEAD COSTS

Sr.No.	Detailed Description	As a %age of Basic Salary and Social Charges



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

[Refer also to Notes under Form A-4]

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

B-I ESTIMATED LOCAL CURRENCY SALARY COSTS/REMUNERATION

[Refer also to Notes under Form TECH-4]

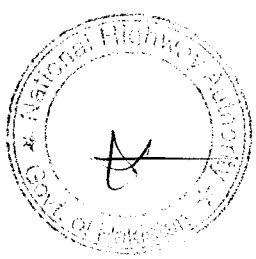
Sr. No.	Position	Name	Person-Months	Monthly Billing Rate (Rs.)	Total Estimated Amount (Rs.)
B-I. All Local Key Personnel and Specialist Sub-consultant (if any)					
Sub-Total:					

B-II ESTIMATED LOCAL CURRENCY SALARY COSTS/ REMUNERATION

[Refer also to Notes under Form A-4]

Sr. No.	Position	Person-Months	Monthly Billing Rate (Rs.)	Total Estimated Amount (Rs.)
B-II.	**Non-Key and other Personnel (Local)**			
	Sub Total:			

Note: The bidders are required to quote the monthly billing rates of Non Key and other Personnel given in the TOR in above table. The bidder(s) may propose Person-Months for Non Key Personnel in addition to those estimated by the Client in the TOR; however, in such a case tenable reasons 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 Non Key Personnel during Contract Negotiation meeting. It is also to be noted that the Client is not bound to agree to the reasons of Consultants given in the 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 Costs	L.S			
3.	Cost / rental of Furniture / Furnishings	L.S			
4.	Cost (rentals) of Office / Other Equipment i. Computers and accessories ii. Photo copy machines iii. Communication equipment iv. Drafting / Engineering equipment v. Surveying instruments (rentals) vi. Transport Vehicles (Rentals) vii. Site visits and Meetings in Islamabad during currency of Project and coordination during supervision	L.S			
5.	Communication expenses	Per Month	4.0		
6.	Drafting/ Reproduction of Reports	L.S			
7.	Office/ Drafting Supplies	L.S			
8.	Topographic Survey (LIDAR survey by Pak Army 477 Survey Group)	P.S	-	-	3,000,000/-
9.	Soil Investigation	L.S			
10.	Geotechnical Investigation	L.S			
11.	EIA Study	L.S			
12.	Third Party Design Validation/ Review	L.S			
13.	Hydrology Study	P.S	-	-	500,000/-
14.	Others not covered above to comply with TOR requirement*				
	Total				

* Any additional item/ cost quoted against this line item must be supported by solid/ tenable justification(s) detailed in Technical Proposal Submission Form A-4 "Comments on TOR" without indicating financial value therein. The negotiation committee of the Client may negotiate this cost on the basis of justification provided in the form A-4 with the prospective successful bidder in the light of Clause ITC 6.6 of RFP. Moreover, if no justification is given or Client does not agree to the justifications, the Client in both the cases **shall not** include this cost in the total cost offered by the Consultants for this assignment, particularly in case any amount against this line item is deemed to have been covered in other pay items.

Form A-17

SUMMARY OF COST

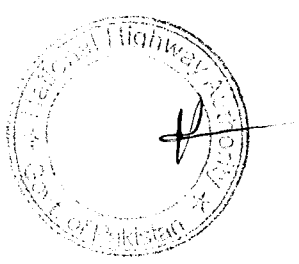
Sr. No.	Description	Amount (Rs.)
1.	Salary Cost/Remuneration	
2.	Direct (Non-Salary) Cost	
3.	Sub Total (1+2):	
4.	Sales Tax @ 16% on item S.No.3 above which shall be kept as Provisional Sum* in the Contract Agreement	Not Applicable till final decision of the Court of Law [3]
5.	**Grand Total [1]:**	

Note: 1- This cost should be inclusive of all the activities, whether specified or not, to complete the services spelled out in the TOR.

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

3- Relevant documents are attached at the end of RFP.

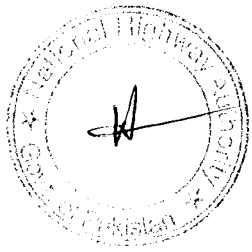
4- The grand total is inclusive of all the applicable Federal, Provincial and Local taxes. All these taxes (except the Sales Tax) are required to be built-in in the quoted rates and not be mentioned separately.



APPENDIX-A

TERMS OF REFERENCE

(TOR)



CHAPTER NO. 1
INTRODUCTION

1.1. BACKGROUND

The total length of road "Sharda – Noori Top – Jalkhad" is about 49 Km (Km 00+000 – Km 49+000). The National Highway Authority (NHA) intends to hire the services of a competent and highly experience Consultants in the relevant field, having the requisite human resource, office premises and necessary equipment to undertake the Assignment for Feasibility Study and Detailed Design, complete Tender Documents, Bill of Quantities (BOQ), Environmental Impact Assessment (EIA) and preparation of PC-I for Sharda – Noori Top – Jalkhad (SNJ) Bypass (Km 00+000 to Km 49+000) Length: 49 Km.

1.2. NEED ASSESSMENT

Kaghan valley road falls in KPK Province in North of Pakistan; it starts from Mansehra passing through Balakot (Km 40), Kawai (Km 60), Kaghan (Km 100) Naran (Km 123), Battakkundi (Km 138), Buravi (Km 142), Jalkhand (Km 165), via Babusar Top and ends at Chillas (Km 234). The major avalanches approximately 25-30 numbers occurred between Kaghan to Battakundi from (Km 100 to Km 138) are identified during March to May during every year.

The road from Jalkhad to Kel originates along the Jalkhad Nullah on Eastern side of Jalkhad crossing river Kunhar 300m ahead of Jalkhad – Chillas road (N-15). This is approximately 3.5m to 4m wide track and 4x4 jeeps and flat Trucks ply on this road. The road passes through Noori-Nar Top (having elevation: 11,800 ft.) with ascending gradient from Jalkhad to Noori-Nar Top. Noori-Nar Top is the boundary between KPK Province and AJ&K. The total length from Jalkhad to Kel which is approximately 78 Km out of which 17 Km falls in the KPK Province. The road passes through this area having hairpin bends on both sides of the Top.

The road passes through Sharda and Surgan villages. There is scenic view 10 Km ahead of Noori-Top and here are proper trees on way to Sharda and Surgan. This is alternate strategic route to Kail, when Neelum Valley is within the attack range of Indian forces. The road is maintained by 10 Corps and when the road closes Engineering Battalion is responsible for opening it. An office is established at Jalkhad to open the road and a setup is established at Surgan also by 10 Corps and Engineering Battalion.

The road remains closed from November to December each year and even up to April and May. If the construction work is started in this section, working season is limited. This is very important route from strategic view point.

1.3. PROJECT DEFINITION

Feasibility Study and Detailed Design for Sharda – Noori Top – Jalkhad (SNJ) Bypass (Km 00+000 to 49+000) Length: 49 KM.

1.4 PROJECT OBJECTIVES

The objectives envisaged are following but not limited to:

i) Widening/ improvement of said road will facilitate population of the project surrounding areas in a better manner;

ii) Economic development along the proposed corridor;

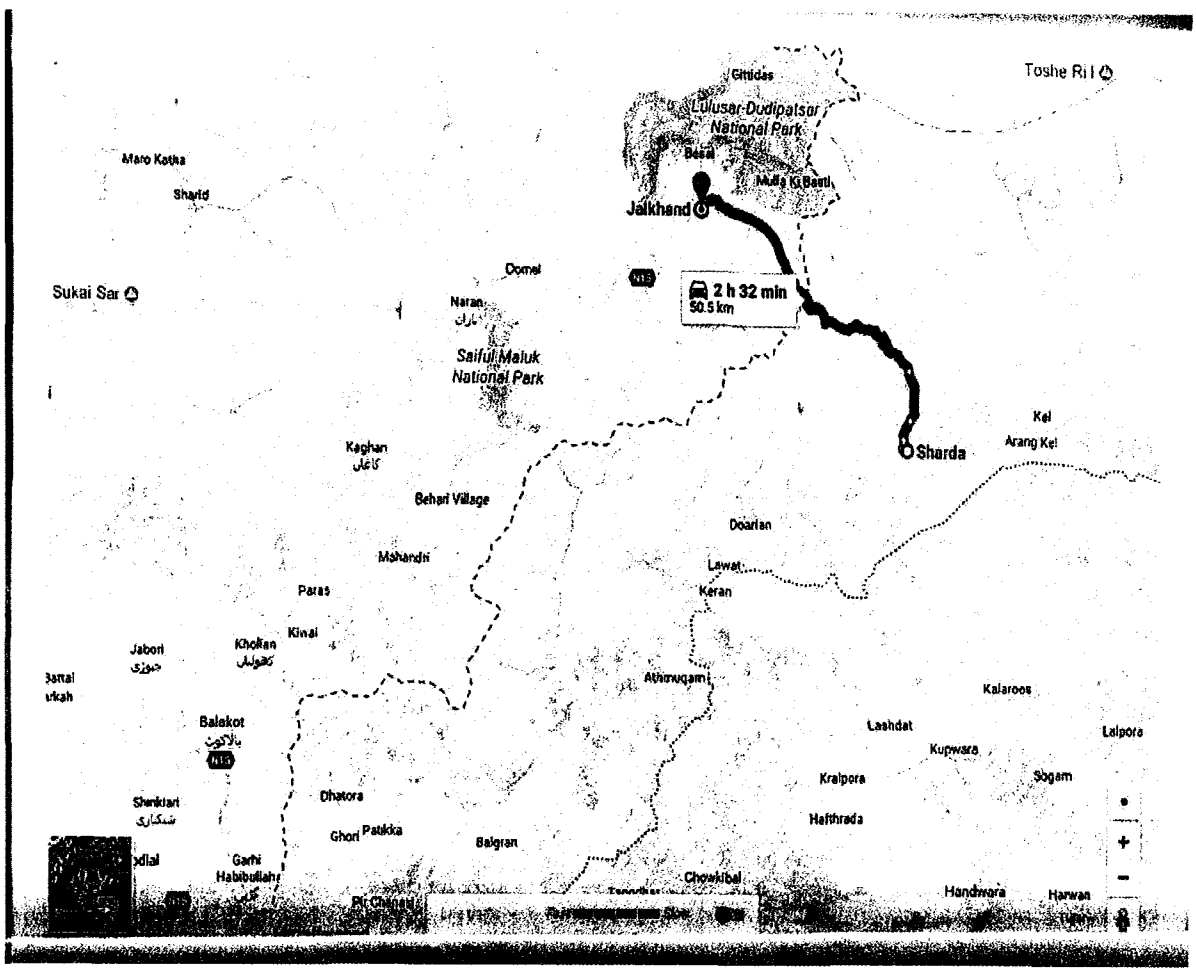
iii) Tourism activities will be enhanced;

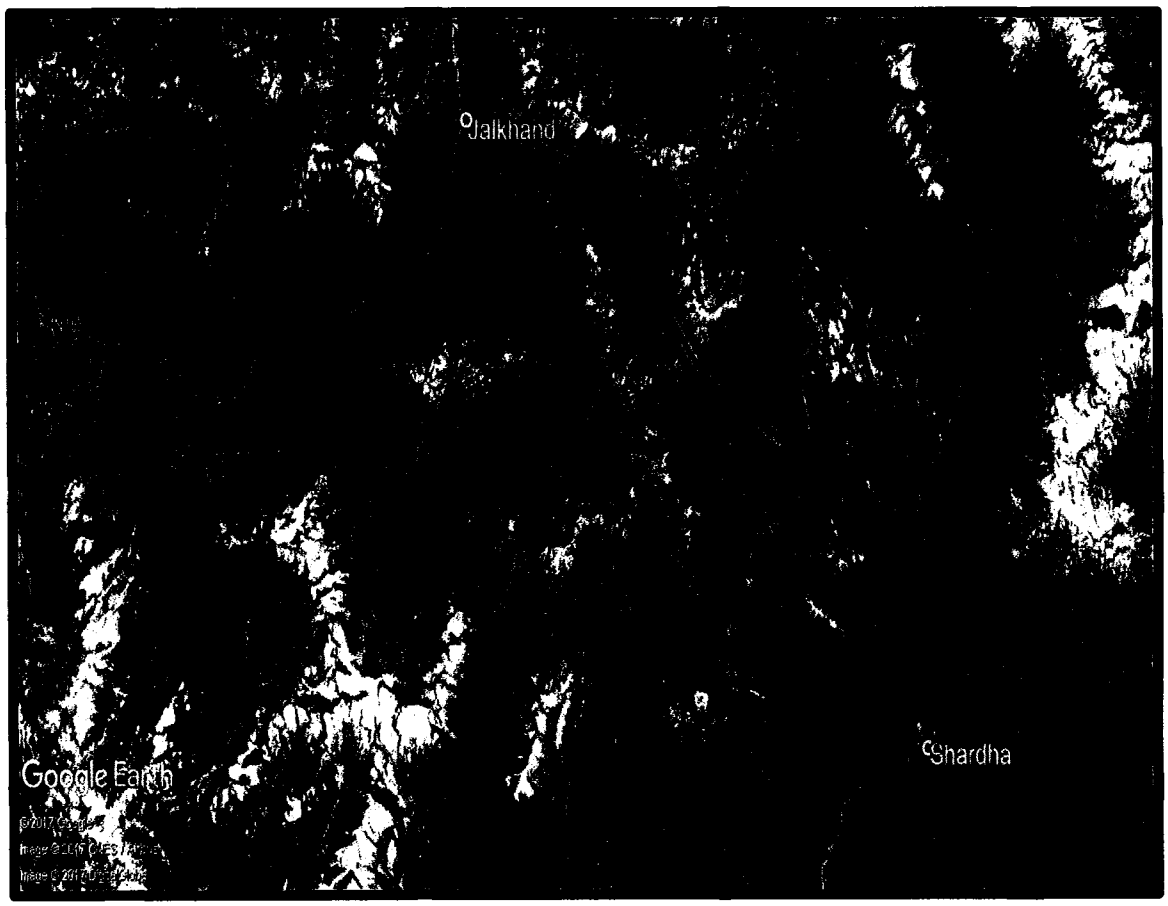
iv) Employment opportunity will be created.

CHAPTER NO. 2
DESCRIPTION OF PROJECT

2.1 LOCATION OF PROJECT

The total length of road is about 49 Km. The location map is given below:





2.2 PROJECT WORKS

The scheme envisages the construction of "(Km 00+000 to Km 49+000) (49 Km)" as per NHA Standards and Specifications. In this regard, the feasibility study and detailed design of the said project is required to be conducted.

The scope of work and the Terms of Reference which broadly covers the following but not limited to the followings:

- Feasibility study and Detailed Design;
- Desk study on maps and Satellite Imagery validated by Reconnaissance visit;
- Alignment options and recommended alignment with comparisons including Tunnel option for short term and long term options;
- Satellite Images of entire corridor with recommended option duly marked on it;
- Identification and Preliminary design of crossing access roads, underpasses and cattle creeps etc.;
- Soil Investigation Survey on the proposed alignment at required interval, identification of quarry sites and Construction Material Survey;

- Traffic Count and O-D Survey;
- Topographic Survey with cross-sections at every 20m interval;
- Hydrology (mapping) of the area and Hydraulic Study of rivers;
- Number and type of cross drainage structures, including Bridges, Box/ Pipe Culverts etc.;
- Structural Design that includes all type of structures, typical structural drawings with general layout of Bridges;
- Pavement Design with surface and subsurface drainage;
- Construction Material Study Report;
- Detailed Design of Highway;
- Environmental Study and Social Impact Assessment;
- Road Furniture design including Traffic Signs and Gantries;
- Provision of Toll Plazas (if required with approval of NHA) with land area provision and change;
- Provision of Ducts/ crossing of future utilities like OFC, pipelines etc.;
- Utilities Folders and Land Acquisition Plans using Imageries, Cadastral Maps on GIS;
- Determination of Highway Capacity and Level of Service according to Highway Capacity Manual latest edition;
- Cost Estimates on best effort basis (BOQs and Engineering Estimates with minimum 95% of confidence level) and final Detailed Design Drawings;
- Preparation of PC-I.

2.3 COMMENCEMENT OF SERVICES

The Consultants shall commence the services immediately upon signing of the Contract Agreement, or such other time period as the Parties may agree in writing.

2.4 TIME PERIOD

The period of completion of services shall be **four (04) months** from the commencement of services or such other period as the Parties may agree in writing, and the Consultants shall submit all the Reports mentioned in the TOR in the form and format acceptable to the Employer.

CHAPTER NO. 3
SCOPE OF WORK

3.1. GENERAL

National Highway Authority intends to undertake Construction of Sharda – Noori Top – Jalkhad (SNJ) Road *(from Km 00+000 to Km 49+000)*. The location map of the proposed road is shown in Chapter 2 of this document. The total length of the existing road is approximately 49 Km. In this regard, NHA intends to appoint a reputable and qualified consultant for carrying out the Feasibility Study & Detailed Design.

The scope of work defined herein is expected to be carried out by the consultant to complete the feasibility study, detailed design and formulation of tender drawings / documents and consequently assume complete onus and responsibility. Consultant is at the liberty to modify/ improve the alignment after field survey and ground validation.

Consultant is required to go through the defined scope of work given herein. Any shortcoming / deficiency is required to be spelled out in the pre-bid meeting and recorded in the comments to TOR. After the signing of the contract, any further requirement is assumed to be included in the quoted bid price and will not be entertained later.

3.2. SCOPE OF WORK

Consultant is required to carry out following activities within the stipulated time for the contract:

- Comment on Terms of Reference and query about them at pre-proposal meeting
- Data Collection / Co-ordination with concerned local Departments / Pak Army
- Review of existing alignment and recommend improvements / modifications in accordance with the Geometric Standards set forth in the TOR, if any
- Presentation of alignment for approval from NHA
- Detailed topographic survey with establishment of survey control points
- Soil and Material investigation
- Traffic survey and Axle load survey
- Evaluation of existing pavement and Pavement Design with Surface Runoff Calculations
- Identification of quarry sites and construction material survey
- Geotechnical Investigation survey for bridges and structures

- Road furniture design including traffic signs and gantries
- Hydrology & Hydraulic design of alignment & structures including flash flood routing
- Structures Design
- Horticulture and Landscaping of intersections, if any
- Feasibility Study Report
- Highway Safety Audit by a team nominated by Employer
- Tender Documents including Drawings, C-Factor, BOQ, Engineer's Estimate, Particular Specifications and Special Provisions
- Stakeout of design alignment after approval for ground validation
- Utility folders and Land acquisition plans
- Fixation of ROW markers when required by the Client
- Preparation / revisions of PC-1
- Design Validation / Review from Third Party Consultant

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 / 3rd party review consultant. Any comments offered by the Client do not absolve the consultant from its obligation to develop correct and cost effective engineering solutions for the Project. NHA reserves the right to take punitive actions as required at appropriate forum even during construction stage.

3.3. DESIGN STANDARDS

The project will be two lane carriageway. Following design standards and Codes shall be followed:

Carriageway Width	7.3 m (3.65 m in each direction)
Bridge	2-lane (Each lane as per Carriageway Width specifications)
Shoulder Width	2.5 m paved and 0.5 m rounding
Crossfall normal	Carriageway 2% Shoulder 4%
Geometric Design Standards	"A Policy on Geometric Design of Highway & Streets, 2011"
Classification of Highway	Rural Arterial
Design Speed	100 Kph (Plain Terrain)

	80 Kph (Rolling Terrain)
	60 Kph (Mountainous Terrain)
Minimum Turning Radius	30 m
Drainage	Side Drains, Curb, Gutter and Chutes for controlled drainage
Protection Works	Retaining Walls / Breast Walls where required

3.3.1. Other Design Parameters

Sr. No.	Design element	Unit	Plain	Rolling	Mountainous
1.	Design speed	KPH	100	80	60
2.	Min. Stopping sight distance	m	207	136	92
3.	Min. Decision sight distance	m	315	230	170
4.	Min. Passing sight distance	m	320	245	180
5.	Max rate of super-elevation	%	6		
6.	Horizontal curvature				
	i) Absolute minimum radius	m	437	252	123
5.	Road formation width	m	13.3 minimum		
6.	Max. grade	%	6		
7.	Min. grade	%	In fill 0.3 In cut 0.5		
8.	Rate of vertical curvature: i) 'K' value for crest curves (based on Passing Sight Distance):	K/%A	119	69	38
	ii) 'K' value for Sag curves:	K/%A	45	30	18
9.	Fill Slopes:	H:V	2:1		
10.	Min. vertical clearance over road	m	5.2		
11.	Min. vertical clearance over railway line.	m	7.0		
12.	Right of way.	m	100	80 - 100	60 - 80
13.	Design Life	Years	20		

Above standards are derived from "A Policy on Geometric Design of Highway & Streets". Any Design element not mentioned above should conform to the same design guide for Rural Arterial standard.

3.3.2. Standards for Structures

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

- **AASHTO-(LRFD): -**

  For analysis and design for all loads and load combinations.

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

  For vehicular loads, their spacing & impact factors.

- **UBC / IBC 2003: -**

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

- **ASTM: -**

  For material specifications & testing.

- **ACI: -**

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

- **Vehicles Live Load**

  West Pakistan Code of Practice for Highway Bridges 1967 (WPCHB) specifies more severe loads to be considered in combination with other loads such as dead load etc. as follows:

- **Class AA Loading:**

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

- **Class A Loading:**

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

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

  Additionally, the bridge deck slab shall be checked in Punching Shear for a Wheel Load of 21,000 Pounds [95 KN] on 0.25 x 0.5m^2 tire contact area.

Other Loads

- **Side-walk Live Load**

  A load of 5 KN/m^2 (100 psf) of walkway between side barrier / railing and shoulder, applied continuously or discontinuously over both lengths and width of structure in order to produce maximum stresses in the member under consideration.

- **Horizontal Live Load on Railing / Posts of Side Barrier**

  These depend upon the configuration of the railing / posts / barrier system. The position and the magnitude of the horizontal loads are taken according to Article 2.7 of AASHTO.

- **Impact Load**

  Impact loading on the bridge superstructure is taken in accordance with WPCHB.

- **Wind Loads**

  Wind loads are taken in accordance with the provision of WPCHB.

- **Seismic Design**

  International Building Code (IBC-2003) and Earthquake forces are calculated according to article 3.21 of AASHTO, keeping in view the recent earthquake of October 8, 2005, the earth quake zones will be considered accordingly.

3.3.3. Existing Structures

Consultants shall carry out detailed inspection of existing structures (if any) and based on condition of the structure shall recommend retention of existing structures or replacement. Where existing structures can be retained, design for widening / extension of existing structures shall be carried out to commensurate with NHA standards for cross-section of the road and structures. **Condition Survey Report, along with two photographs of each existing structure will be submitted.**

Structural Analysis

Structural Analysis shall preferably be performed using standard renowned international software. **All input files shall be provided in the design report.**

Task 1:	**Data Collection & Coordination with Local Departments**
Approximate Duration:	**10 days**
Outcome:	**Consultant get hold of relevant information, SOP Maps, Satellite imageries and liaison with local department/ Police**

3.4. DATA COLLECTION AND COORDINATION WITH LOCAL DEPARTMENTS/ PAK ARMY

Immediately after signing of the Contract, the consultant will attend the kickoff meeting at NHA headquarters and present his **working schedule and confirm availability of resources as specified in the Technical proposal**. NHA will issue necessary authorization letter "To Whom It May Concern". Consultant will immediately mobilize and get

possession of the relevant maps, reports and imageries for the feasibility study and detailed design of the Project. After completion of the design, SOP maps and imageries shall be returned to the Client in Original and un-damaged form.

The Consultant should inform the local police and administration before conducting all types of filed surveys. Before planning the field reconnaissance, the consultant should coordinate meeting with the local city development / Highway Department to know any future plans for city expansion etc. Tips for design of Bypasses shall be obtained as per local requirements if required.

Outcome of above activity shall be reported in the form of presentation to the client.

Task 2:	**Reconnaissance Visit and Alignment Study Report**
Approximate Duration:	**10 days**
Outcome:	**Consultant shall submit an Inception Report & Reconnaissance / Alignment Report based on outline design and ground validation. Recommend any changes, if required. Approval of alignment in presentation to the Client**

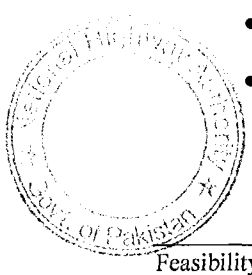
3.5. RECONNAISSANCE VISIT WITH IDENTIFICATION OF ALIGNMENT ALTERNATIVES

After the completion of the Task 1, the consultant shall carry out the desk study of proposed alignment using maps, satellite imageries and ground validation followed by a site visit. **The site visits shall be carried out by a senior highway engineer of not less than 15 years of experience.** Coordinated meetings with local departments shall be done and minutes recorded (same shall be made part of the Reconnaissance and Alignment report). The Consultant shall develop and submit a Map showing recommended Option duly marked on Satellite imagery & SOP Sheet. **The Consultant shall also prepare video log of the existing road depicting road and road side conditions chainage wise and shall submit it along with the reconnaissance visit report.**

During the reconnaissance visit, particular requirements of the project shall be identified that will be addressed in the detailed design. At the reconnaissance stage, social, economic and environmental aspects shall also be considered. The resulting information will form part of the recommendations for adoption of a particular corridor.

Data from various sources shall be collected at this stage:

- Topographic Maps
- Available Geological reports, if any (from local departments, adjacent projects)
- Satellite Imagery & Digital Elevation Model (DEM) Data
- Agriculture soil reports



- Soil survey maps (Soil survey of Pakistan)
- Flood Maps / Discharge Data

Other requirement of Task-2 is submission of Inception Report. Inception Report should elaborate the methodologies for feasibility study & detail design and for requirements spelled out in the TOR and observations made in the site visit.

After submission of Alignment report and Inception report, the Consultant will give presentation of recommended alignment with merits and demerits to the Competent Authority in NHA for approval of alignment.

Task 3:	**Detailed Topographic Survey**
Approximate Duration:	**50 days**
Outcome:	**Consultant will get approval of Topographic Survey Program** **Submit Survey Report** **Submit Draft and Final Topographic Plans**

3.6. DETAILED TOPOGRAPHIC SURVEY (PRE-REQUISITES)

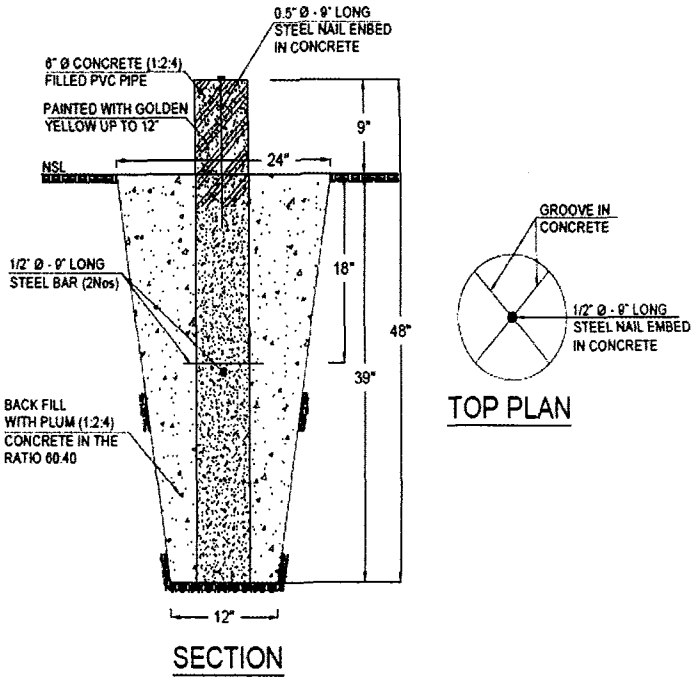
Topographic survey forms the basis for the detailed design. Poor quality of survey work produces not only incorrect designs but also results in post construction problems with variations in cost and claims. It will be ensured by NHA that the Survey work is of top most order.

It is therefore, recommended that consultant should use the latest technology for the topographic surveys, which include as many DFGPS for establishment of highly accurate control points. In case, the consultant does not have the requisite number of DFGPS, he is advised to hire services of professional survey companies having the required expertise. The DFGPS shall be simultaneously used for enough duration to develop accurate control points.

The Survey company mobilizing to the site must comply with the requirement of the recent "Surveying & Mapping Act 2014". Before mobilizing to site for Survey, the Consultant shall submit to the Client detailed topographic survey program with actual human resources *planned to be deployed.* The consultant shall specify *the time line of survey program.* Total *number of equipment* with models and *calibration certificates not more than 6 months* old shall be produced. The *name and qualifications of surveyors* shall also be submitted. NHA reserves the right to interview the surveyor if required. Upon request, the consultant should change the surveyor. If *consultant wants to outsource the Survey work, it will be mandatory to take prior approval of the Client.* NHA will ensure that the survey firm is not black listed and has sufficient resources and complies with the Surveying and Mapping Act 2014.

3.6.1. Survey Monuments

Permanent Ground Monument made of Concrete 1:4:8 with 75 mm steel nail embedded at centre. The type and dimensions of Survey monuments to be installed at site is shown here. Using spray paint and a stencil, the monument number shall be painted.



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 susceptible to disturbance and damage. The consultant shall fill out a Performa for each traverse station showing picture, sketch and reference with permanent ground features. If sub-standard monuments are used, then NHA will deduct the necessary amount from consultant's due payments.

3.6.2. Control for Traverse

Projection: UTM

Datum: WGS84

Vertical Datum: MSL

3.6.3. Horizontal Control

Precise Primary Controls (ITRF CONTROLS)

Minimum (2) DFGPS 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 100 km. Minimum observation time shall be at least ten (10) hours 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.

3.6.4. Primary Controls

DFGPS Primary Controls shall be established at a maximum distance of 10 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, which may be used for Total station if needed for topographic survey.

3.6.5. Secondary Controls

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

3.6.6. 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 shall be related to monuments made for Horizontal primary and secondary controls with double run level to control the height as mentioned above.

3.6.7. 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.

3.6.8. Topographic Survey (Scale 1:1,000); 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 1:1,000.

b. The Consultant is required to observe 10 cross-sections across the flow channels 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.

3.6.9. Cross section Points

- The cross section should be measured one by one.
- The cross section of the embankment should be measured at 25m interval
- The cross section shall be measured to the ROW limit.
- For the alignment sections with proposed retaining wall, the cross section shall be measured at 5m interval.
- For the bridge pier, the measuring range of the cross section is 10m at both left and right sides of the center; whereas for the bridge abutment, the measuring range is till the ROW limits.

3.6.10. Interchanges (1:1,000) Map

Extraction of features shall be done & points shall be taken beyond the ROW and inside the minimum region defined for Interchanges to create 1:1,000 map. The minimum length of existing road to be included in topographic survey (for interchange ramps merging) should not be less than 250 m.

3.6.11. 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 recorded along with all break points to clearly define the canal shape.

3.6.12. Survey for Crossing Water Channels / Nullas

Measure the center longitudinal section of the water Channel / Nullas from 100m upstream to 50m downstream and measure the cross section of the water channel /nullas at 10 m 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 / Nullas.

3.6.13. Survey corridor

The detailed topographic survey in normal circumstances shall be carried out in a corridor of 50 m (25 m from CL on either side). At locations of crossing rivers & nullas, the detail of survey extent is given in respective sections.

3.6.14. Mapping (Unit of Measurement)

Metric units shall be used throughout.

3.6.15. Scale

Besides soft copy, mapping of drawings shall be plotted to a scale of 1:1,000.

3.6.16. Details to be shown

All natural or manmade erections above ground need to be depicted in the topographic survey. Enough points should be recorded, so that its clear picture including identification, size and elevation is available for the designer. The consultant should also depict underground utilities with markers available at site. Intelligent nomenclature need to be adopted to describe the feature. The information should be available in CAD software in layer format with fully defined attributes.

3.6.17. Bridge details

The bridge details shall be shown on a separate drawing for each bridge. The bridge observations 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.

3.6.18. Culvert details

Details of each culvert are to be shown on the survey plans and a separate sheet 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.

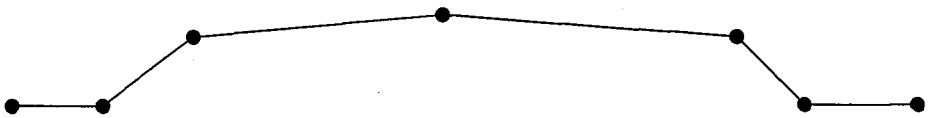
e. Invert levels of the inlet and outlet.

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 through recording enough points so that the culvert can be modeled in CAD.

3.6.19. Existing Road / Embankment

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



3.6.20. Details of Junctions and Existing Roads

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

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

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

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

3.6.21. Digital Ground Models (DGM)

The product of the field 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 filter the data. All data points with incorrect x, y or z values shall be removed. It is also important 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 to 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.

TIN (Triangular Irregular Network) shall be developed by using software. Using TIN, Contours shall be generated. Since NHA uses AutoCAD Civil 3D for vetting, same shall be used by the consultant.

3.6.22. Grid

The coordinates of the DGM shall be referred to the grid system as described already in section 3.6.2 of this document. The coordinates of the DGM shall be Easting, Northing and elevations.

3.6.23. String Labelling

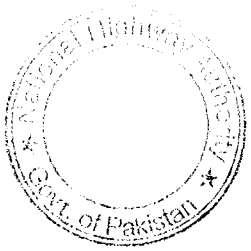
The ground features including break lines shall be labeled with the exact description shown under AUTOCAD LAYER NAME. Any additional labels may be considered and the Surveyor shall submit the list for approval prior to their usage in the DGM.

3.6.24. 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 in the AutoCAD format. Such information shall be used by the Surveyor when preparing Land Utility folders at the end.

3.6.25. Contours

After digital data collection of survey points at site, the contour generation shall be done by using computer software. **The contour 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 collected very carefully 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 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 the ground surface is obscured because of undergrowth, on-going earthworks, swampy areas, or other obstructions, or the access is restricted, contours can be shown by broken lines to indicate that their accuracy cannot be guaranteed but with prior approval of the Client.

3.6.26. Longitudinal Profile and Cross-Section

The longitudinal profile shall be plotted in A1 / A3 size (as requested by Client) to a scale of 1:1,000 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 1:200 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.

3.6.27. Original Drawings & Preliminary Copies

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

3.6.28. Soft Submission of Data and Drawings

The Surveyor shall supply the digital ground model data, all Drawings, Reports suitable for input to the computer and according to the specification acceptable to Client. The survey data shall be supplied in CSV & DWG format.

The CD / DVD-R and hard copy shall be supplied with an index scheduling the contents and referencing and shall remain the property of the Client.

3.6.29. 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 and Drawings 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.

Task 4:	**Traffic & Axle Load Survey**
Approximate Duration:	**14 Days**
Outcome:	**Classified Traffic Surveys after approval of Client.** **Submit Traffic & Axle load survey report**

3.7. TRAFFIC AND AXLE LOAD SURVEY

3.7.1. Field Books and Record

Traffic count forms the basis for capacity analysis, pavement design and economic analysis etc. Consultant is required to carry out 7-days (24-hrs) classified traffic counts at required locations along the project (minimum 2) 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 detailed

program of traffic count along with locations, duration and repetitions in Inception report. 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.

3.7.2. 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.

3.7.3. Origin & Destination Survey

If required, the O & D Survey shall be carried out to identify the traffic likely to be diverted.

3.7.4. Axle Load Survey

Consultant shall undertake axle load survey using portable weighing machine. Consultant shall confirm in his technical proposal the availability of such equipment (ownership / rental basis). Sufficient samples of all axle groups shall be weighed. In addition to axle load, tyre pressure shall also be measured. Data shall be annexed in the final report and used in the pavement design.

3.7.5. Underpass / Cattle Creep Survey

Using satellite imageries, field survey and site consultation, consultant shall identify exact number & locations of the underpass / cattle creep to be provided for convenience of local residents.

3.7.6. Traffic Diversion Plans

Traffic Diversion Plans shall be provided for the following situations:

a. At toll plazas (If required)

b. At Intersections and interchanges

c. In urban areas including methodology for separating the local and through traffic.

d. On at-grade railway crossings.

e. At places where underground constructions like construction of box culverts and underpasses.

f. At places where overhead bridge construction is likely to take place.

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

Task 5:	**Soil & Material Investigation Report**
Approximate Duration:	**30 Days**
Outcome:	**Soil and Material Investigation Report**

3.8. SOIL & MATERIAL INVESTIGATION

Soil & Material investigation shall be done to ascertain the index and engineering properties of encountered soil. 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.

The consultant is required to carry out following steps:

- Determine needs of the design
- Carry out complete ground investigations
- Carry out complete laboratory testing
- Evaluate results for final design
- 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 and quantity of naturally occurring construction materials.
- Examine specific sites such as deep cuts, retaining walls and culverts etc.

Enough samples with appropriate spacing is required to be investigated to fully analyze the ground conditions that shall be addressed with appropriate treatment for construction.

Consultant is required to propose appropriate methodology to address the problems of embankment construction, if any.

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

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

3.8.1. Material Investigation

Every effort should be made to locate sufficient quantities of naturally occurring construction materials at regular intervals along the alignment and as close to the alignment as possible. In case of potential quarry sites, test borings are necessary to confirm the quantity and quality of available material. Test results from any nearby operational quarries should also be included.

The material to be investigated includes but not limited to earthwork, subbase, aggregate base, asphaltic material, cement, steel, pre-stressing strands, sand, crush aggregates and geo-textile, etc.

Considerable amount of water is likely to be required for proper compaction of earthworks. 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. Tests to assess the suitability of water for concrete are necessary and shall be undertaken.

3.8.2. Soil Classification

Soil description is necessary for all test pits and bore 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 Colour, Composition, Grading, Particle shape, soil name and soil group. Both Unified and AASHTO classification shall be used.

Task 6:	**Environmental Impact Assessment**
Approximate Duration:	**120 days**
Outcome:	**EIA Report submission and obtaining NOC from PEPA**

3.9. ENVIRONMENTAL IMPACT ASSESSMENT

As per EIA Rules, Consultant is required to carry out the EIA Study for the Project. It involves collection of required base line data from site, analysis and recommendation for mitigations. Findings shall be recorded in the form of Report which shall be reviewed by NHA EALS Section. The scope also includes submission of EIA Report to EPA Punjab, addressing their requirements, to their entire satisfaction (Including submission fee),

conducting the Field hearing and obtaining NOC for NHA. All costs whatsoever shall be quoted. The detailed TOR for Environmental Impact Assessment is attached as Chapter-4 of this document.

For EIA, Consultant shall directly coordinate with GM (EALS) office. The Consultancy fee against the EIA shall be verified and processed by the office of GM (EALS).

Task 7:	**Geotechnical Investigations for structures**
Approximate Duration:	**30 Days**
Outcome:	**Geotechnical Investigation Report**

3.10. GEOTECHNICAL INVESTIGATION FOR STRUCTURES

Consultant shall perform geotechnical investigations including field and laboratory testing for which he is required to quote a lump sum amount. Detailed program for mobilization and doing tests at site shall be submitted to the Client and after approval work shall commence. Consultant will supervise the sub soil investigation work in case he sublets the work to a Geotechnical Firm and shall submit an undertaking in this regard. A qualified geotechnical engineer of the Consultant shall supervise the work at site and certify the supervision of work who will be responsible for the quality and accuracy at site.

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. A separate report will be prepared to this effect and will be submitted to NHA bearing approval of the Consultant. Original lab reports shall be attached in the soil report along with colored photographs.

Bore logs shall be included in the Soil Investigation Report along with the laboratory results. Testing of samples collected from site shall be carried out in a reputed laboratory, under strict quality control and adherence to relevant ASTM procedures / standards. Depth of boring shall be decided by the geological formation at site and the type of foundations proposed for the structures. Standard penetration tests shall be started from the ground surface and carried out in accordance with ASTM D1586 Penetration Test and Split Barrel sampling of soils or relevant AASHTO code. Where clayey soils are encountered, undisturbed samples shall be obtained in accordance with ASTM thin–walled sampling of soils. Movie clip of 15 minutes at each location is required to be submitted. The scope of work and specifications for handling of undisturbed samples shall be developed by the Consultant.

The site investigations shall conclude with submission of proper site investigation report comprising all relevant notes and pertinent information required by this Specification 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.

The detailed scope of work developed by the Consultant should not be less than following:

- No. of Bore holes — Min. one for each bridge (to be widened / replaced / improved)
- Depth of Bore — 40m in soil and 5m in rock*
- To prevent the sand collapse of bore hole, Bentonite solution will be maintained to the top of the bore hole.
- SPT will be carried out starting from 2.0m below the surface at an interval of 2.0m or change of strata, till the complete depth of bore hole and all relevant testing shall extended. After 75 blows, if penetration is not achieved, the refusal shall be recorded.
- Undisturbed sample after 10-15m depth for carrying out index property test, Atterberg limits, unconfined compression test, direct sheer test and grain size analysis.

* *(If rock encounters* before *40m depth than 5m maximum rock drilling shall be made)*

Task 8:	**Pavement Design Report**
Approximate Duration:	**10 Days**
Outcome:	**Pavement Design Report**

3.11. PAVEMENT DESIGN REPORT

After the traffic count and projections for designed life of 10 years are done and the soil investigations data is available; the pavement design shall be done. The consultant shall get the basic design from AASHTO Pavement design guide-93, but final pavement design shall be done using mechanistic-empirical method. Asphalt Institute & Shell Model shall be used. Axle Load data and tyre pressure data to be collected and Kenlayer analysis software shall be used. All calculations shall be attached with the report.

Flexible, Rigid and Composite Pavement shall be evaluated and cost comparison shall also be carried out and submitted to the Client along with Pavement Design Report.

Task 9:	**Hydrology & Hydraulic Study**
Approximate Duration:	**25 Days**
Outcome:	**Hydrology Report**

3.12. HYDROLOGY & HYDRAULIC STUDY

Conventional hydraulic impact using empirical connotations are not warranted, as they do not depict the real impact of food and flood routing in extreme flat land. Our consultants

generally follow such practices and are devoid of modern techniques employed using DEM and aerial photographic techniques. It is strongly suggested to undertake the state of the art methodology with ground validation of land use and drainage patterns. The main scope of the required study is as follows:

a. Field Work and GIS data Processing.
   - i) Reconnaissance survey, literature review and marking of waterways
   - ii) Calibration of field data with remote-sensing data
   - iii) Satellite Imagery and DEM processing
   - iv) Land use and Soil Mapping with ground verification
   - v) Flood routing investigation

b. Hydrology and Hydraulic study
   - i) Watershed delineation
   - ii) Soil and land use analysis.
   - iii) Rainfall analysis
   - iv) Storm-frequency analysis
   - v) Design Storm calculation
   - vi) Surface runoff model
   - vii) 2D Hydraulic River & flood modelling for embankment height and structures design and value engineering

c. Hydraulic design of cross drainage structure

Above methodology is robust and predict accurate water shed pattern. The DEM used is refined to the extent to give acceptable results. **It is highlighted that the whole design philosophy in such conditions are dictated by the Hydrology / Hydraulic study**.

The Consultant is required to quote for "Hydrology & Hydraulic Study" including cost for field data collection, procurement of Satellite images with refined DEM. It also includes man months of design team working at head-office, complete in all respect.

Task 10:	**Highway Safety Audit**
Approximate Duration:	**30 Days**
Outcome:	**Highway Safety Audit Report**

3.13. HIGHWAY SAFETY AUDIT (HSA)

Pakistan is among those countries, where the road accidents and fatalities are high. One of the major components about 28% relating to road accidents is attributed to the road

environment factors. It is therefore, essential that the highway safety audit (third party) should be carried out by a certified HSA, at various stages, as per requirements of international standards.

Since the project in hand is selected for feasibility study and detailed design, the HSA shall be carried out with the submission of alignment report and shall conclude with the submission of final design report. In this regard, consultant shall quote a facilitation charges as LS.

Detailed Audit shall be carried out under the supervision of NHA HSA. Other members of Highway Audit team may include third party experts (at least two). An Engineer from NHA Design & Planning Section shall be made part of the Audit team. Consultant is required to arrange the Audit visit, collection of required data, field visit expenses, coordinate meetings and compilation of final Audit report including proceedings. Appropriate remuneration to be paid to Audit team from quoted amount.

Task 11:	**Stakeout of Design Alignment**
Approximate Duration:	**20 Days**
Outcome:	**Centerline staked out at site with permanent markers**

3.14. STAKEOUT OF ALIGNMENT ON GROUND

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

Task 12:	**Land Acquisition & Utility Folders**
Approximate Duration:	**20 Days**
Outcome:	**Land Acquisition & Utility Folders**

3.15. LAND ACQUISITION AND UTILITY INFRASTRUCTURE REPORT

The consultant shall identify land and property falling within the right of way (ROW) to be acquired. The consultants shall submit 5 copies of ROW plans showing the alignment and defining the Right of Way to facilitate timely action for acquisition of land. ROW permanent markers shall be set up by the consultant, upon request. The Consultant shall also prepare estimate for acquiring any additional land 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.

The markers as per NHA specifications shall be erected and payment shall be verified and processed by the Project Director directly.

Task 13:	**Construction Machinery Report**
Approximate Duration:	**10 Days**
Outcome:	**Construction Machinery Report**

3.16. CONSTRUCTION MACHINERY REPORT

A detailed report on construction resource shall be prepared. It 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.

Task 14:	**Feasibility Study**
Approximate Duration:	**10 Days**
Outcome:	**Feasibility Study Report**

3.17. FEASIBILITY STUDY REPORT

The Consultant shall submit a detailed feasibility report encompassing the technical / economic viability of the project after carrying out preliminary design and necessary investigations. The basic data, result of investigations and studies as well as cost estimates and evaluation shall be collected in a condensed and comprehensive form, in the feasibility report. Benefit cost methodology, cost appraisals of alternatives, benefit cost ratio, net present value, economic internal rate of return, sensitivity analysis, shall also be made part of the report.

Task 15:	**Mass Haul Diagram**
Approximate Duration:	**Simultaneous Activity**
Outcome:	**Mass Haul Diagram**

3.18. MASS HAUL DIAGRAM

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

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

Task 16:	**Formulation of PC-I**
Approximate Duration:	**10 Days**
Outcome:	**Submission of PC-I**

3.19. FORMULATION OF PC-I

The consultant shall prepare the PC-I for the project road including economic analysis on prescribed Performa of PC-I by Planning Commission.

Separate PC-I for land acquisition shall be prepared and submitted. Subsequent revision shall also be done by the Consultant, if required.

Task 17:	**Tender Documents**
Approximate Duration:	**10 Days**
Outcome:	**Submission of Tender Documents**

3.20.1. 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 as per the following detail:
  - Title Sheet
  - Sheet Index
  - Key & Location Plan with Coordinates and alignment with stationing. Pits of soil investigations shall also be marked.
  - Sheet of Legends & Symbols
  - Traverse, Bench Mark and Design alignment data including curve data
  - Typical Cross-Sections with locations of applications
  - Super-elevation details and Linear Plan
  - Road Furniture Details (Guard rails, Pavement Markings & Traffic signs etc) with locations of applications
  - Retaining walls with location tables
  - Soil investigation linear plan
  - Intersection Details

- Drainage plan for surface runoff and urban areas
- Mass Haul Diagram
- Plan and Profile Drawings
- General Notes for Structural Drawings
- Drawings for Small drainage structures
- Drawings for Large structures
- Drawings for Earth retaining structures
- Landscaping details
- Miscellaneous Details / Ancillary Works including training works.
- 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 standardized Volume-I (Part-I) and Volume-II. Consultants shall study and adopt these documents after scrutiny and modification whereas 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 standardized 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 ± 5% encompassing all the items of work, properly cross referenced to the Technical Specifications. Standard format of Bill of Quantities shall be adopted. The Consultant is required to obtain the standard format from NHA prior to submission of Bidding Documents. The Consultant shall stamp and sign each page of BOQ.

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 Schedule of Rates (2014). For items not specified in NHA CSR, rate analysis shall be provided based upon market price. The Consultant shall provide backup calculations of the Engineer's Estimate in Microsoft Excel Format with proper formulas. The Client will ensure safeguard of the intellectual property rights of the consultant in this regard.

i. Cross-Sections

Consultant shall prepare the cross-sections drawings for complete project length showing the NSL and PGL and the area / volume of cut and fill in m^3. A separate volume titled "Cross-Sections" same shall be submitted with the Tender Drawings & Engineer's Estimate for verification of Earthwork Quantities by the Quantity Section, NHA. Submission shall be made in both hard and soft (CAD Drawings) format.

j. Certificate of Technical Sanction

As per Para 55-65, Chapter-Two, NHA Code, Vol-I & NHA's Circular No. 11(19)/Secy(Coord)/NHA/15/569 dated November 04, 2015, the Consultant is required to submit a certificate which is to be used for obtaining technical sanction of the project from the competent authority. A standard certificate is attached at Annex-A.

3.20.2. Final Presentation

Consultant at the end of design shall make a final presentation with following details. At the end of Presentation, a box containing all documents and drawings shall be handed over for record section.

Important Features of Presentation:

- Consultant will describe the selected road alignment, merits, demerits, land acquisition and other impediments (if any).
- Consultants will highlight important components of project like major bridges, flyovers, interchanges, service areas and landslides etc.
- Important parameters of sub-soil investigation like CBR, Pile Capacity and General Soil Classification etc.
- Consultant will also highlight the environmental impact of the road construction on the road influence areas.

- Important hydraulic parameters used in the design of bridges over rivers/ canals.
- Results of traffic study and axle load survey.
- Location of quarry sites
- Consultant shall clearly explain the traffic management plans.
- Complete description of design criteria and functional requirements.
- Description of specialized equipment and machinery required for the construction.
- Description of methodology / codes for pavement and structural design including details of computer models.
- For Structural Design, Summary of results of computer output (especially maximum and minimum forces for all elements) in tabulated form shall be presented.
- A plan showing major quarry sites / borrow area sites including mass diagram showing cut and full along the finally selected alignment shall be presented.

Any other points, which the consultant may like to highlight, should be included.

3.20.3. Submission of Documents

All the Reports associated with each Task shall be submitted as stated in respective sections. **In the technical proposal, consultant shall develop a Work programme Task wise with submission dates. Failing to provide the same, the proposal shall not be evaluated.**

All documents/ drawings shall be subject to review and checking by NHA's Experts. Consultant will incorporate any comments / modifications made by the Experts (if agreed, The Responsibility for correctness of design lies with the Consultant).

Consultants will provide two additional sets of the tender documents and reports to the Client at a later stage at no extra cost to the Client. Additional number of sets (if required) shall be provided at a cost of Rs. 5,000/- per set.

3.20.4. Provision of Data on Compact Discs

The Consultants shall submit complete set of documents and drawings listed above on three (03) digital CD-ROMs. Files (Word, Excel, AutoCAD, Graphical Images, Photographs etc.) shall be properly indexed / catalogued for record purposes and use / reproduction at a later stage by NHA.

3.21. THIRD PARTY DESIGN VALIDATION / REVIEW

The Design will be reviewed and validated by a third party consultant as Design Review consultant. The Consultant is required to quote for "Third Party Design Validation/ Review" in its financial proposal. The Design Review shall be carried out by one of the top three Consultancy firms who had been technically qualified for undertaking detailed design of this project, however could not win due to their higher financial proposal. The Consultant shall recommend the Third Party Design Review/ Validation consultant to the Client for formal approval. The consultant shall get design and relevant reports reviewed simultaneously so that the design review assignment gets finished with a lag of 15-30 days from the completion of the Detailed Design.

It is highlighted here that complete responsibility of the Design is of the Designer/ Design Consultant and the comments of Design Review consultant have no binding on the Detailed Design Consultant to incorporate them definitely. It is the Designer's prerogative that if it considers the comments acceptable, it may incorporate them or otherwise. In case of difference of opinion between Design Review consultant and the Design Consultant, decision of the Design Consultant shall be final.

3.22. PERFORMANCE OF THE CONSULTANT

The Consultant shall attend the pre-bid meeting with bid preparing team (coordinator only is not acceptable). The performance of the Consultant with reference to his response to the queries of the contractors shall be evaluated and recorded by GM (P&CA) & GM (Design).

a. During the construction phase, the design review shall finally reveal the performance status recorded by the Design Section.

b. Finally, the performance of the consultant shall be evaluated based on the performance status recorded by the Design Section. The performance rating shall be made in the following manner: -

A+	Excellent
A	Good
B	Requiring improvement
Poor	Poor

c. "B" performance rating without subsequent improvement shall drop the consultant performance to the stage "Poor". If "Poor" persists in two consecutive stages, the Design section shall propose penalty and P&CA shall implement the recommendation in the light of legality of the matter.

3.23. MODE OF PAYMENT:

"A" is the Contract amount, excluding the Provisional Sums

Sr. No.	Description	% age of Total Amount
STAGE-I		
1.	Inception Report	5%
2.	Reconnaissance Visit and Alignment Study Report	5%
	Sub Total (A)	**10%**
STAGE-II		
3.	Topographic Survey Drawings & Report	5%
4.	Traffic Survey Report	3%
5.	Axle Load Survey Report	3%
6.	Pavement Design Report	4%
7.	Soil Investigation Report	5%
8.	Construction Material Report	5%
9.	Geo-technical Investigation Report	5%
10.	Hydrology & Hydraulic Study Report	5%
11.	Feasibility Study Report	10%
12.	Highway Safety Audit Report	5%
13.	Stake out of alignment on ground.	5%
14.	Land Acquisition & Relocation of Utility Infrastructure Folders	5%
15.	EIA and SIA Report	5%
	Sub Total (B)	**65%**
STAGE-III		
16.	Final Tender Documents & Drawings (Volume I – IV) including BOQ, Engineer's Estimate, C-factor, Special Provisions, Cross-Sections along with Backup / Design Calculations in hard and soft (pdf + CAD file)	10%
17.	Mass Haul Diagram, Traffic Diversion/Management Plan and Drainage plan for surface runoff and urban areas	5%
18.	Final Design Report (including detailed Structural, Geometric, Hydraulic and Pavement Design along with Backup calculations)	5%
19.	PC-1	5%
	Sub Total (C)	**25%**
	TOTAL (A+B+C)	**100%**

Upon checking the report that it is in line with the TOR, 50% payment shall be released. Remaining shall be released upon acceptable quality is ensured. Upon initial submission, a checklist correlating to TOR requirement shall be attached and checked for requirement spelled out.

Final payment shall not be cleared until Consultant gives a satisfactory final report and until consultant submits soft copies of all documents / reports / drawings. Furthermore, no EOT shall be required for the balance payments against each report.

3.24. DELIVERABLES (Breakdown)

All the Reports associated with each Task shall be submitted as stated in respective sections. In the technical proposal, Consultants shall develop a Work Program Task wise with submission dates. Failing to provide the same, the proposal shall not be evaluated. However, list of documents to be submitted by the Consultants is hereunder:

Sr. No.	Description	Numbers
STAGE-I		
1.	Inception Report	03 Hard Copies + 01 Soft Copy
2.	Reconnaissance Report	03 Hard Copies + 01 Soft Copy
3.	Alignment Study Report along with Map showing recommended option duly marked on Satellite imagery.	03 Hard Copies + 01 Soft Copy
4.	Presentation of recommended alignment with merits and demerits for approval by NHA	03 Hard Copies + 01 Soft Copy
STAGE-II		
5.	Topographic Survey Drawings & Report	03 Hard Copies + 01 Soft Copy
6.	Traffic Survey Report	03 Hard Copies + 01 Soft Copy
7.	Axle Load Survey Report	03 Hard Copies + 01 Soft Copy
8.	Pavement Design Report	03 Hard Copies + 01 Soft Copy
9.	Hydrology and Hydraulic Study Report	03 Hard Copies + 01 Soft Copy
10.	Soil Investigation Report	03 Hard Copies + 01 Soft Copy
11.	Construction Material Report	03 Hard Copies + 01 Soft Copy
12.	Feasibility Study Report	03 Hard Copies + 01 Soft Copy
13.	Geo-Technical Investigation Report	03 Hard Copies + 01 Soft Copy
14.	Highway Safety Audit Report	03 Hard Copies + 01 Soft Copy
15.	Report on Stake out of alignment on ground.	03 Hard Copies + 01 Soft Copy
16.	Land Acquisition & Utility Folders along with ROW Plans showing the alignment and total area to be acquired	03 Hard Copies + 01 Soft Copy
17.	EIA and SIA Report	03 Hard Copies + 01 Soft Copy
STAGE-III		
18.	Final Design Report (including detailed Structural, Geometric, Hydraulic and Pavement Design along	03 Hard Copies + 01 Soft copy

Sr. No.	Description	Numbers
	with Backup calculations)	
19.	Mass Haul Diagram, Traffic Diversion/ Management Plan and Drainage plan for surface runoff and urban areas	03 Hard Copies + 01 Soft copy
20.	Final Tender Documents & Drawings (Volume I – IV) including BOQ, Engineer's Estimate, C-factor, Special Provisions, Cross-Sections along with Backup / Design Calculations in hard and soft (pdf + CAD file)	15 Hard Copies + 01 Soft copy
21.	PC-I Performa	85 Hard Copies + 01 Soft copy

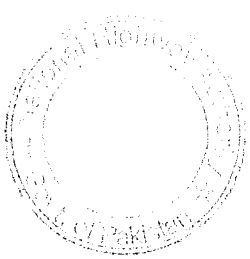
Note: The soft copy will also be submitted in the format compatible with document i.e. Word, Excel, CAD, etc. One copy in PDF must be provided along with.

In addition, the Consultants should perform following actions and incorporate in their submissions:

i. Alignments (all possible options) marked on SOP sheets should be submitted at the outset of the project along with Inception Report.

ii. Consultants will get approval of location / concept of Bridges from NHA Design Section before embarking on detailed structural designs.

It is reiterated that all documents / drawings shall be subject to review and checking by NHA's In-house consultants. Consultants will incorporate any comments / modifications made by the NHA's In-House Consultants (if agreed, the responsibility for correctness of design lies with the Consultants). Consultants will provide two additional sets of the tender documents and reports to the Client at a later stage at no extra cost to the Client. Additional number of sets (if required) shall be provided at a cost of Rs. 5,000/- per set.



Annexure-I

MINIMUM PERSONNEL PROPOSED BY THE CLIENT

S. No.	Position	Nos.	Months	Person-Months[1]
A. KEY PERSONNEL				
1.	Team Leader/ Sr. Highway Engineer	1	4	4
2.	Pavement Specialist*	1	1.5	1.5
3.	Structural Engineer	1	3	3
4.	Slope Stabilization Expert	2	1	2
5.	Hydrology & Drainage Engineer	1	2	2
6.	Geo-Technical Engineer	1	2	2
7.	Economist	1	1.5	1.5
	Sub-Total (A):	***8***	**-**	***16***
B. NON KEY PERSONNEL				
8.	Quantity Surveyor	1	2	2
9.	Chief Surveyor	1	2	2
10.	Surveyors	2	3	6
11.	CAD Operators	2	3	6
	Sub-Total (B):	***6***	**-**	***16***
C. SUPPORT STAFF				
12.	Computer Operators	2	3	6
13.	Helpers	15	2	30
	Sub-Total (C):	***17***	**-**	***36***
	Total (A + B + C):	**31**	**-**	**68**

* *Pavement Specialist will also carry out traffic studies and surveys.*

[1]The proposed person-months are as per Client's assessment; if the consultant has reservation/opinion/suggestion regarding proposed person-months it may convey same in writing during Pre-Proposal Meeting or even after Pre-Proposal Meeting but before the last date for seeking clarification, for review and decision of NHA which will be communicated to all the prospective bidders.

Annexure-A

CERTIFICATE FOR TECHNICAL SANCTION

This is to certify that the proposal titled "**Name of Project**" "**(Length)**" is structurally sound and that the estimates are accurately calculated and based on adequate data.

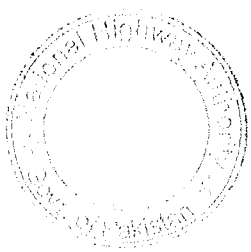
For and on behalf of Consultant

Sign & Stamp: _____

Name of Authorized Representative: _____

Name of Consultant: _____

Dated: _____



CHAPTER NO.4

ENVIRONMENTAL IMPACT ASSESSMENT OF ROADS/ HIGHWAYS PROJECTS

1. Need for Environmental Impact Assessment (EIA)

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

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

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

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

i) **Regulations and Standards.** Describe the pertinent legislation, regulations and standards, and environmental policies that are relevant and applicable to the

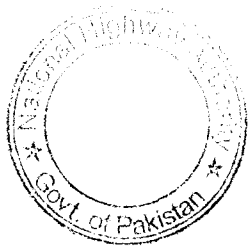
proposed project, and identify the appropriate authority jurisdictions that will specifically apply to the project.

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

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

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

v) **Environmental Impacts and Mitigation Measures.** Identify any negative positive, direct, indirect, short term and long term impacts of the project, during pre-construction/design, construction and operation phases. Identify any information gaps and evaluate their importance for decision-making. The Consultants must recommend appropriate mitigation and rehabilitation measures for the environmental



damage and other impacts identified for specific road corridors, and how they would be implemented with regards to: coordination between highway design and environmental issues, ambient air, water and noise quality, water resources, drainage, mineral resources, flora and fauna, social and cultural environment, historical sites. The Consultants should attempt to identify creative measures that would also have positive social implications, such as participatory tree planting that would also serve as job creation for affected communities. Consultants should identify biological environment, and must discuss about national parks, game reserves and endangered species. Consultants should also identify the impacts and mitigation measures for topography, social / cultural issues, land acquisition and resettlement, community development, borrow open pits, waste disposal, geology and soil, surface and ground water, hydrologic regime, traffic flow, wastage of fertile humus layer, utilities issue and poverty alleviation etc.

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

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

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

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

i) AMBIENT AIR QUALITY:

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

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

Air quality data will be collected over a 24-hour period at all the sampling points *(a reasonable number of sampling and their analysis should depend upon the*

road length and other environmental factors which should provide a reasonable image of air quality).

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

ii) NOISE LEVELS:

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

iii) WATER QUALITY:

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

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

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

will be undertaken of the proposed design, site technology and operational alternatives in terms of:

Their potential environmental and social impacts;

Capital and recurrent costs;

Suitability under local conditions; and

Institutional, training and monitoring requirements.

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

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

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

ix) **Environmental Management Plan (EMP).** Identify and prepare EMP including an implementation schedule and supervision program with associated costs and contracting procedures for the execution of environmental mitigation and social issues for pre-construction, design, construction and implementation phases. The EMP cost plus monitoring cost together will be minimum 1% of total project cost so that these can be implemented in true letter & spirit at later stages. Same cost will be given in PC-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 monitor the rehabilitation of borrow areas and the restoration construction campsites according to EMP report. The monitoring plan should ensure the safe disposal of excess construction materials. Consultants should also evaluate the effectiveness of the mitigation measures proposed in the EMP and recommend improvements if necessary. Apart from regular compliance checks the Consultants should generate a tabular matrix for air, water and noise analysis, asphalt plant emissions, soil erosion and contamination, plantation, safety and traffic rules compliance for construction and operation phases.

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

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

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

xiii) **Recommendation and Conclusions.** An adequate summary should emphasize on the project description and environment, environmental impacts and mitigation measures, alternatives, socio-cultural and socio economics, public consultation and

the resulting issues and recommendations, environmental management and monitoring plans, economic assessment, recommendation and conclusions.

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

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

The reports should include acronyms list and a copy right certificate in the name of NHA. The reports should include all the key articles but not limited to the executive summary, introduction, description of the project, policy, all legal and administrative framework, description of the project environment, alternative analysis, environmental impacts and mitigation measures, public consultation and resettlement action plan, inter-agency and public/ NGO consultation process, environmental Management & monitoring plans, economic assessment, conclusions and recommendations.

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

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

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

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

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

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

project construction and number of labor force (employees) required for the project construction and operation phases.

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

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

Public Hearing:

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

Consultants' Fee for Services:

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

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

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

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

Non Compliance: If Consultants 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 whatsoever be the reasons.