Expression of Interest
(EOI)

Title of Consulting Services *:* *Consulting Services For Infrastructure Development at Haripur Municipality*

Method of Consulting Service : *National*

Project Name **:** *Consulting Services Infrastructure Development at Haripur Municipality*

EOI: *NCB-08/2077/078*

Office Name **:** *Haripur municipality*

Office Address: *Haripur, sarlahi*

Issued on: *2021 January*

Financing Agency: Government Budget

Chief Administrative Officer

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Abbreviations

CV	-	Curriculum Vitae
DO	-	Development Partner
EA	-	Executive Agency
EOI	-	Expression of Interest
GON	-	Government of Nepal
PAN	-	Permanent Account Number
PPA	-	Public Procurement Act
PPR	-	Public Procurement Regulation
TOR	-	Terms of Reference
VAT	-	Value Added Tax

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A. Request for Expression of Interest

Chief Administrative Officer

HARIPUR MUNICIPALITY

OFFICE OF THE MUNICIPAL EXECUTIVE
HARIPUR,SARLAHI

Date: 2077-10-06

Name of Project: ***Consulting Services for Infrastructure Development at Haripur Municipality***

Dear all the eligible consultants,

1. Government of Nepal (GoN) has allocated fund ***toward Consulting Services for Infrastructure Development at Haripur Municipality for*** eligible payments under the Contract for which this Expression of Interest is invited for **national consulting service**.
2. The ***Haripur municipality*** now invites Expression of Interest (EOI) from eligible consulting firms ("consultant") to provide the following consulting services: ***Consulting Services for Infrastructure Development at Haripur Municipality***
3. Interested eligible consultants may obtain further information and EOI document free of cost at the address ***Haripur Municipality*** during office hours on or before **2077-10-21 12:00** or visit the client's website ***haripurmun.gov.np***
4. Consultants may associate with other consultants to enhance their qualifications.
5. Expressions of interest shall be delivered online through e-GP system www.bolpatra.gov.np/egp N/A on or before **2077-10-21 12:00**
6. In case the last date of obtaining and submission of the EOI documents happens to be a holiday, the next working day will be deemed as the due date but the time will be the same as stipulated.
7. EOI will be assessed based on ***Qualification 40%, Experience 40%, and Capacity 20%*** of consulting firm and key personnel. Based on evaluation of EOI, only shortlisted firms will be invited to submit technical and financial proposal through a request for proposal.
8. Minimum score to pass the EOI is ***60.***
9. *The EOI will be opened on* **2077-10-21** *at Haripur Municipality at 14:00 with consultant representative*
10. *The information of the consulting service is attached herein*

S. No.	Project Name	Location	Tentative Type/Area	Remarks
1.	*Preparation of Feasibility Study, Geotechnical Investigation and Detail Project Report of Lakhandehi Bridge.*	*Haripur municipality, ward no. 2*	*Major*	
2	*Preparation of Feasibility Study, Geotechnical Investigation and Detail Project Report of manjurwa Bridge.*	*Haripur municipality, ward no. 5*	*Minor*	
3	*Preparation of Feasibility Study, Geotechnical Investigation and Detail Project Report of jhim Bridge.*	*Haripur municipality, ward no. 6*	*Minor*	
4	*Preparation of master plan, Geotechnical Investigation and Detail Project Report of Chitain Mahadev, Picnic Spot and Children park*	*Haripur municipality, ward no. 7*		
5	*Preparation of master plan, Geotechnical Investigation and Detail Project Report of Hariyar mai than park*	*Haripur municipality, ward no. 1*		
6	*Preparation of master plan, Geotechnical Investigation and Detail Project Report of Gadhi mai park*	*Haripur municipality, ward no. 2*		
7	*Preparation of Master Plan, Geotechnical Investigation and Detail Project Report of Agriculture Infrastructure Developmrnt.*	*Haripur municipality, ward no. 1*		

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B. Instructions for submission of Expression of Interest

1. Expression of Interest may be submitted by a sole firm or a joint venture of consulting firms and the maximum number of partners in JV shall be limited to three.
2. Interested consultants must provide information indicating that they are qualified to perform the services *(descriptions, organization and employee and of the firm or company, description of assignments of similar nature completed in the last 7 years and their location, experience in similar conditions, general qualifications and the key personnel to be involved in the proposed assignment).*
3. This expression of interest is open to all eligible all eligible consulting firm/company. [1]
4. In case, the applicant is individual consultant, details of similar assignment experience, their location in the previous 4 years and audited balance sheet and bio data shall be considered for evaluation.[2]
5. The assignment has been scheduled for a period of ***3 months.*** Expected date of commencement of the assignment is ***according to notice.***
6. A Consultant will be selected in accordance with the ***QCBS*** method.
7. Expression of Interest should contain following information:
   (i) A covering letter addressed to the representative of the client on the official letter head of company duly signed by authorized signatory.
   (ii) Applicants shall provide the following information in the respective formats given in the EOI document:
      - ***EOI Form: Letter of Application (Form 1)***
      - ***EOI Form: Applicant's Information (Form 2)***
      - ***EOI Form: Work Experience Details (Form 3(A), 3(B) & 3(C))***
      - ***EOI Form: Capacity Details (Form 4)***
      - ***EOI Form: Key Experts List (form 5).***
8. Applicants may submit additional information with their application but shortlisting will be based on the evaluation of information requested and included in the formats provided in the EOI document.
9. The Expression of Interest (EOI) document must be duly completed and submitted in sealed envelope and should be clearly marked as "EOI Application for Short-listing for the ***Consulting Services for Infrastructure Development at Haripur Municipality***. The Envelope should also clearly indicate the ***name and address of the Applicant***. Alternatively, applicants can submit their EOI application through e-GP system by using the forms and instructions provided by the system.
10. The completed EOI document must be submitted on or before the date and address mentioned in the **"*Request for Expression of Interest*".** In case the submission falls on public holiday the submission can be made on the next working day. Any EOI Document received after the closing time for submission of proposals shall not be considered for evaluation.

[1] Client should delete as appropriate.

[2] Delete if EOI is not called for person.

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C. Objective of Consultancy Services or Brief TOR

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Haripur Municipality

Office of the Municipal Executive

Sarlahi, Province no. 2, Nepal

CONSULTING SERVICES FOR
Feasibility Study, Detailed Engineering Survey, Soil Investigation, Hydrological Study and Detailed Design of bridges at Haripur Municipality ,Sarlahi

TERMS OF REFERENCES (ToR)

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1. INTRODUCTION

The Haripur Municipality, Office of the Municipal Executive, Sarlahi (herein after referred as "the IMO"), intends to utilize services of engineering consulting firms well experienced in the fields of soil investigation, hydrological studies, bridge engineering, river training works, environment aspects etc. for providing engineering consulting services for detail design work of proposed Bridge(s) including river training works, and approachroads.

2. OBJECTIVE

Objective of this job is to design a ***safe***, ***reliable*** and***cost effective*** bridge using the appropriate technology. The bridge is to be designed considering the availability of skilled manpower, construction material, condition of accessibility and other prevailing working conditions.

3. SCOPE OFWORK

The scope of work to be carried out by the consultant shall include but may not be limited to the following:

3.1. Desk study:

A desk study should be carried out, collecting all data, maps and information relevant to bridge design and reviewing for planning of further field survey and investigation works as well as detailed design.

3.2. FeasibilityStudy:

Feasibility Study shall include the following:

3.2.1. Technical Feasibilitystudy:

It should include reviewing the available data, collecting, reviewing and analysis of field data to be used in the study and conducting analysis to decide upon the technical feasibility of the bridge site(s). A cost comparison of different types of bridge shall be made and discussed with the DOR before proceeding to bridge site for soil investigation.

In this study, the following points related to the river, its catchment area and all the considered bridge sites should be studied in detail.

(i) Topography
(ii) Nature and structure of the surfacesoil

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(iii) Nature and structure of local as well as regionalgeology

(iv) Other information as needed.

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3.2.2. *Bridge SiteSelection*

Alternative bridge sites shall be studied based on 3.2.1 and the most suitable site for the bridge based on the above criteria of the site as well as the catchment area shall be selected. The selected site should be clearly indicated in the map and all the characteristic features of the chosen bridge site shall be given, in order to facilitate easy reference while designing the bridge.

3.2.3. *Topographical Survey*

The topographical survey of the area should cover a minimum distance of **500 m** upstream, **200 m**. downstream and **200 m** from the river banks on either side of the river at the proposed bridge site. The Topographic map should show the following:

(i) Contours at 1(one) m. intervals in hilly area and at 0.25 m in plainarea.
(ii) Flood lines on either side of the river in the entire areasurveyed.
(iii) Lines with spot levels along which the bed slope of the river istaken
(iv) Both banks of the river
(v) Lines along which cross section of the river is taken
(vi) Govt. and/or publicestablishments
(vii) Traverse lines, benchmarks reference lines and/or points with respect towhich the present topographic map isprepared.
(viii) The angle and direction of skew, if the bridge is proposed to be alignedskew.
(ix) The Names of the nearest identifiable villages/towns etc. in either ends of thebridge.
(x) Other information relevant to design, construction and/or maintenance of thebridge.
(xi) Bridge axis cross section should be taken by level machine and R. L. computation should be checked with conventional Rise/Fall or Height of Instrumentmethod.

3.2.4. *Hydrological Study*

For determination of all design data the consultant shall carry out a detailed hydrometrical surveyand hydrological study of the river and bridge site, which shall include thefollowing:

(i) Catchment area of the river up to bridgesite
(ii) Length of the river from origin up to bridgesite
(iii) Possibility of change ofcatchment
(iv) Nature, size and quantities of debris carried by theriver
(v) Intensity, duration and distribution of rain in thecatchment
(vi) Vegetation, cultivation etc. of the catchment.
(vii) Existence of reservoir's, Lakes etc. in thecatchment.
(viii) Existing bridge or other hydraulic structures across the river in the vicinityof the proposed bridge site with their details as much aspossible.
(ix) General slope of the river from the critical point (origin) of the river up tobridge site and general slope of the catchment in both sides of theriver.
(x) Cross sections covering 200m.beyond flood lines of the river at proposed bridge site, at about 500m. u/s and about 200m d/s. wherein HFL, LWL, LBL, area of the cross section, wetted perimeter and geological profile with silt factor of each strata (atproposed bridge site only) shall be indicated. (Horizontal and vertical scale of the cross section shall be thesame)
(xi) Bed slope of the river which must start from 100m. up of the U/S crosssection and end at 100 m. down of the D/S crosssection.

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(xii) Maximum discharge calculated by established formulas with differentreturn periods and the peak discharge observed over a period of 100years.

(xiii) Velocity and depth of flow at the time ofsurvey.

(xiv) Shifting of the river in the past at proposed bridge site and in itsvicinity.

(xv) Other information required for river control, design, constructionand maintenance of the bridge.

3.2.5. Seismological Study:

The consultants shall collect and refer to the available data regarding the seismic records of the area. Seismic Forces: According to the Indian Standard Criteria for Earthquake Resistant Design of Structures, IRC: 6 may be followed.

3.2.6. EnvironmentalStudy

The consultant shall predict damages to the Environment and attempt to mitigate or minimize the damages by choosing appropriate site, cross-section, type of structures etc. and suggest appropriate measures in the design for protection of surrounding Environment. The Environmental Protection Act, Environmental Protections Rules and the Department of Road's environmental policies including Environmental and Social Management Framework (ESMF), modified by GESU/DOR for bridges should befollowed.

3.3. Preliminary Design ofBridge

After the selection of the proposed bridge site with alternatives and preparation of topographic maps, the Consultant shall prepare a Preliminary Design Report including feasibility report and discuss with concerned Project In-charge of the IMO on the overall feasibility of the site, boring numbers and locations, concept design and other aspects as listed below for the detailed survey and design of the bridge:

a) Design discharge
b) Scour depth, Maximum Scourdepth
c) Linear waterway needed to beprovided
d) Anticipated soil condition forfoundation
e) The most feasible proposed bridgesite
f) River- training & approachroads.
g) Type of proposed foundation, substructure and superstructure.

The discussion will be done on the basis of the topographic maps, preliminary findings of the parameters (i to
vii) above, location of the bridge with respect to the complete road network of the district. After discussion and finalizing of the bridge site/axis the consultant shall carry out subsurface exploration which shall include the followings:

3.3.1. Test pits andauguring

Test pits and auger-holes in the riverbed to a depth as mentioned in the BOQ for determining the mean particle size of riverbed materials in each layer.

3.3.2. Bore-holes, Field tests and Laboratorytests

The properties of the underlying soil are determined by field and laboratory tests of the soil samples obtained from the bore holes drilled to a depth as mentioned in the next section and/or the Bill of Quantities. As far as possible, the locations of the boreholes shall be under each abutment and piers. Generally, the following tests are conducted for determination of soil properties:

S.N.	Type of test	Frequency
1	Undisturbed Soil Sampling	at least 2 at each borehole
2	Standard Penetration Test	as required but the interval not less than 1.5 m and every change of soil strata
3	Grain size analysis	at least 2 at each borehole
4	Hydrometer analysis	at least 2 at each borehole
5	Moisture content	at least 2 at each borehole
6	Bulk and dry density	at least 2 at each borehole
7	Unconfined compression test	at least 2 at each borehole
8	Consolidation test	at least 2 at each borehole
9	Direct shear test	at least 2 at each borehole

If required by the field condition, the Consultant shall conduct other types of tests. Similarly, the frequency of the above tests can be increased if required. The cost of all the field and laboratory tests shall be incorporated in the cost of soil investigation works. No separate payment shall be made for thetests.

3.3.3. *Depth of soilexploration`*

The depth of soil exploration from ground level shall be as follows:

SN	Type of soil	Governing depth
1	Silty, Sandy, Clayey soil	3 times the design scour depth, or 1.5 times the least dimension of the foundation footing, or 20 m, whichever is maximum
2	Granular soil Gravels, Boulders	2 times the design scour depth, or 1.5 times the least dimension of the foundation footing, or 16 m, whichever is maximum
3	Rocks (soft or hard)	Not exceeding 8 m.

The above-mentioned depths are indicative. The Consultant shall decide the actual required depth of soil investigation according to the field condition and design parameters. But in any case, the Consultant shall be paid only up to the depth mentioned in the Bill of Quantities. If rock is found at the beginning or at mid-depth then the drilling works shall not exceed the depth as mentioned in the table above. In such case the payment shall be made only for the actualdepth.

For example, if rock is found at a depth of 12 m. and if the maximum required depth is 16 m, then drilling shall continue only for further 4 m., and the payment shall be done for 16 m. If rock is exposed on the surface then drilling shall be done up to a depth of 8 m., and the payment shall be done for 8 m. But if the thickness of rock at the surface is 6 m then the drilling shall continue further to the required maximumdepth.

3.3.4. *Changes in soilstrata*

N/A

3.3.5. *Soil exploration works to becertified*

The IMO, if required, may ask the Consultant to submit the soil/rock samples obtained from the drilling works in core boxes and/or a bore-log certified by the concerned Division/Project Office and/or visual certification by using Bridge Site Monitoring (BSM) System software.

3.3.6. *Otherinformation*

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Availability of construction materials like, sand gravel, boulders, timber, etc. with their engineering properties, quantities and lead up to the bridge site, quarry site of materials with their available quantities should be shown on a sketch plan with reference to Bridge site.

3.4. Analysis of Data, Conclusion and Recommendation of DesignParameters.

Based upon the above-mentioned studies and investigations the consultants shall make the best use of their technical know-how and professional skill to arrive at and recommend the most cost effective design parameters. The consultant shall discuss in detail at least three different options and shall recommend the most appropriate option.

The consultants are required to design the bridges keeping in view of the introduction of modern construction materials and technology into bridge construction industry. It is highly recommended to use pre-stressed concrete in their design if all the conditions are favourable. Ordinary RCC or Steel superstructures shall only be accepted if there is sufficient ground in favour of them as compared with the pre-stressed concrete.

3.5. Miscellaneous

If not covered by aforesaid, the Consultants shall perform other studies, explorations, tests surveys, calculations, etc. required to produce full and complete set of working drawings, specifications, bills of quantities, requirement of materials and complete cost estimates for the bridge/s including related works based upon which construction activities can be started to complete without further study and/or reference tothem.

3.6. Detailed Design and Quantity/CostEstimates

Based on the collected information and results of the discussions mentioned above the consultants shall design the bridge following the standard codes of practice, norms and guidelines. The relevant **codes of IRC for the design of bridges and Nepal Bridge Standards-2067** shall be followed. The list of all reference literature and materials shall be provided on thereport.

The consultants shall produce detailed quantity estimate of the bridge and its accessories. They shall collect information on sources of materials and their lead distances and prepare rate schedules and cost estimates based on the standard norms and prevailing district rates.

3.7. Use of StandardDesign(s)

Depending upon the site condition and other factors the Consultants can use the Standard Design of the part(s) of the bridge, which shall available at the Department of Road (DOR). This matter will be discussed and finalized during the presentation of the Preliminary Design or at a later stage convenient to both parties. If such Standard Design is used the Consultants shall adjust the design of other parts of the bridge to incorporate the parameters of the Standard Design.

If it is decided to use any Standard Design, the Payments shall be adjusted according to the Conditions of Contract and/or as mentioned in the BOQ.

3.8. TheChecklist

The detailed requirements of the design report are given in the checklist at the end of this TOR.Before submitting the report the consultants should verify whether it complies with thechecklist.

4. SUBMISSION OF REPORTS AND PRESENTATION OF THE WORKS

In accordance with DOR's standard and procedures the consultant shall submit his reports as under:

4.1. Inception Report

This report shall contain bridge location with alternatives, **Cross-section of bridge axis of each alternatives showing Hydrological and Geological elements**, Bank Conditions, General Geology, General Hydrology, Location Plan, Social Acceptability, Tentative Bridge type with length, Span arrangement etc. This shall contain Index map as well as Location map of the bridge with respect to main road network. Inception report shall be submitted to IMO in one copy and shall be presented in Office of Office of the Municipal Executive.

4.2. Field Report & Preliminary DesignReport

This report will contain bridge site plan showing alignment of bridge foundations and locations of bore holes, logs with description of samples taken at every change of strata. Preliminary field report shall be submitted to IMO in two copies and should be discussed with IMO.

This report shall contain the preliminary design concepts and short descriptions relating to the proposed structure and its major components, e.g. Superstructure, Pier, Foundations, River training/ bank protection structures, Approach Road etc. It shall include location of proposed foundations and arrangement of the bridge components along with comparison between the possible alternative types. **(Please also see Clause 3.7, Use of Standard Designs).** This report shall be submitted in **three** copies and the content shall be discussed with IMO **before proceeding to the detailed design of the bridge**. **The IMO may also ask to present the Preliminary Design Report to the IMO audience.** The cost of such presentation shall be borne by theConsultants.

4.3. Draft Report

This report shall in all respect be complete, containing all the required components of the design and be presented in clear and easy to refer formats as per the general design guidance attached. The complete set of the report shall consistof:

a) Volume I – MainReport
b) Volume II –Drawings
c) Volume III – DesignCalculations
d) Volume IV – BOQ and Special Provisions to Standard Specifications, ifany
e) Appendices

Please refer to the checklist provided with this TOR for number of copies and detailed requirements of the reports. The Report shall also include the drawings, quantity and cost estimate of any Standard Design that is used in the Design.

4.4. Presentation of the Draft Report

The Consultants shall present the design report in specified format and defend it to the IMO audience prior to the submission of the final report. They shall review the issues raised during the presentation while finalizing the report and make necessary amendments/corrections if needed. The date and venue of the presentation shall be determined by mutual agreement between the District Technical Office (IMO) and the consultants. The cost of such presentation shall be borne by the consultants.

4.5. Final Report

Apart from the presentation, the IMO/IMO will verify the content of the report against the Terms of Reference and the checklist. The IMO may also discuss upon the technical content of the report and

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may suggest some changes if thought necessary. While preparing the Final Report the consultants shall consider the comments/suggestions and make corrections or amendments if required. It does not, however, relieve the consultants of their responsibility over the technical content of the design. The final report shall be submitted in stipulated number of copies as indicated in the checklist.

4.6. Soft Copy (Electronic Copy) of the Design Report

Apart from the bound report the consultants shall submit soft copies (electronic copies) of the final report in suitable tool as specified in the checklist.

5. TIME SCHEDULE

If not indicated otherwise in the contract documents the consultant shall complete the assigned works as per the following schedule:

(i) **Inception Report within 10 (Ten) days** started from the date of signing ofthe Agreement.
(ii) **Field Report & Preliminary Design Report within 30 (Thirty) days** started from the date of signing of theAgreement.
(iii) **Draft Report within 40 (Fourty) days** started from the date of signing of theAgreement.
(iv) **Final Report within 15 (Fifteen) days** after receiving IMO's Comments andsuggestions on the draftreport.

6. WORKING TEAM

The working team for field and office works should necessarily consist of the following Key Personnel together with adequate supporting manpower.

SN	Personal	Preferred Academic Qualification	Minimum Years of General Experience
1	Team Leader (Bridge/Structural Engineer)	Master's in Bridge/Structural Engineering	10 years
2	Geotechnical Engineer	Master's in Bridge/Structural Engineering	5 years
3	Road/Highway Engineer	Master's in Engineering Transportation	5 years
4	Hydrologist	Master's degree in Hydrology/ Water Resource	5 years
5	Civil Engineer	BE in Civil Engineering	5 years
6	Enviromentalist	Master's degree in Enviromental Enineering	5 years
7	Surveyor	Diploma/BE in civil Engineering	5 years
8	Socio Economist		
9	Legal Expert		
10	Draft Person		
11	Computer Operator, Supervisor, Helper		

DEFECT LIABILITY

6.1. Responsibility for survey and design

Submission of the final reports does not relieve the consultant from their responsibility to the design.

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They shall bear full responsibility for:

(i) Authenticity of all the field data including socio-economic, environmental,topographic, hydrological and geologicalinformation;

(ii) Correctness of the design and all the calculations (except for the Standard Design, ifused);

(iii) Correctness of thedrawings;

(iv) Correctness of any other details related toconstruction

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6.2. *Assistance during construction phase*

During construction the consultants, upon written request from the IMO, shall visit the bridge site and provide necessary technical assistance. The consultants shall be paid for such visits (travel cost and daily allowances) as per the approved norms. But if any changes in the design are required **as per ToR**, **the consultants shall furnish it free of cost as per the Condition of Contract.**

6.3. *Acceptance of responsibility*

The Consultants may be asked to submit signed Statement of Acceptance of Responsibility as mentioned above in sections 8.1 and 8.2 attached together with the final report.

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Checklist for Detailed Survey and Design of Bridges

This paper serves as a guideline for checking the detailed engineering survey and design of bridges, received from the consultants.

General procedure for checking the design report:

Checklist for content of the package:

Particulars	Required Information / Number / Range / Value(s)
Volume I - Main report	Draft – 2 copies; Final – 3 copies
Volume II – Drawings	Draft – 2 copies; Final – 3 copies
Volume III – Design calculations	Draft – 2 copies; Final – 3 copies
Volume IV – BOQ and Special Provisions to Standard Specifications (if required)	Draft – 2 copies; Final – 3 copies
Soft (electronic) copies of the report	1 copies in USB Drive with hard plastic case

1. Content of Main Report (Volumel)

1.1 Statement of acceptance of responsibility

A signed acceptance of responsibility to the authenticity of field data and correctness of design shall be attached to each copy of the main report.

***1.2** Salient features:*

Particulars	Required Information / Number / Range / Value(s)
Name of the Project:	Job description as mentioned in the work-order
Location:	
Development Region	Name of the development region
Zone	Name of the zone
District	Name of the district
Village/town	Name of the surrounding RM/town/municipality or any pertinent landmark in the vicinity of the bridge.
Name of the Road:	Popular / formal name of the road (e.g. MechiRajmarg) and road reference number from the LRN data (ifapplicable)
Origin and Destination of the Road	Origin and destination (e.g. Naubise – Pokhara)
Chainage of the Bridge Site	Chainage from the origin of the road
Geographical Location:	
Easting	East coordinate
Northing	North coordinate
Classification of the Road	NH / FRN / FRO / DR / UR / Other
Type of the road surface	BT / GR / ER / Track only
Terrain / Geology	General terrain (Hill, mountain or plain) and general geology
Information on structure:	

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Total length of the bridge	Total length between edges of the end decks
Span arrangement	Number x Effective lengths of spans
Total width of the bridge:	Total width between edges of the deck
Width of:	
Carriageway:	Clear width available to vehicles
Footpath(s):	Clear width available to pedestrians
Kerbs	Width at the bottom of the kerb
Type of superstructure:	Overall system (e.g. Three girder RCC T-beam & deck / <Type> Steel truss & RCC deck / Four Steel plate I-girders & RCC Deck, Arch, Prestressed etc. etc.)
Type of bearings:	Type of bearings with their dimensions
Type of abutments:	Shape and material in the abutment (e.g. Rectangular RCC with cantilever return wall, or RCC isolated columns with stone pitched slope and wing walls, etc.)
Type of pier(s):	Shape and material (e.g. Rectangular solid / hollow RCC wall, or RCC Hammer-head with solid circular body, etc.)
Type and depth of foundations:	Type and depth from the maximum scour level. Separately for each, if type and depth of foundations for different units are varying
Sketches:	Sketches of the general arrangement of the bridge with gross dimensions (plan, elevation and cross section) in a reduced scale from the main drawings to be attached in A4 or A3 size sheet.
Design data:	
Live load:	Load classes considered (Class AA, Class A or Class B)
Net bearing capacity of soil	Net bearing capacity applied in design
Design discharge	
Linear waterway	
Summary of quantities of materials:	
Grade and quantity of concrete:	
In superstructure:	Grade and total quantity including girders, deck, parapet, kerb, footpath, railings and approach slab
In substructure:	Grade and total quantity including pier/abutment cap, stoppers, abutment return-walls, ballast wall, pier/abutment stem above pile/well cap and in case of open foundation above base-plate.
In foundation:	Grade and total quantities of pile/well cap, well steining and curb, piles, foundation base-plate and other accessories.
Grade and quantity of structural steel:	
In superstructure:	Steel grade and quantities of truss members, gusset plates and nut-bolts, plate girders including accessories,

In substructure:	Grade and quantity (if any) in abutment/piers
In foundation:	Grade and quantity in foundation (e.g. well-shoe, pile tips etc.)
Grade and quantity of reinforcing steel:	
In superstructure:	Grade and total quantity as in quantity of concrete
In substructure:	Grade and total quantity as in quantity of concrete
In foundation:	Grade and total quantity as in quantity of concrete
Quantities of other materials:	

Stone masonry:	Total quantity (e.g. in wing walls, foundation base, river protection works etc.)
Gabion works:	Total quantity (e.g. in wing walls, river training and riverbed protection works etc.)
Formworks:	Quantities in superstructure, substructure, foundation and others if any.
Timber:	Total quantity excluding formwork and staging.
Other:	
Summary of cost:	
Superstructure:	
Substructure:	
Foundation:	
Approach road:	
River training works:	
Total net cost of the bridge:	
4% (Contingency &MarmatKosh)Total net cost of the bridge: Total gross cost of the bridge:	

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1.3 Fieldworks:

The following should be complied with at the proposed bridge site.

Centreline of the proposed bridge	Three R.C.C. posts (1:2:4) of 15cm x 15cm in section and 1m length each should be installed minimum 30m apart and projecting 15cm above the ground in the centre line of the bridge. Iron rods of not less than 15cm in length and 8mm in diameter fixed in centre and flushing top surface of each post shall form the centreline of the bridge. All posts shall be installed beyond the zone of inundation and there should be at least one post on each bank of the river.
Bench Marks	Similar posts (at least one post in each bank) should be fixed in the right of way and beyond the zone of inundation's as Bench Marks, whereon B.M. No. and elevation must be written in fast colour paint on two opposite faces of the post. If permanent structures are available, they can be used for B.M. in lieu of the posts. All central line and Bench Mark posts should be connected with sufficient permanent reference points.
Bore/Drill logs	Bore/Drill logs should be certified by the engineer of the Project.

***1.4** Detailed Engineering Study andSurvey:*

Geology and topography	General description of geologic and topographic parameters as per section 3.2.2 and 3.2.4. of the TOR. Specific geo-technical and
	topographic parameters shall appear in the design calculations and drawings, respectively.
Hydrology	General description of hydrological aspects as per section 3.2.5 of the TOR. Detailed hydrological parameters shall appear in the design calculations and drawings. The main report should have information on: • Catchment area characteristics • Summary of rainfalldata • Stream / channel characteristicsincluding: ▪ Type of river ▪ Flood characteristics HFL, LWL andafflux ▪ Depth of scour • Summary of discharge calculation by various methodsand determination of design discharge • Determination of effective linear waterway, bridge span

	arrangements and freeboard. • Summary of required river training works with theirjustification
Feasibility/ Selection of the bridge site	The report should review existing studies (if available) and field data to decide upon the technical feasibility of the bridge site. The bridge site should be selected among at least three locations. Selection criteria shall incorporate geo-physical, topographic, hydrological, social, environmental and economic parameters. The bridge site is discussed with the Office of IMO/IMO's representatives. The report should present a gist of the discussion and conclusion.
Selection ofbridge type, length and span arrangement	The type of bridge, its length and span arrangement is determined after desk study and field works except detailed subsoil exploration on the basis of the following parameters: • Design discharge • General and maximum scour depth • Linear waterway to beprovided • Anticipated soil condition • Selected bridge site • River training and approachroad • Construction/maintenance cost • Availability of material andlabour The report should present a comparative evaluation of different types of bridges on the basis of the above parameters. The type of bridge is discussed with the DOR before proceeding to soil investigation and detailed design. The report should include the gist of discussion and conclusion.

Environmental study	The report should review the project as per the Environmental Protection Act, Environment Protection Rules and DOR environmental policies including Environmental andSocial Management Framework (ESMF), modified by GESU/DOR for bridges.
Seismological study	The report should review the information and past seismic records of the project area as per section 3.2.6 of the TOR.
Sub-surface exploration	The subsurface exploration shall proceed after final selection of the bridge type and axis conforming to the requirement as per section 3.3 of the TOR. The main report should include the following: • General description of the subsoilstrata • Bore logs • Sectional elevation of the subsoil strata showing locationsof bore-holes and proposed foundations • Net bearing capacity, selection of foundation and its depth onthe basis of the above parameters. Detailed analysis of subsoil strata and test results shall appear in Design Calculations and Appendix-1

1.5 Design of Bridge

Design parametersand concepts	The detailed design of the different parts shall appear in Design Calculations. The **main report** should include the following: • Design parameters: Discharge, HFL, LBL, free board, scourdepth, waterway, loads considered. • Design concepts of superstructure, sub structure andfoundation. • Determination of design standards; methods adopted and codes followed. • Requirement of river training and bed protection works conceptsof design of such structures.
Summary of design	• Summary of design should include the followings: ▪ Type and length ofspans, ▪ Effective cross section, design forces and reinforcement ofslab, main girders, cross girder; ▪ Type, sections and reinforcement of elements ofsubstructures; ▪ Type and details of bearings; ▪ Type, depth, sections, reinforcement of foundationbody and footings, ▪ Dimension and reinforcement of approachslab.

▪ Design parameters of approach road: width, surfacetype, maximum and average gradient, minimum radius of curves

1.6 Costestimates

Summary of cost	▪ Total cost including cost of bridge, approach roads, rivertraining works, other accessories ▪ Net cost per running meter of bridgeonly ▪ Total cost per runningmeter ▪ Abstract of quantity andcost
Rate analysis	The rate analysis should be done following the current norms on the basis of comparative cost of materials such as boulders, stone aggregates, sand, river / quarry gravel collected at sources and direct market price and as per the prevailing district rate. The report should include: ▪ A short description of materialsources ▪ Lead distances from sources andmarket ▪ Comparison of cost of material collected at sources andpurchased at market. ▪ Labourrate ▪ Summary of unitrates Detailed rate analysis and a copy of certified district rates should be submitted in Appendix – 2 and 3 respectively.

2. Content of Drawings (VolumeII)

General	Size: • All the working drawings are presented in size A2sheets, bound properly. However, if convenient the drawings in Draft Report can be submitted in A3 size sheets.
Format of cover page	The cover page should show the following: ▪ Name and address ofclient, ▪ Contract number, work description,volume ▪ Consultant's name and address ▪ Month and year ofcompletion
Format of other pages	All other pages should show the followings at the bottom of the sheet: ▪ Name of the client; ▪ Work description ▪ Drawing title ▪ Designation & signature columns for consultant: designed by, checked by, Approved by ▪ Designation& signature columns for the client: checked by, recommended by, Accepted by ▪ Consultant's name andaddress

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- Scale of the drawing
- Drawing no./sheet no.

The size of letters anywhere in all sheets shall not be less than 2 mm.

Content of thedrawings (Volume II)	1.1	Contents
	1.2	General notes a. list of concrete grades used with respect to the components/locations b. concrete covers with respect to the components/locations c. reinforcement designproperties d. bar mark designationsystem
	1.3	Index map Map of country (length 8 to 10 inches) with location highlighted, location plan showing road network, river system and names of places.
	1.4	Topographicalmap Plan of bridge site (scale not exceeding 1:1000) covering a minimum distance of 500 m u/s, 200 m d/s, 200 m from the river banks on either side of the river at proposed bridge siteshowing: a. contour intervals of 1m & 0.25 m for plainand hilly areasrespectively b. Flood lines on either sides of the river inthe entire areasurveyed. c. Lines with spot levels along which thebed slope of the river istaken d. Both banks of the river e. Locations of bore-holes and benchmarks f. Plan of the bridge g. Bridge axis referenceindex h. Govt/publicestablishments. i. Traverse lines, benchmarks reference lines and/or points with respect to which the present topomap isprepared j. The angle and direction of skew, if thebridge is proposed to be alignedskew k. The names of the nearest identifiable-village/towns etc in either ends of thebridge l. Other information pertinent to design, construction and/or maintenance of thebridge.
	1.5	Catchment area map in suitablescale a. Catchment area of the river up to bridgesite b. Length of the river from origin up to bridgesite c. Slope of the river from the critical point (origin) of the river up to bridge site and general slope of the catchment in both sides of theriver. d. Maximum discharge calculated byestablished formulas with different returnperiods e. Maximum discharge during highest flood, at eachcrosssection.(Byxsectionarea&slope

method). The peak discharges as observed over a period of 100 years (for important bridges) or 50 yrs (ordinary bridges) as the use may be an average of peaks istaken

f. Velocity and depth of flow at the time ofsurvey at the bridgelocation
g. Shifting of the river in the past atproposed bridge site and in vicinity ofit.
h. Other information required for river control, design, construction and/or maintenance of the bridge.

1.6 L-section of river & C/S ofriver

1.7 General arrangement

a. Plan, Elevation and Side elevation
b. Bore logs presented onElevation

2. Structural Drawings with bar bending schedules included in the respectivesheets

2.1 Main girder(s)details
2.2 Cross girdersdetail
2.3 Deck slabdetails
2.4 Abutment and approach slabdetails
2.5 Pierdetails
2.6 Foundation details
2.7 Details on bearings, railings, drainage systems,expansion jointsetc.

3. Plan, profile and cross sections of the approach roads onboth sides of thebridge
4. Details of river training works
5. Miscellaneous

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3. Content of Design Calculations (Volume III)

Detailed analysis and design calculation of following elements should be provided.
The design calculations should mention the governing design code or guideline wherever they are applied.

Hydrology	
Hydrological data	• Catchment area characteristics: The catchment area size, shape (classified as fan, pear, long - or narrow), slopes (Longitudinal and Cross-sectional). - Surface characteristics (whether sandy, clayey etc. including percolation and interception characteristics. - Whether land is under afforestation, deforestationor is dotted with urban areas, cultivated areas or storage areas, e.g. lakes, swamps, tanks, reservoirs etc. shall be determined. • Rainfall Data: - Maximum in 24 hours. - Maximum in any one hours. - Rainfall distribution in the catchment area. - Duration and frequency of the rain. - Rain gauge data of the storms along with the corresponding stream gauss data (data for unit hydrograph). - Average annual rainfall characteristics (from relevant meteorological records). - Probability plotting (a graph plotted between the flood magnitude against its return period). • Stream / channelcharacteristics 1. Type of river - Seasonal or Perennial. - Meandering or Straight. - Other classification, e.g. boulder, flashy, well defined, tidy etc. - Length, slope, cross-sections of the river. 2. Water Level - Highest flood in living memory and other major floods before start of investigation. - Highest flood level and year of its occurrence, showing the areas flooded.

	-Records of flood gauging stations. -Lowest Water Level (LWL). -Afflux, if observed. -Observed maximum depth of scour and scour level, indicating what obstruction if any, and other special causes, which can be responsible for the scour at site. -Sediment Data, indicating bed material particle size, aggradation (degradation of bed, bank erosion (reference to flood stage) etc. -Erodibility of riverbanks and river bed. -Scour Data (as observed, particularly downstream of any obstructions to the flood flow).	
Analysis of hydrological data and determination of associated elements	▪ Discharge calculation by various methods including WECS method, comparison of discharges, determination of design discharge expected to pass under the bridge and justification for adapting the design discharge, natural stream velocity and flood velocity. ▪ Maximum mean or maximum velocity of flood flow. ▪ Effective linear waterway required under the bridge (after allowing for average thickness of each pier and its foundation, between High Flood Level and Normal Scour Level, ignoring the earth fills in front of the abutment). ▪ High Flood Level, Afflux and Water Level. ▪ Freeboard required between the affluxes High Flood Level and soffit of deck from the considerations of unobstructed flow of floating debris with the flood discharge. ▪ Normal and Design (maximum) scour levels at piers and abutments (Consider higher watermarks in the area and at and near the site). ▪ Minimum founding levels at piers and abutments from consideration of maximum scour etc.	
Sub-soil investigation Investigation data	▪ Bore-log of each bore-hole showing: Depth gauge, soil description of encountered layers with depth marks, sample collection points, depth and types of tests performed, Ground water table, number of blows for SPT/CPT, N-values ▪ Certificate of sub-soil investigation from respective Division / project office indicating depth of each bore-hole and confirming that soil-samples of each strata in each borehole are deposited in core boxes for the record. ▪ Laboratory test result of the samples as specified in section 3.3of the TOR.	

	▪
Analysis ofsub- soil data	▪ Determination of bearing capacity and other parameters atdifferent depths required for different types of foundations, determination of design bearing capacity. ▪ Comparison and determination of type(s) of foundationfor abutments and piers. ▪ Summary of subsoil characteristics and types offoundations.
Design ofbridge elements	On the basis of the topographic survey, hydrological, sub-soil and seismological analysis the report should present detailed design of the following parts of the bridge: ▪ Design of superstructure and its parts: deck, main andcross girders, bearings, railing posts, bracings, stiffeners, joints etc. as applicable. ▪ Design of substructure: pier/abutment cap, substructurebody ▪ Design of foundation and its part: foundation base, well/pilecap, well steining, pile grouping, individual pile body, pile head, cutting edge, top/bottom plug as applicable. ▪ Design of river trainingworks ▪ Design of approachroads

5. Soft (electronic) copies of the part of thereport

Two copies of the report in electronic files should be submitted in suitable tool, which shall include the following:

- Text of main report (in MS Wordformat)
- Rate analysis and cost estimates (in MS Excelformat)
- All the drawings in format compatible toAutoCAD.

6. Appendices

The following should be submitted as appendices to the main report:

1. Laboratory test results of subsoil strata as specified in section 3.3 of theTOR
2. Detailed rateanalysis
3. Certified districtrate

7. PAYMENTSCHEDULE

The payment of the consultant shall be as per following modality:

1	1st Installment	After submission of Field and Draft Report	@ 20% of total remuneration
2	2nd Installment	After Submission of Draft Design Report	@ 50 % of total remuneration
3	Final Instalment	After Submission of Final Detailed Engineering Design Report	@ 30 % of total remuneration

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Terms of Reference

Terms of Reference (ToR) for Preparation of Feasibility Study, Detailed Engineering Survey, Geotechnical Investigation, Enviromental Analysis, Detailed Architectural, structural, Electrical, sanitary, Landscape design, working drawing and Design and Preparation of Religious, Cultural and Tourism Masterplan of Chitaen Mahadev mandir, Children park, Picnic spot with Detailed Drawings and Estimate

INTRODUCTION

A. OBJECTIVE, SCOPE OF WORKS AND STUDY METHODS

1. To prepare a conceptual Structural, architectural design to the satisfaction of the client

OBJECTIVE

The main objective of this report is to prepare the detailed engineering design of Chitaen Mahadev Mandir, Children Park, Picnic Spot. Also this assignment is to prepare a Master plan for conserving and enhancing the natural beauty of area, promoting this as a Technological Friendly Park to attract the tourists.

The specific objectives are as follows:

1.Carry out all the required surveys and investigations like topographical survey, and use secondary data of geo-technical investigation, soil investigation, hydro-geological investigation, meteorological investigation etc.;
2.Review existing legal frameworks and prepare Policy and Legal reform requirements.
3.Prepare the design criteria and carry out engineering design of various components as mentioned above Park facilities based on approved design criteria including civil, mechanical and electrical components based on best international / national practices;

- To conduct the detailed Survey of the area and find out the actual Shape and Size of the area covered as well as it's surrounding.

- To prepare detail landscape master plan of the Project Site along with the infrastructural management including Separate Parking Area, approach Foot trail from parking area to Temple along with children park and picnic spot with attactive entrance gate and at least one statue

- To prepare Maintenance plan with at least one meditation centre

- To prepare Park with seperate children park and ski spot, Picnic spots One information Centre, atleast five buildings
- To prepare DPR of basic infrastructure such as drinking water supply system, Waste management plan, beautification and lightening system
- To prepare a plan for conservation of Grazzing land with shed
- To prepare the Physical development Master plan of Project area.
- To prepare the tourism development master plan of the Project Area.
- To prepare the conservation plan of existing cultural, religious and historical places within the project area.
- To Prepare the Detailed Engineering design and Cost Estimate of at least 5(Five)Engineering Structure as per the prioritization noted by HM.

4. Design Chitaen Mahadev Mandir Area, Children Park, Picnic Spot
5.Design suitable structures to support the Mandir area, Children Park, Picnic Spot
6. Prepare engineering drawings and cost estimation;
7.Prepare site closure plan
8.Prepare Operation, management and Maintenance Plan
9.Prepare and propose Institutional Model for operation, maintenance and Environmental monitoring if necessary

SCOPE OF WORKS

The Consultant will, under these Times of Reference (TOR) carry out activities and deliver services and documents as follows:

1. Consultant shall conduct Topographic survey and preparation of topographical map.

2.Preparation of Master Plan of Project area minimizing both environmental impacts and project costs adding greater value to the site.

All the structures that had been designed shall be located in the site. The requirement shall be finalized through the close consultation with the client. The master plan shall be environment friendly minimizing the maximum change in the existing land slope. Preliminary master plan shall be finalized with client before preparing the detail design.

3.Collection of baseline data of annual tourist visti and prepare effective plan to increase the stay of tourist in Haripur.

social and cultural aspects of the temple and area data shall be explored, collected and prepare promoting plan for increasing the stay of tourist.

4.Preparation of schematic landscape plan of the Temple area.

After the finalization of preliminary master plan, schematic landscape plan along with the connections and other supplementary infrastructure shall be planned.

5.Preparation of detail Physical infrastructure development plan along with detail cost estimate of at least Four structure.

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After the preparation of schematic landscape plan, for the construction of project, detail land development plan shall be prepared. Cost estimates of the detail land development shall be made based on district rates and market rates, i.e. expected cost accompanied by rate analysis for major work items for both type of rates in terms of labour, material, equipment and including a contingency provision of 4% and value added Tax (VAT)

6. The site plan of the proposed design program has to be prepared responding to the local site conditions and features after visiting the proposed site.

7.Preparation of conceptual Structural, architectural design of the mandir,Park, picnic spot along with related facilities and landscape design.

8.Preparation of detailed Structural, architectural working drawings, detailed cost and quantity estimate, bill of quantities (BOQ) with specification.

9.Preparation of 3-D modelling without minute details.

STUDY METHOD

Field work and study: A preliminary site visit consisting of the Core Team members shall be carried out by the design team with a view of enabling team members to observe and document firsthand information regarding the existing condition of the site.

Primary data collection mainly includes the observation at site and discussions with the concerned officials for the identification of the practical criteria needed in the site. The existing physical infrastructure shall be primarily collected and the socio-cultural context of the area shall also be collected primarily.

Reconnaissance survey: Shall be done by the consultant in coordination with the rural municipality for the extensive field visit study and survey of an entire area that might be used for development as tourism development master plan Chitaen Mahadev mandir. Its purpose is to eliminate those routes or sites which are impractical or unfeasible and to identify the more promising routes or sites. Existing maps and aerial photographs may also be of great help.

Detailed Topographic Survey : Shall be done by the consultant after finding out the territory of the Site. Total Station shall be used for conducting the topographical Survey of the area and at least two permanent benchmark shall be establish by constructing the concrete monuments. At least 40m buffer area shall be included from the existing boundary of Project Site for preparation of Master plan of surroundings. The other cultural and heritage sites nearby the project area which has the greater importance shall also be included in survey.

Preparation of Existing topographical Map: After conducting the topographical Survey of the area, topographical map shall be prepared and printed in A1 Size paper. Boundary of Project Area, Contour of existing landscape, catchment area and existing structures along with existing trees having girth size more than 20cm shall be shown in Topographical Map.

Preparation of Conceptual Master Plan: Playing with the prepared topographical map , collected existing data and keeping in mind the demands of municipal officials and stakeholders of the municipality the conceptual master plan of the area shall be prepared. In preparing the conceptual master plan of area the minimization of the environmental impact after the development and conservation of existing natural beauty shall be considered as a prime importance.

Topographical Survey of Proposed Sites: The team shall conduct Engineering Survey at the site for determining the topography of the building site. Topographical survey shall be conducted with Total Station for the greater accuracy. The survey shall be performed to produce the map of 1:1000 scale and 1m contour interval. All features of the land shall be detailed out in the field. The Consultant shall use the digital terrain modeling or Land Development software, which includes the generation of the cross sections from the survey data.

Topographical survey shall be carried out around the proposed site to show necessary details for design and to prepare plans. The density of survey points shall be at least 1 point per 25 square meters. The survey shall be carried out by tachometric method. It shall provide topographic details as well as the reduce levels. It shall produce the data for preparing topographic map. The Topographic map shall show the following:

- Contours at 1m intervals.
- Govt. and/or public establishments
- Traverse lines, benchmarks reference lines and/or points with respect to which the present topomap is prepared.
- Other information relevant to design, construction and/or maintenance of the building block.

Assessment on Existing Situation of Project Site: The existing condition in the study area shall be observed in detail.

- Identifying suitable electric supply point (constant supply of electricity is must in the case of public building)
- Identifying the economical, suitable and adequate water supply point (water demand will be more)
- Identifying the proper outlet sewer (Environment hazard will be less)
- The Team shall conduct Market Survey near the site for
    - Determining the availability of required construction material and their market rate (Rate analysis)
    - Determining the availability of local construction material and their suitability in building (Promoting locally available construction material and accessories)
    - Determining the labor cost, land revenue cost, transportation cost (for Preparing bidding document for construction)
    - Determining the market survey for the assessment of requirement of the function that can be used in the site area.

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Conceptual Master Planning: The space requirements for the master plan and design shall be calculated through various activities: meetings and study of norms. The team shall have interaction municipal personnel and supporting staff, directly or indirectly affecting the Client. A master plan will be prepared with the space allocations.

Architectural Design and Working Drawings: Architectural Design shall be based on the common practices, Nepal Building Code; NBC 106:2003, the concept of the building finalized through discussion shall be detailed. Later, the final architecture design together with its working drawings shall be submitted to CLIENT. 3D modeling will be prepared after the finalization of conceptual plan. The Architectural drawings shall comprise the 3D rendered drawing.

All design works shall be in compliance with Nepal National Building Code (NBC), 2060. The concept of the building shall be prepared in close coordination with the expert designated by Client from the beginning of the project period. The consultant shall visit the site for finalizing the site-specific design. The consultant in consultation with the Client and related organizations shall prepare detailed architectural design and drawings of the buildings. The architectural details shall be in compliance with NBC 106:2003 regarding the provisions for physically disabled people. The consultant shall prepare architectural design drawing(1:100)and detailed architectural and engineering working drawings acceptable to Client, in suitable and presentable scales (working drawing in 1:50 and other details in the range of 1:5 to l:20). The elevation, the floor-wise plan, the plan and overall perspective plan of the complex shall be prepared in standard scale.

Preparation of Detailed Land development, conservation and Tourism development Master Plan: After the finalization of the alteration and modification of the conceptual plan, the final land development master plan of the area shall be prepared. Conceptual Sectional details of the structures proposed in master plan shall be shown in individual drawings in standard scale

Preparation of Technical Specification: The consultant shall prepare the Technical Specification based on civil design which shall in turn base on approved concept of Architectural design. The specification of construction materials shall meet the standard requirements of Nepal Bureau of Standard and/or ISO Standard. The technical specification shall be approved by Client before detailed cost estimation made of the project.

Detail Estimate, Rate Analysis and BoQ: Quantity of each item shall be calculated using spreadsheet. The Rate Analysis for the estimate purpose shall be based on GoN Norms for Rate Analysis. The unit rates shall be adopted for current fiscal year as well as prevailing market rates. Based on the approved technical specification from Client, the consultant shall prepare detailed cost estimates for civil works of the project. This includes the estimation or calculation of the quantities required and expenditure likely to be incurred in the construction of a work.

Submission of Final Report:

The final master plan report along with maps , Detailed design and drawings of prescribed structures and detailed Cost estimate report shall be submitted to the Haripur Municipality, Sarlahi.

2. To prepare a Structure design, Electrical design, sanitary design & drawings to the satisfaction of the client

OBJECTIVE

The main objective of the assignment is to prepare a Structure design, Electrical design, sanitary design &drawings to the satisfaction of the client which is safe against earthquake, economical, aesthetical, and affordable with low maintenance cost and environmental friendly. The specific objectives are as follow:

Carry out detailed Structure design, Electrical design, sanitary design &drawings of the proposed structures in compliance with prevailing standards and Nepal National Building Code (NNBC), 2060

SCOPE OF WORKS

The Consultant will, under these Times of Reference (TOR) carry out activities and deliver services and documents as follows:

1. To prepare the detailed structural, electrical and sanitary design and prepare the working drawings for the same.
2. To prepare the detailed quantity estimate prepare Bill of quantities, abstract of quantities, abstract of cost of structural, electrical and sanitary systems.
3. To prepare the Specification and Bidding Document as per public procurement Act 2063, public procurement Regulation 2064 and public procurement Monitoring office Detective

STUDY METHOD

Structural analysis and Working Drawings: Based on the approved Architectural design, Structural analysis shall be done to design safe, economic, stable, efficient structures which then shall safe guard the lives of the people in the state of earthquake disasters. While designing a structure great emphasis shall be given for seismic analysis, as natural disasters like earthquake on perspective of Nepal have been a great catastrophe on existence as well as wealth due to worst scenario it can create. The analysis of the structure shall be done in the most realistic approach with the help of standard engineering software and its design shall be fully compliance with various stipulations of Standard code of practice like Nepal National Building Code; Seismic Design of Building in Nepal (NBC 105), Code of Practice for Plain and Reinforced Concrete I.S. 456-2000, HANDBOOK ON CONCRETE REINFORCEMENT AND DETAILING; SP34 and Criteria Earthquake Resistant Design Structures I.S:1893:2002.

Electricity Supply and Telecommunication design and drawings: All electrical and Telecommunication design related to this Project shall be carried out with the highest degree of

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technical quality and workmanship accepted for this category of work. Special attention shall be given to rigorous application of safety codes and accepted practices so that with the completed works, operation of electrical services may add to the overall efficiency of functions to be performed within the premises without in any way detracting from the safety aspects required within the premises.

Sanitary design and drawings: The design of plumbing and sanitation for building need special attention. For common toilets, pour flush system shall be considered for cultural and other reasons (low water consumption, less chance of breakage's, simplicity in cleaning and maintaining etc.). Selection of floor and wall finishing shall take into account the cleaning and maintenance requirements. This shall be given topmost priority because of the need of the high degree of cleanliness. Water Supply system will have GI pipes and waste pipes may be of HDP (high density polythene) which is economical and easy to maintain.

Preparation of Technical Specification: The consultant shall prepare the Technical Specification based on civil design which shall in turn base on approved concept of Architectural design. The specification of construction materials shall meet the standard requirements of Nepal Bureau of Standard and/or ISO Standard. The technical specification shall be approved by Client before detailed cost estimation made of the project.

Detail Estimate, Rate Analysis and BoQ: Quantity of each item shall be calculated using spreadsheet. The Rate Analysis for the estimate purpose shall be based on GoN Norms for Rate Analysis. The unit rates shall be adopted for current fiscal year as well as prevailing market rates. Based on the approved technical specification from Client, the consultant shall prepare detailed cost estimates for civil works of the project. This includes the estimation or calculation of the quantities required and expenditure likely to be incurred in the construction of a work.

Preparation of Bidding Document: Procurement of works under projects shall be developed in corset with the client. Public Procurement Act 2063, public procurement Regulation 2064 and Public shall be followed to develop conditions of Contract. Bid documents prepared shall respond to the specific technical requirements to ensure materials quality and integrity of works for, the prospective contractor. All contractors preparing the bid need specific guidance with respect to the quality requirement form the technical specification to enable them to prepare their bids competitively on equal footing. Prepared specification and other information shall take special note of this requirement.

B. REPORT WRITING

Details of each Task has been described below

Draft Report: One copy of draft design Report shall be submitted within 4 weeks from the issuing date of work order. Contents of the report shall be approved by the client, which is expected to include largely completed tasks as follows.

- Field work and the topography map of the site
- Design and detail drawings
- Technical Specification, Detail Estimate, Rate Analysis and BoQ

Final Report: Three copies of final report and drawings along with two digital soft copies shall be submitted to the client after 90 days from the date of signing of agreement. The report shall incorporate all the feedbacks received on the draft final report. Normally, comment shall be given in written within 1 week after comments of the draft final report.

All reports shall be prepared in English and system of measurement shall be in the metric system except otherwise mentioned. All report except drawings shall be in A4 size paper.

Scales and sizes of the drawings shall be agreed upon between the consultant and municipal at the beginning of the conceptual planning stage. Preference shall be given to A3 and A2 size. Scale of the drawing shall be as follows:

- Plan, section, elevation-1:100
- Details-1:25, 1:10, 1:5 (as per the requirement of the detail)
- Site Plan-1:200
- Site plan of the whole site-1:500

All reports shall be prepared in English and system of measurement shall be in the metric system except otherwise mentioned. All report except drawings shall be in A4 size paper.

Scales and sizes of the drawings shall be agreed upon between the consultant and municipal at the beginning of the conceptual planning stage. Preference shall be given to A3 and A2 size.

Detail Structural design and drawings in A3 size format

- Structural Model
- Structural report including design philosophy, design parameters, load calculations, calculation and design of structural component like slab, foundation, staircase, shear wall , lift etc.
- Detailed drawing of foundation (Isolated , combined or raft/ pile if necessary)
- Column layout plans, column details
- Beam – column junction details
- Vertical section along column showing lap and joint details
- Lift and other shear wall detail drawing
- Water Tank detail and drawing
- Tie Beam, foundation Beam, Toe wall , sill Band and Lintel Band detail working
- Beam Layout Plan
- Beam Sections
- Slab Reinforcement Details (Plan and Section)
- Staircase Details

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- Other Roofing like Truss details if required.
- Expansion/ Construction Joint Details
- Ramp drawing and details
- Other necessary details if required

Detailed Electrical Design/Acoustic and Drawings

- Lighting layout plan
- Power layout plan
- Telecommunication layout plan
- Power backup system plan
- Sound System plan
- AC unit plan
- Lightening arrester and earthing detail
- Main distribution and distribution board design
- Specify the standard dimension and position for the placement of the switches, plug sockets, height hanging light or wall light.
- Provide catalogue or picture of any fixture and fittings that has been recommended.
- Design report must indicate the designed illumination levels with load calculation for each rooms.

Detailed Sanitary Design and Drawings

- Soil and waste pipe layout plan (specifying required slope)
- Hot water and cold water layout plan
- Rain water harvesting plan and details
- Section details of piping at the critical locations such as ducts, bends etc.
- Isometric illustrations for the piping
- Toilets and other sanitary fixtures layout plan
- Blowup sections showing fixtures specifying height from the floor and floor slopes.
- Septic tank and soak pit details with design calculations
- Storm water flow in site plan
- Specify precautions or instruction if any

Geotechnical investigation

Introduction

Geotechnical investigation is conducted for the estimation of the soil physical properties of an area. The data obtained from the geotechnical exploration and laboratory test shall be analyzed and interpreted concerning the existing site conditions and the proposed constructions type, in order to determine the various design parameters such as the safe bearing pressure. The result of the investigation shall lead to the selection of most optimal type and depth of the foundation. It shall also determine the possibilities and limitations of boring/ drilling in the area.

OBJECTIVES

The main objective of this investigation is to explore geotechnical characteristics of the sub–soil strata.

- to assess the engineering/physical properties of the sub-soil
- to ascertain bearing capacity of the ground strata for foundation design

Scope of work

The scope of work includes soil investigation of 5 boreholes along the proposed building construction Site, each of 12.0m depths, with retrieving samples from the boreholes and evaluation of allowable bearing capacities of the foundation based on field and laboratory test results.

STUDY METHOD

After the review of the objectives and the scope of work as specified, the consultant shall be prepared the following methodology in order to successfully accomplish the given project in the stipulated time. The study method has been divided into activities which have been described below.

Desk Study

This is an initial phase and includes collection of preliminary data. The required and available document such as design map, topographic map, location of site in Google map shall be collected from the client.

Site Preparation and Inspection

Before moving to the soil investigation work at field level all the necessary tools shall be well arranged and checked whether the machine is in good condition or not. At the field inspection time status of site clearance, logistic facilities availability shall be noted.

Field Works

Chief Administrative Officer

Work Schedule

The work shall be completed within 90 days from the date of agreement. The consultant is thus instructed to follow the work schedule below.

S No	Work Description	No. of months
1	Desk study, preparation of secondary data collection, preparation of check list	0.2
2	Drilling work in Site	0.30
3	Laboratory Test and analysis	0.50
3	Submission of Lab Test Report (After Agreement)	1.0
4	Submission of Draft Report [(including Building Drawing), From Date of Agreement]	2.0
4	Submission of final report (After Submission of Draft Report)	1.0

Personnel Requirements

The consultant should establish and manage a work team comprising following professional and resources personnel to accomplish the assignment.

C. Personnel Requirements

No.	Proposed Personnel	Man Month	Qualification & Work Experience
	Team Leader (Urban planner)	1.5	MSC in Urban Planning with minimum 10 years experience
	Tourism Expert	.25	MSC in Anthropology/Tourism with minimum 10 years experience
	Structure Engineer	1	MSC/ME in structural Engineering with minimum 5 years experience
	Geotechnical Engineer	.25	MSC in Geotechnical Engineering with minimum 5 years experience
	Enviromentalist	.25	ME in Enviromental Engineering with minimum 5 years

			experience
	Civil Engineer	.75	BE in civil Engineering with minimum 5 years experience
	Water Supply and Sanitary Engineer	.25	BE in related field with 5 years experience
	Electrical Engineer	.25	BE in related field with 5 years experience
	Architect	.5	BE in Architecture Engineer with 5 years experience
	Computer Operator	2	
	Surveyor	1	Diploma /BE in civil Engineer
	Helper	3	
	Draft Person	1	
	Supervisor	3	

D. Payment Schedule

Payments will be made upon the submission of Consultant's invoices according to the following schedule:

Mode of Payment	Percentage
First instalment after the submission of Inception Report	30
Second instalment upon the submission of Draft Report	50
Third instalment upon the submission of final report	20

Chief Administrative Officer

Terms of Reference

Terms of Reference (ToR) for Preparation of Feasibility Study, Detailed Engineering Survey, Geotechnical Investigation, Enviromental Analysis, Detailed Architectural, structural, Electrical, sanitary, Landscape design, working drawing and Design and Preparation of Religious, Cultural and Tourism Masterplan of Hariyar Mai Than Area with Detailed Drawings and Estimate

INTRODUCTION

E. OBJECTIVE, SCOPE OF WORKS AND STUDY METHODS

3. To prepare a conceptual Structural, architectural design to the satisfaction of the client

OBJECTIVE

The main objective of this report is to prepare the detailed engineering design of Hariyar Mai Than Area . Also this assignment is to prepare a Master plan for conserving and enhancing the natural beauty of area, promoting this as a Technological Friendly Park to attract the tourists.

The specific objectives are as follows:

1.Carry out all the required surveys and investigations like topographical survey, and use secondary data of geo-technical investigation, soil investigation, hydro-geological investigation, meteorological investigation etc.;

2.Review existing legal frameworks and prepare Policy and Legal reform requirements.

3.Prepare the design criteria and carry out engineering design of various components as mentioned above Park facilities based on approved design criteria including civil, mechanical and electrical components based on best international / national practices;

- To conduct the detailed Survey of the area and find out the actual Shape and Size of the area covered as well as it's surrounding.

- To prepare detail landscape master plan of the Project Site along with the infrastructural management including Separate Parking Area, approach Foot trail

connecting all the Valued area within

- To prepare Maintenance plan with at least one meditation centre

Chief Administrative Officer

- To prepare Park with Attractive entrance Gate with seperate children park, Statue of Gautam Buddha and ski spot, Picnic spots ,One information Centre, at least five community buildings

- To prepare DPR of basic infrastructure such as drinking water supply system, Waste management plan, beautification and lightening system

- To prepare a plan for conservation of Grazzing land with shed

- To prepare the Physical development Master plan of Project area.

- To prepare the tourism development master plan of the Project Area.

- To prepare the conservation plan of existing cultural, religious and historical places within the project area.

- To Prepare the Detailed Engineering design and Cost Estimate of at least 5(Five)Engineering Structure as per the prioritization noted by HM.

4. Design of various structure within Hariyar Mai Than Area
5.Design suitable structures to support the Park
6. Prepare engineering drawings and cost estimation;
7.Prepare site closure plan
8.Prepare Operation, management and Maintenance Plan
9.Prepare and propose Institutional Model for operation, maintenance and Environmental monitoring if necessary

SCOPE OF WORKS

The Consultant will, under these Times of Reference (TOR) carry out activities and deliver services and documents as follows:

2. Consultant shall conduct Topographic survey and preparation of topographical map.

2.Preparation of Master Plan of Project area minimizing both environmental impacts and project costs adding greater value to the site.

All the structures that had been designed shall be located in the site. The requirement shall be finalized through the close consultation with the client. The master plan shall be environment friendly minimizing the maximum change in the existing land slope. Preliminary master plan shall be finalized with client before preparing the detail design.

3.Collection of baseline data of annual tourist visti and prepare effective plan to increase the stay of tourist in Haripur.

social and cultural aspects of the temple and area data shall be explored, collected and prepare promoting plan for increasing the stay of tourist.

4.Preparation of schematic landscape plan of the Temple area.

After the finalization of preliminary master plan, schematic landscape plan along with the connections and other supplementary infrastructure shall be planned.

5.Preparation of detail Physical infrastructure development plan along with detail cost estimate of at least Five structure.

After the preparation of schematic landscape plan, for the construction of project, detail land development plan shall be prepared. Cost estimates of the detail land development shall be made based on district rates and market rates, i.e. expected cost accompanied by rate analysis for major work items for both type of rates in terms of labour, material, equipment and including a contingency provision of 4% and value added Tax (VAT)

6. The site plan of the proposed design program has to be prepared responding to the local site conditions and features after visiting the proposed site.

7.Preparation of conceptual Structural, architectural design of the area along with related facilities and landscape design.

8.Preparation of detailed Structural, architectural working drawings, detailed cost and quantity estimate, bill of quantities (BOQ) with specification.

9.Preparation of 3-D modelling without minute details.

STUDY METHOD

Field work and study: A preliminary site visit consisting of the Core Team members shall be carried out by the design team with a view of enabling team members to observe and document firsthand information regarding the existing condition of the site.

Primary data collection mainly includes the observation at site and discussions with the concerned officials for the identification of the practical criteria needed in the site. The existing physical infrastructure shall be primarily collected and the socio-cultural context of the area shall also be collected primarily.

Reconnaissance survey: Shall be done by the consultant in coordination with the rural municipality for the extensive field visit study and survey of an entire area that might be used for development as tourism development master plan Hariyar Mai Than Area. Its purpose is to eliminate those routes or sites which are impractical or unfeasible and to identify the more promising routes or sites. Existing maps and aerial photographs may also be of great help.

Detailed Topographic Survey : Shall be done by the consultant after finding out the territory of the Site. Total Station shall be used for conducting the topographical Survey of the area and at least two permanent benchmark shall be establish by constructing the concrete monuments. At least 40m buffer area shall be included from the existing boundary of Project Site for preparation of Master plan of surroundings. The other cultural and heritage sites nearby the project area which has the greater importance shall also be included in survey.

Preparation of Existing topographical Map: After conducting the topographical Survey of the area, topographical map shall be prepared and printed in A1 Size paper. Boundary of Project Area, Contour of existing landscape, catchment area and existing structures along with existing trees having girth size more than 20cm shall be shown in Topographical Map.

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Preparation of Conceptual Master Plan: Playing with the prepared topographical map , collected existing data and keeping in mind the demands of municipal officials and stakeholders of the municipality the conceptual master plan of the area shall be prepared. In preparing the conceptual master plan of area the minimization of the environmental impact after the development and conservation of existing natural beauty shall be considered as a prime importance.

Topographical Survey of Proposed Sites: The team shall conduct Engineering Survey at the site for determining the topography of the building site. Topographical survey shall be conducted with Total Station for the greater accuracy. The survey shall be performed to produce the map of 1:1000 scale and 1m contour interval. All features of the land shall be detailed out in the field. The Consultant shall use the digital terrain modeling or Land Development software, which includes the generation of the cross sections from the survey data.

Topographical survey shall be carried out around the proposed site to show necessary details for design and to prepare plans. The density of survey points shall be at least 1 point per 25 square meters. The survey shall be carried out by tachometric method. It shall provide topographic details as well as the reduce levels. It shall produce the data for preparing topographic map. The Topographic map shall show the following:

- Contours at 1m intervals.
- Govt. and/or public establishments
- Traverse lines, benchmarks reference lines and/or points with respect to which the present topomap is prepared.
- Other information relevant to design, construction and/or maintenance of the building block.

Assessment on Existing Situation of Project Site: The existing condition in the study area shall be observed in detail.

- Identifying suitable electric supply point (constant supply of electricity is must in the case of public building)
- Identifying the economical, suitable and adequate water supply point (water demand will be more)
- Identifying the proper outlet sewer (Environment hazard will be less)
- The Team shall conduct Market Survey near the site for
    - Determining the availability of required construction material and their market rate (Rate analysis)
    - Determining the availability of local construction material and their suitability in building (Promoting locally available construction material and accessories)
    - Determining the labor cost, land revenue cost, transportation cost (for Preparing bidding document for construction)
    - Determining the market survey for the assessment of requirement of the function that can be used in the site area.

Conceptual Master Planning: The space requirements for the master plan and design shall be calculated through various activities: meetings and study of norms. The team shall have interaction municipal personnel and supporting staff, directly or indirectly affecting the Client. A master plan will be prepared with the space allocations.

Architectural Design and Working Drawings: Architectural Design shall be based on the common practices, Nepal Building Code; NBC 106:2003, the concept of the building finalized through discussion shall be detailed. Later, the final architecture design together with its working drawings shall be submitted to CLIENT. 3D modeling will be prepared after the finalization of conceptual plan. The Architectural drawings shall comprise the 3D rendered drawing.

All design works shall be in compliance with Nepal National Building Code (NBC), 2060. The concept of the building shall be prepared in close coordination with the expert designated by Client from the beginning of the project period. The consultant shall visit the site for finalizing the site-specific design. The consultant in consultation with the Client and related organizations shall prepare detailed architectural design and drawings of the buildings. The architectural details shall be in compliance with NBC 106:2003 regarding the provisions for physically disabled people. The consultant shall prepare architectural design drawing(1:100)and detailed architectural and engineering working drawings acceptable to Client, in suitable and presentable scales (working drawing in 1:50 and other details in the range of 1:5 to l:20). The elevation, the floor-wise plan, the plan and overall perspective plan of the complex shall be prepared in standard scale.

Preparation of Detailed Land development, conservation and Tourism development Master Plan: After the finalization of the alteration and modification of the conceptual plan, the final land development master plan of the area shall be prepared. Conceptual Sectional details of the structures proposed in master plan shall be shown in individual drawings in standard scale

Preparation of Technical Specification: The consultant shall prepare the Technical Specification based on civil design which shall in turn base on approved concept of Architectural design. The specification of construction materials shall meet the standard requirements of Nepal Bureau of Standard and/or ISO Standard. The technical specification shall be approved by Client before detailed cost estimation made of the project.

Detail Estimate, Rate Analysis and BoQ: Quantity of each item shall be calculated using spreadsheet. The Rate Analysis for the estimate purpose shall be based on GoN Norms for Rate Analysis. The unit rates shall be adopted for current fiscal year as well as prevailing market rates. Based on the approved technical specification from Client, the consultant shall prepare detailed cost estimates for civil works of the project. This includes the estimation or calculation of the quantities required and expenditure likely to be incurred in the construction of a work.

Submission of Final Report:

Chief Administrative Officer

The final master plan report along with maps , Detailed design and drawings of prescribed structures and detailed Cost estimate report shall be submitted to the Haripur Municipality, Sarlahi.

4. To prepare a Structure design, Electrical design, sanitary design & drawings to the satisfaction of the client

OBJECTIVE

The main objective of the assignment is to prepare a Structure design, Electrical design, sanitary design &drawings to the satisfaction of the client which is safe against earthquake, economical, aesthetical, and affordable with low maintenance cost and environmental friendly. The specific objectives are as follow:

Carry out detailed Structure design, Electrical design, sanitary design &drawings of the proposed structures in compliance with prevailing standards and Nepal National Building Code (NNBC), 2060

SCOPE OF WORKS

The Consultant will, under these Times of Reference (TOR) carry out activities and deliver services and documents as follows:

4. To prepare the detailed structural, electrical and sanitary design and prepare the working drawings for the same.
5. To prepare the detailed quantity estimate prepare Bill of quantities, abstract of quantities, abstract of cost of structural, electrical and sanitary systems.
6. To prepare the Specification and Bidding Document as per public procurement Act 2063, public procurement Regulation 2064 and public procurement Monitoring office Detective

STUDY METHOD

Structural analysis and Working Drawings: Based on the approved Architectural design, Structural analysis shall be done to design safe, economic, stable, efficient structures which then shall safe guard the lives of the people in the state of earthquake disasters. While designing a structure great emphasis shall be given for seismic analysis, as natural disasters like earthquake on perspective of Nepal have been a great catastrophe on existence as well as wealth due to worst scenario it can create. The analysis of the structure shall be done in the most realistic approach with the help of standard engineering software and its design shall be fully compliance with various stipulations of Standard code of practice like Nepal National Building Code; Seismic Design of Building in Nepal (NBC 105), Code of Practice for Plain and Reinforced Concrete I.S. 456-2000, HANDBOOK ON CONCRETE REINFORCEMENT AND DETAILING; SP34 and Criteria Earthquake Resistant Design Structures I.S:1893:2002.

Electricity Supply and Telecommunication design and drawings: All electrical and Telecommunication design related to this Project shall be carried out with the highest degree of technical quality and workmanship accepted for this category of work. Special attention shall be

given to rigorous application of safety codes and accepted practices so that with the completed works, operation of electrical services may add to the overall efficiency of functions to be performed within the premises without in any way detracting from the safety aspects required within the premises.

Sanitary design and drawings: The design of plumbing and sanitation for building need special attention. For common toilets, pour flush system shall be considered for cultural and other reasons (low water consumption, less chance of breakage's, simplicity in cleaning and maintaining etc.). Selection of floor and wall finishing shall take into account the cleaning and maintenance requirements. This shall be given topmost priority because of the need of the high degree of cleanliness. Water Supply system will have GI pipes and waste pipes may be of HDP (high density polythene) which is economical and easy to maintain.

Preparation of Technical Specification: The consultant shall prepare the Technical Specification based on civil design which shall in turn base on approved concept of Architectural design. The specification of construction materials shall meet the standard requirements of Nepal Bureau of Standard and/or ISO Standard. The technical specification shall be approved by Client before detailed cost estimation made of the project.

Detail Estimate, Rate Analysis and BoQ: Quantity of each item shall be calculated using spreadsheet. The Rate Analysis for the estimate purpose shall be based on GoN Norms for Rate Analysis. The unit rates shall be adopted for current fiscal year as well as prevailing market rates. Based on the approved technical specification from Client, the consultant shall prepare detailed cost estimates for civil works of the project. This includes the estimation or calculation of the quantities required and expenditure likely to be incurred in the construction of a work.

Preparation of Bidding Document: Procurement of works under projects shall be developed in corset with the client. Public Procurement Act 2063, public procurement Regulation 2064 and Public shall be followed to develop conditions of Contract. Bid documents prepared shall respond to the specific technical requirements to ensure materials quality and integrity of works for, the prospective contractor. All contractors preparing the bid need specific guidance with respect to the quality requirement form the technical specification to enable them to prepare their bids competitively on equal footing. Prepared specification and other information shall take special note of this requirement.

F. REPORT WRITING

Details of each Task has been described below

Draft Report: One copy of draft design Report shall be submitted within 4 weeks from the issuing date of work order. Contents of the report shall be approved by the client, which is expected to include largely completed tasks as follows.

- Field work and the topography map of the site
- Design and detail drawings
- Technical Specification, Detail Estimate, Rate Analysis and BoQ

Final Report: Three copies of final report and drawings along with two digital soft copies shall be submitted to the client after 90 days from the date of signing of agreement. The report shall incorporate all the feedbacks received on the draft final report. Normally, comment shall be given in written within 1 week after comments of the draft final report.

All reports shall be prepared in English and system of measurement shall be in the metric system except otherwise mentioned. All report except drawings shall be in A4 size paper.

Scales and sizes of the drawings shall be agreed upon between the consultant and municipal at the beginning of the conceptual planning stage. Preference shall be given to A3 and A2 size. Scale of the drawing shall be as follows:

- Plan, section, elevation-1:100
- Details-1:25, 1:10, 1:5 (as per the requirement of the detail)
- Site Plan-1:200
- Site plan of the whole site-1:500

All reports shall be prepared in English and system of measurement shall be in the metric system except otherwise mentioned. All report except drawings shall be in A4 size paper.

Scales and sizes of the drawings shall be agreed upon between the consultant and municipal at the beginning of the conceptual planning stage. Preference shall be given to A3 and A2 size.

Detail Structural design and drawings in A3 size format

- Structural Model
- Structural report including design philosophy, design parameters, load calculations, calculation and design of structural component like slab, foundation, staircase, shear wall , lift etc.
- Detailed drawing of foundation (Isolated , combined or raft/ pile if necessary)
- Column layout plans, column details
- Beam – column junction details
- Vertical section along column showing lap and joint details
- Lift and other shear wall detail drawing
- Water Tank detail and drawing
- Tie Beam, foundation Beam, Toe wall , sill Band and Lintel Band detail working
- Beam Layout Plan
- Beam Sections
- Slab Reinforcement Details (Plan and Section)
- Staircase Details
- Other Roofing like Truss details if required.

- Expansion/ Construction Joint Details
- Ramp drawing and details
- Other necessary details if required

Detailed Electrical Design/Acoustic and Drawings

- Lighting layout plan
- Power layout plan
- Telecommunication layout plan
- Power backup system plan
- Sound System plan
- AC unit plan
- Lightening arrester and earthing detail
- Main distribution and distribution board design
- Specify the standard dimension and position for the placement of the switches, plug sockets, height hanging light or wall light.
- Provide catalogue or picture of any fixture and fittings that has been recommended.
- Design report must indicate the designed illumination levels with load calculation for each rooms.

Detailed Sanitary Design and Drawings

- Soil and waste pipe layout plan (specifying required slope)
- Hot water and cold water layout plan
- Rain water harvesting plan and details
- Section details of piping at the critical locations such as ducts, bends etc.
- Isometric illustrations for the piping
- Toilets and other sanitary fixtures layout plan
- Blowup sections showing fixtures specifying height from the floor and floor slopes.
- Septic tank and soak pit details with design calculations
- Storm water flow in site plan
- Specify precautions or instruction if any

Geotechnical investigation

Introduction

Geotechnical investigation is conducted for the estimation of the soil physical properties of an area. The data obtained from the geotechnical exploration and laboratory test shall be analyzed and interpreted concerning the existing site conditions and the proposed constructions type, in order to determine the various design parameters such as the safe bearing pressure. The result of the investigation shall lead to the selection of most optimal type and depth of the foundation. It shall also determine the possibilities and limitations of boring/ drilling in the area.

OBJECTIVES

The main objective of this investigation is to explore geotechnical characteristics of the sub–soil strata.

- to assess the engineering/physical properties of the sub-soil
- to ascertain bearing capacity of the ground strata for foundation design

Scope of work

The scope of work includes soil investigation of 5 boreholes along the proposed building construction Site, each of 12.0m depths, with retrieving samples from the boreholes and evaluation of allowable bearing capacities of the foundation based on field and laboratory test results.

STUDY METHOD

After the review of the objectives and the scope of work as specified, the consultant shall be prepared the following methodology in order to successfully accomplish the given project in the stipulated time. The study method has been divided into activities which have been described below.

Desk Study

This is an initial phase and includes collection of preliminary data. The required and available document such as design map, topographic map, location of site in Google map shall be collected from the client.

Site Preparation and Inspection

Before moving to the soil investigation work at field level all the necessary tools shall be well arranged and checked whether the machine is in good condition or not. At the field inspection time status of site clearance, logistic facilities availability shall be noted.

Field Works

Work Schedule

The work shall be completed within 90 days from the date of agreement. The consultant is thus instructed to follow the work schedule below.

S No	Work Description	No. of months
1	Desk study, preparation of secondary data collection, preparation of check list	0.2
2	Drilling work in Site	0.30
3	Laboratory Test and analysis	0.50
3	Submission of Lab Test Report (After Agreement)	1.0
4	Submission of Draft Report [(including Building Drawing), From Date of Agreement]	2.0
4	Submission of final report (After Submission of Draft Report)	1.0

Personnel Requirements

The consultant should establish and manage a work team comprising following professional and resources personnel to accomplish the assignment.

G. Personnel Requirements

No.	Proposed Personnel	Man Month	Qualification & Work Experience
	Team Leader (Urban planner)	1.5	MSC in Urban Planning with minimum 10 years experience
	Tourism Expert	.25	MSC in Anthropology/Tourism with minimum 10 years experience
	Structure Engineer	1	MSC/ME in structural Engineering with minimum 5 years experience
	Geotechnical Engineer	.25	MSC in Geotechnical Engineering with minimum 5 years experience

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	Enviromentalist	.25	ME in Enviromental Engineering with minimum 5 years experience
	Civil Engineer	.75	BE in civil Engineering with minimum 5 years experience
	Water Supply and Sanitary Engineer	.25	BE in related field with 5 years experience
	Electrical Engineer	.25	BE in related field with 5 years experience
	Architect	.75	BE in Architecture Engineer with 5 years experience
	Computer Operator	2	
	Surveyor	1	Diploma /BE in civil Engineer
	Helper	3	
	Draft Person	1	
	Supervisor	3	

H. Payment Schedule

Payments will be made upon the submission of Consultant's invoices according to the following schedule:

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First instalment after the submission of Inception Report	30
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Terms of Reference

Terms of Reference (ToR) for Preparation of Feasibility Study, Detailed Engineering Survey, Geotechnical Investigation, Detailed Architectural, structural, Electrical, sanitary, Landscape design, working drawing and Design and Preparation of Religious, Cultural and Tourism Masterplan of Gadhimai Area with Detailed Drawings and Estimate

INTRODUCTION

I. OBJECTIVE, SCOPE OF WORKS AND STUDY METHODS

5. To prepare a conceptual Structural, architectural design to the satisfaction of the client

OBJECTIVE

The main objective of this report is to prepare the detailed engineering design of Gadhimai Area . Also this assignment is to prepare a Master plan for conserving and enhancing the natural beauty of area, promoting this as a Technological Friendly Park to attract the tourists.

The specific objectives are as follows:

1.Carry out all the required surveys and investigations like topographical survey, and use secondary data of geo-technical investigation, soil investigation, hydro-geological investigation, meteorological investigation etc.;
2.Review existing legal frameworks and prepare Policy and Legal reform requirements.
3.Prepare the design criteria and carry out engineering design of various components as mentioned above Park facilities based on approved design criteria including civil, mechanical and electrical components based on best international / national practices;

- To conduct the detailed Survey of the area and find out the actual Shape and Size of the area covered as well as it's surrounding.

- To prepare detail landscape master plan of the Project Site along with the

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infrastructural management including Temple, Separate Parking Area, approach Foot trail connecting all the Valued area within, and attractive entrance gate

- To prepare Maintenance plan with at least one meditation centre

- To prepare Park with Attractive entrance Gate with seperate children park, at least one Statue and ski spot, Picnic spots ,One information Centre, at least four community buildings

- To prepare DPR of basic infrastructure such as drinking water supply system, Waste management plan, beautification and lightening system

- To prepare a plan for conservation of Grazzing land with shed

- To prepare the Physical development Master plan of Project area.

- To prepare the tourism development master plan of the Project Area.

- To prepare the conservation plan of existing cultural, religious and historical places within the project area.

- To Prepare the Detailed Engineering design and Cost Estimate of at least 4(Four)Engineering Structure as per the prioritization noted by HM.

4. Design of various structure within Gadhimai Area
5.Design suitable structures to support the Park
6. Prepare engineering drawings and cost estimation;
7.Prepare site closure plan
8.Prepare Operation, management and Maintenance Plan
9.Prepare and propose Institutional Model for operation, maintenance and Environmental monitoring if necessary

SCOPE OF WORKS

The Consultant will, under these Times of Reference (TOR) carry out activities and deliver services and documents as follows:

3. Consultant shall conduct Topographic survey and preparation of topographical map.

2.Preparation of Master Plan of Project area minimizing both environmental impacts and project costs adding greater value to the site.

All the structures that had been designed shall be located in the site. The requirement shall be finalized through the close consultation with the client. The master plan shall be environment friendly minimizing the maximum change in the existing land slope. Preliminary master plan shall be finalized with client before preparing the detail design.

3.Collection of baseline data of annual tourist visit and prepare effective plan to increase the stay of tourist in Haripur.

social and cultural aspects of the temple and area data shall be explored, collected and prepare promoting plan for increasing the stay of tourist.

4.Preparation of schematic landscape plan of the Temple area.

After the finalization of preliminary master plan, schematic landscape plan along with the connections and other supplementary infrastructure shall be planned.

5.Preparation of detail Physical infrastructure development plan along with detail cost estimate of at least Five structure.

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After the preparation of schematic landscape plan, for the construction of project, detail land development plan shall be prepared. Cost estimates of the detail land development shall be made based on district rates and market rates, i.e. expected cost accompanied by rate analysis for major work items for both type of rates in terms of labour, material, equipment and including a contingency provision of 4% and value added Tax (VAT)

6. The site plan of the proposed design program has to be prepared responding to the local site conditions and features after visiting the proposed site.

7.Preparation of conceptual Structural, architectural design of the area along with related facilities and landscape design.

8.Preparation of detailed Structural, architectural working drawings, detailed cost and quantity estimate, bill of quantities (BOQ) with specification.

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Preparation of Conceptual Master Plan: Playing with the prepared topographical map , collected existing data and keeping in mind the demands of municipal officials and stakeholders of the municipality the conceptual master plan of the area shall be prepared. In preparing the conceptual master plan of area the minimization of the environmental impact after the development and conservation of existing natural beauty shall be considered as a prime importance.

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- Contours at 1m intervals.
- Govt. and/or public establishments
- Traverse lines, benchmarks reference lines and/or points with respect to which the present topomap is prepared.
- Other information relevant to design, construction and/or maintenance of the building block.

Assessment on Existing Situation of Project Site: The existing condition in the study area shall be observed in detail.

- Identifying suitable electric supply point (constant supply of electricity is must in the case of public building)
- Identifying the economical, suitable and adequate water supply point (water demand will be more)
- Identifying the proper outlet sewer (Environment hazard will be less)
- The Team shall conduct Market Survey near the site for

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- Determining the availability of required construction material and their market rate (Rate analysis)
- Determining the availability of local construction material and their suitability in building (Promoting locally available construction material and accessories)
- Determining the labor cost, land revenue cost, transportation cost (for Preparing bidding document for construction)
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Architectural Design and Working Drawings: Architectural Design shall be based on the common practices, Nepal Building Code; NBC 106:2003, the concept of the building finalized through discussion shall be detailed. Later, the final architecture design together with its working drawings shall be submitted to CLIENT. 3D modeling will be prepared after the finalization of conceptual plan. The Architectural drawings shall comprise the 3D rendered drawing.

All design works shall be in compliance with Nepal National Building Code (NBC), 2060. The concept of the building shall be prepared in close coordination with the expert designated by Client from the beginning of the project period. The consultant shall visit the site for finalizing the site- specific design. The consultant in consultation with the Client and related organizations shall prepare detailed architectural design and drawings of the buildings. The architectural details shall be in compliance with NBC 106:2003 regarding the provisions for physically disabled people. The consultant shall prepare architectural design drawing(1:100)and detailed architectural and engineering working drawings acceptable to Client, in suitable and presentable scales (working drawing in 1:50 and other details in the range of 1:5 to l:20). The elevation, the floor-wise plan, the plan and overall perspective plan of the complex shall be prepared in standard scale.

Preparation of Detailed Land development, conservation and Tourism development Master Plan: After the finalization of the alteration and modification of the conceptual plan, the final land development master plan of the area shall be prepared. Conceptual Sectional details of the structures proposed in master plan shall be shown in individual drawings in standard scale

Preparation of Technical Specification: The consultant shall prepare the Technical Specification based on civil design which shall in turn base on approved concept of Architectural design. The specification of construction materials shall meet the standard requirements of Nepal Bureau of Standard and/or ISO Standard. The technical specification shall be approved by Client before detailed cost estimation made of the project.

Detail Estimate, Rate Analysis and BoQ: Quantity of each item shall be calculated using spreadsheet. The Rate Analysis for the estimate purpose shall be based on GoN Norms for Rate Analysis. The unit rates shall be adopted for current fiscal year as well as prevailing market rates. Based on the approved technical specification from Client, the consultant shall prepare detailed cost estimates for civil works of the project. This includes the estimation or calculation of the quantities required and expenditure likely to be incurred in the construction of a work.

Submission of Final Report:

The final master plan report along with maps , Detailed design and drawings of prescribed structures and detailed Cost estimate report shall be submitted to the Haripur Municipality, Sarlahi.

6. To prepare a Structure design, Electrical design, sanitary design & drawings to the satisfaction of the client

OBJECTIVE

The main objective of the assignment is to prepare a Structure design, Electrical design, sanitary design &drawings to the satisfaction of the client which is safe against earthquake, economical, aesthetical, and affordable with low maintenance cost and environmental friendly. The specific objectives are as follow:

Carry out detailed Structure design, Electrical design, sanitary design &drawings of the proposed structures in compliance with prevailing standards and Nepal National Building Code (NNBC), 2060

SCOPE OF WORKS

The Consultant will, under these Times of Reference (TOR) carry out activities and deliver services and documents as follows:

7. To prepare the detailed structural, electrical and sanitary design and prepare the working drawings for the same.
8. To prepare the detailed quantity estimate prepare Bill of quantities, abstract of quantities, abstract of cost of structural, electrical and sanitary systems.
9. To prepare the Specification and Bidding Document as per public procurement Act 2063, public procurement Regulation 2064 and public procurement Monitoring office Detective

STUDY METHOD

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Structural analysis and Working Drawings: Based on the approved Architectural design, Structural analysis shall be done to design safe, economic, stable, efficient structures which then shall safe guard the lives of the people in the state of earthquake disasters. While designing a structure great emphasis shall be given for seismic analysis, as natural disasters like earthquake on perspective of Nepal have been a great catastrophe on existence as well as wealth due to worst scenario it can create. The analysis of the structure shall be done in the most realistic approach with the help of standard engineering software and its design shall be fully compliance with various stipulations of Standard code of practice like Nepal National Building Code; Seismic Design of Building in Nepal (NBC 105), Code of Practice for Plain and Reinforced Concrete I.S. 456-2000, HANDBOOK ON CONCRETE REINFORCEMENT AND DETAILING; SP34 and Criteria Earthquake Resistant Design Structures I.S:1893:2002.

Electricity Supply and Telecommunication design and drawings: All electrical and Telecommunication design related to this Project shall be carried out with the highest degree of technical quality and workmanship accepted for this category of work. Special attention shall be given to rigorous application of safety codes and accepted practices so that with the completed works, operation of electrical services may add to the overall efficiency of functions to be performed within the premises without in any way detracting from the safety aspects required within the premises.

Sanitary design and drawings: The design of plumbing and sanitation for building need special attention. For common toilets, pour flush system shall be considered for cultural and other reasons (low water consumption, less chance of breakage's, simplicity in cleaning and maintaining etc.). Selection of floor and wall finishing shall take into account the cleaning and maintenance requirements. This shall be given topmost priority because of the need of the high degree of cleanliness. Water Supply system will have GI pipes and waste pipes may be of HDP (high density polythene) which is economical and easy to maintain.

Preparation of Technical Specification: The consultant shall prepare the Technical Specification based on civil design which shall in turn base on approved concept of Architectural design. The specification of construction materials shall meet the standard requirements of Nepal Bureau of Standard and/or ISO Standard. The technical specification shall be approved by Client before detailed cost estimation made of the project.

Detail Estimate, Rate Analysis and BoQ: Quantity of each item shall be calculated using spreadsheet. The Rate Analysis for the estimate purpose shall be based on GoN Norms for Rate Analysis. The unit rates shall be adopted for current fiscal year as well as prevailing market rates. Based on the approved technical specification from Client, the consultant shall prepare detailed cost estimates for civil works of the project. This includes the estimation or calculation of the quantities required and expenditure likely to be incurred in the construction of a work.

Preparation of Bidding Document: Procurement of works under projects shall be developed in corset with the client. Public Procurement Act 2063, public procurement Regulation 2064 and Public shall be followed to develop conditions of Contract. Bid documents prepared shall respond to the specific technical requirements to ensure materials quality and integrity of works for, the prospective contractor. All contractors preparing the bid need specific guidance with respect to the quality requirement form the technical specification to enable them to prepare their bids competitively on equal footing. Prepared specification and other information shall take special note of this requirement.

J. REPORT WRITING

Details of each Task has been described below

Draft Report: One copy of draft design Report shall be submitted within 4 weeks from the issuing date of work order. Contents of the report shall be approved by the client, which is expected to include largely completed tasks as follows.

- Field work and the topography map of the site
- Design and detail drawings
- Technical Specification, Detail Estimate, Rate Analysis and BoQ

Final Report: Three copies of final report and drawings along with two digital soft copies shall be submitted to the client after 6 weeks from the date of signing of agreement. The report shall incorporate all the feedbacks received on the draft final report. Normally, comment shall be given in written within 1 week after comments of the draft final report.

All reports shall be prepared in English and system of measurement shall be in the metric system except otherwise mentioned. All report except drawings shall be in A4 size paper.

Scales and sizes of the drawings shall be agreed upon between the consultant and municipal at the beginning of the conceptual planning stage. Preference shall be given to A3 and A2 size. Scale of the drawing shall be as follows:

- Plan, section, elevation-1:100
- Details-1:25, 1:10, 1:5 (as per the requirement of the detail)
- Site Plan-1:200
- Site plan of the whole site-1:500

All reports shall be prepared in English and system of measurement shall be in the metric system except otherwise mentioned. All report except drawings shall be in A4 size paper.

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Scales and sizes of the drawings shall be agreed upon between the consultant and municipal at the beginning of the conceptual planning stage. Preference shall be given to A3 and A2 size.

Detail Structural design and drawings in A3 size format

- Structural Model
- Structural report including design philosophy, design parameters, load calculations, calculation and design of structural component like slab, foundation, staircase, shear wall , lift etc.
- Detailed drawing of foundation (Isolated , combined or raft/ pile if necessary)
- Column layout plans, column details
- Beam – column junction details
- Vertical section along column showing lap and joint details
- Lift and other shear wall detail drawing
- Water Tank detail and drawing
- Tie Beam, foundation Beam, Toe wall , sill Band and Lintel Band detail working
- Beam Layout Plan
- Beam Sections
- Slab Reinforcement Details (Plan and Section)
- Staircase Details
- Other Roofing like Truss details if required.
- Expansion/ Construction Joint Details
- Ramp drawing and details
- Other necessary details if required

Detailed Electrical Design/Acoustic and Drawings

- Lighting layout plan
- Power layout plan
- Telecommunication layout plan
- Power backup system plan
- Sound System plan
- AC unit plan
- Lightening arrester and earthing detail
- Main distribution and distribution board design
- Specify the standard dimension and position for the placement of the switches, plug sockets, height hanging light or wall light.
- Provide catalogue or picture of any fixture and fittings that has been recommended.
- Design report must indicate the designed illumination levels with load calculation for each rooms.

Detailed Sanitary Design and Drawings

- Soil and waste pipe layout plan (specifying required slope)
- Hot water and cold water layout plan
- Rain water harvesting plan and details
- Section details of piping at the critical locations such as ducts, bends etc.

- Isometric illustrations for the piping
- Toilets and other sanitary fixtures layout plan
- Blowup sections showing fixtures specifying height from the floor and floor slopes.
- Septic tank and soak pit details with design calculations
- Storm water flow in site plan
- Specify precautions or instruction if any

Geotechnical investigation

Introduction

Geotechnical investigation is conducted for the estimation of the soil physical properties of an area. The data obtained from the geotechnical exploration and laboratory test shall be analyzed and interpreted concerning the existing site conditions and the proposed constructions type, in order to determine the various design parameters such as the safe bearing pressure. The result of the investigation shall lead to the selection of most optimal type and depth of the foundation. It shall also determine the possibilities and limitations of boring/ drilling in the area.

OBJECTIVES

The main objective of this investigation is to explore geotechnical characteristics of the sub–soil strata.

- to assess the engineering/physical properties of the sub-soil

- to ascertain bearing capacity of the ground strata for foundation design

Scope of work

The scope of work includes soil investigation of 5 boreholes along the proposed building construction Site, each of 12.0m depths, with retrieving samples from the boreholes and evaluation of allowable bearing capacities of the foundation based on field and laboratory test results.

STUDY METHOD

After the review of the objectives and the scope of work as specified, the consultant shall be prepared the following methodology in order to successfully accomplish the given project in the stipulated time. The study method has been divided into activities which have been described below.

Desk Study

This is an initial phase and includes collection of preliminary data. The required and available document such as design map, topographic map, location of site in Google map shall be collected from the client.

Site Preparation and Inspection

Before moving to the soil investigation work at field level all the necessary tools shall be well arranged and checked whether the machine is in good condition or not. At the field inspection time status of site clearance, logistic facilities availability shall be noted.

Field Works

Work Schedule

The work shall be completed within 90 days from the date of agreement. The consultant is thus instructed to follow the work schedule below.

S No	Work Description	No. of months

1	Desk study, preparation of secondary data collection, preparation of check list	0.2
2	Drilling work in Site	0.30
3	Laboratory Test and analysis	0.50
3	Submission of Lab Test Report (After Agreement)	1.0
4	Submission of Draft Report [(including Building Drawing), From Date of Agreement]	2.0
4	Submission of final report (After Submission of Draft Report)	1.0

Personnel Requirements

The consultant should establish and manage a work team comprising following professional and resources personnel to accomplish the assignment.

K. Personnel Requirements

No.	Proposed Personnel	Man Month	**Qualification & Work Experience**
	Team Leader (Urban planner)	1	MSC in Urban Planning with minimum 10 years experience
	Tourism Expert	.25	MSC in Anthropology/Tourism with minimum 10 years experience
	Structure Engineer	.5	MSC/ME in structural Engineering with minimum 5 years experience
	Geotechnical Engineer	.25	MSC in Geotechnical Engineering with minimum 5 years experience
	Enviromentalist	.25	ME in Enviromental Engineering with minimum 5 years experience
	Civil Engineer	.5	BE in civil Engineering with minimum 5 years experience
	Water Supply and Sanitary Engineer	.1	BE in related field with 5 years experience
	Electrical Engineer	.1	BE in related field with 5 years experience
	Architect	.25	BE in Architecture Engineer with 5 years experience
	Computer Operator	.5	
	Surveyor	.5	Diploma /BE in civil Engineer

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	Helper	1	
	Draft Person	.5	
	Supervisor	1	

L. Payment Schedule

Payments will be made upon the submission of Consultant's invoices according to the following schedule:

Mode of Payment	Percentage
First instalment after the submission of Inception Report	30
Second instalment upon the submission of Draft Report	50
Third instalment upon the submission of final report	20

TERMS OF REFERENCE FOR

Detailed Project Report (DPR) Preparation for the Infrastructure Development of Agriculture market in Haripiur Municipality, sarlahi

1. INTRODUCTIOIN

BACKGROUND TO TOR

In Nepalese context, agriculture sector is the backbone of country's economy .This sector has prime importance on country's development and linked with livelihood support, income generation, poverty alleviation and food security where this sector contributes more than one third of Gross domestic product (GDP) and more than 60% of country's population directly engaged as major profession. Despite of huge population engagement, financial or technical inputs and country's priority, the performance of agricultural sector has not been adequate/sufficient to meet the increasing food demand and livelihood needs of population towards self-sufficient on consumption so there is growing scenario of import of food /agricultural product in turn huge money outgoing and the accelerating trade loss each next year. Basically, the Challenges has been observed on disseminating the modern tools and technology up to farmers and integrating processing & trade of agriculture products. Hence, it's high time to take appropriate actions and future strategic directions for improving the performance of the agricultural sector to ensure national food security, economic growth aimed towards the country's development & prosperity.

Analysis on migration trends of Nepalese community revels that more people are moving towards the urban and semi urban areas in search of better livelihood and facilities. Rapid growing urbanization obviously demands more food commodities and in turns the infrastructure and other systems on Agriculture business. To our context the demand of edible commodities, fresh vegetables and fruits is growing rapidly due to the faster rate of urbanization and increasing population density but in contrast market system and value chain for agricultural production is not growing rapidly due to lack of timely inputs and proper management. The proper development of market system helps to boost production and productivity and that also plays important role to improve the livelihood of farmers, supply healthy foods and efficient management of agriculture products. The rapidly

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expanding urban and sub urban areas are already lagging adequate and facilitated agricultural market and no of collection centers for collection and supply of fresh fruits and vegetables as a major requisite. In many Urban and sub urban areas market and associated infrastructures are major circumstances to low production and farmer's income. Hence most required to develop proper market system to increase the production to meet growing demand of fresh vegetables and fruits. The production and supply of edible commodities, fresh fruits and vegetables are the most important pre-requisites for market channeling and strengthen the value chain of agricultural commodities.

To boost up the agricultural marketing need connection of the value chain from producer, collectors, wholesalers, retailers and end consumers is required. The mission and vision of Agriculture Development Strategy (ADS) in agricultural sector has also prioritized addressing the food sovereignty and food security with the sustainable commercialized agricultural development through competitive and self-dependency. The ADS focuses on four broader categories Governance, Productivity, Profitable commercialization and Competitiveness. To meet the goals and objectives set by the ADS and sectorial plan and policies of Agriculture sector, Nepal Government has highly prioritized the infrastructure and value chain management of agricultural products. From the F.Y 2075/076 Nepal government has intensive program for the detail planning and construction for upgrading and new agricultural markets, collections centers at central and regional level In this fiscal year as per the request from the Haripur Municipality a detail planning for the agricultural market with the collection and storage facilities has been targeted.

RELEVANCY OF THE TASK

Different scales and nature of agricultural markets are started along with the population increase and urbanization process on need based but in Nepal the almost agricultural markets are not up to standard lacking multiple facilities on storage, trading, transportation, infrastructure, environmental issues and even not assessed the demand and supply capacities. As Nepal government has realized these issues and has priority programs for making numbers of agriculture wholesale markets with modern facilities / standards which may include facilities for Storages, trading facilities for different commodities , Value add support like ripening chambers, grading equipments, drying ,

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storage and milling facilities , need based market sheds, office spaces, sanitary, drainage , washing , shorting , garbage / waste management, guard house , rest house, guest house
, boundary , gates, pavements ,orchard, electricity, electronic /digital boards and many other requirements to the specific market as per site condition and standard norms. All these requirements should be based on the in depth knowledge of total catchment of that market for collection and distribution, different commodities and their volume, Season and potential traders, market linkages and other aspects.

Detail survey, design and estimation for wholesale market referenced to the other national / international agriculture markets will set a model for the future construction and replication of similar market on other areas of country in coming days. This attempt for planning and construction of agricultural market and collection center at Haripur Municipality ward no 1 is relevant to context of huge production potential areas around targeting the major markets of Hetauda, Chitwan and Kathmandu.

2. OBJECTIVE:

The major objective of the task is to prepare detail project plan of the agricultural wholesale market and collection center at Haripur Municipality ward no 1 of Sarlahi District as requested from the local bodies. Some specific objectives of the task are as:

- Survey and detailing of the area selected for the agriculture wholesale market.
- Detail design, estimation and costing of all the required structures and spaces like market sheds, different kind of potential storage facilities, parking, toilets and sanitary, drainage, washing, shorting, ripening chamber, Garbage collection, waste management, guardhouse, rest house, guest house, cold storage, boundary, gates, pavements, orchard, electricity and many other requirements to the specific market as per site condition and standard norms.
- Obtain soil test and test for others as required and use of this information for design and planning.

- Environmental study (as per requires)
- Clear construction plan, details of designs and drawing, estimation and cost for each structure separately and in total are the required outputs.
- Study about the catchment (Arial coverage), Types of agricultural products, Market, potential value add activities, socioeconomic status of the local and its catchment area needs to be assessed and reported.
- Using primary & secondary information, through field survey and discussion at local level suggest the suitable models of operation of the agriculture market.

3. SCOPE OF SERVICES:

In order to meet the objectives of the study, the scope of the work of proposed task shall include, but not limited to, the followings:

- Study and Observations of the agriculture wholesale markets for the background knowledge of current markets, standard & site-specific requirements, related secondary and primary data/information.
- Conduct a comprehensive survey of the purposed market area using standard engineering methods /tools for the design of various structured and non-structured requirements within the wholesale markets.
- Prepare master plan illustrating all requirements including future service extension facilities.
- Comprehensive land use plan clearly illustrating the different market structures and nonstructural requirements (Like open space, orchard etc.), utilities (water, electricity, drainage, road, parking, walking path, food stall etc) with locations and dimensions with all technical specifications.
- Design, Estimation, Costing and all other requirements for the purposed market structures and utilities with optimal engineering standards.
- Required study on major/minor agricultural commodities that has current and future potential of trading on purposed markets and their requirements like storages, cold storages, ripening chambers, cleaning, grading, packaging and

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other value add activities and their requirements planning for at least next 25 years.

- Conduct environmental study as per required as planning for their mitigations like waste management, Bio -composting, energy efficiency technologies, drainage etc.
- Carryout Geo investigation test using SPT method and any other test requirement specific to market site/locations.
- Socio economic study of the market premise and locations.
- Prepare visuals and 3D models of the design /plan of market using computer software.
- Prepare construction planning with master schedule and construction program for development of the project
- Suggest proper and possible modality of sustainable market management from the FGD, Key Informant Interview and discussions with stakeholders.
- Present and supply the study documents as per the mentioned reporting obligations.

The detail discussions of team of consultants with the CAIDMP officials and stakeholders will be guiding the site-specific needs, structural requirements and the details planning. This task demands site specific, need based infrastructural requirement as indicated in scope and their details will need to worked out following the optimal engineering standards /norms.

4 APPROACH

It is anticipated that the following approaches be adopted in course of rendering requisite services:

- Adoption of a "system perspective" approach, wherever possible instead of an ad-hoc provisional measure;
- Fielding of most able and relevant professionals to perform and accomplish their respective jobs as described in this proposal. Due care will be taken as to materialize

timely and efficient mobilization to accomplish the assigned tasks within stipulated periods;

- Use of prudent tools, processes and technologies that have been tested and proven effective at the field level in on-going as well as past projects wherever applicable;
- Full use of available and applicable primary/secondary information such as reports, maps/drawings, specifications, guidelines and any other relevant information relating to the accomplishment of the proposed services with established professional standards, sound engineering, and socio-economic practices;
- Fullest use of all standards/guidelines/instructions formulated by Nepal Government.
- Close coordination and effective communication with all stakeholders and clients;
- Completion of the proposed services within the bounds of project stipulated time and resources.

5 METHODOLOGY

The consultants do have liberty to use varieties of widely accepted and scientific methods to accomplish the given task. They should keep themselves informed of the relevant activities and concerned in the given context. All the activities should be carried out as per the latest applicable and established methodologies tools and techniques. CAIDMP, DOA, MOALD are the major clients of this task whose inputs and concerns should be well considered during this study.

6. HUMAN RESOURCES REQUIRED

SN	***Position***	***No***	***Expected Input (person Month)***	***Required Basic Qualification & Experience***
	Professional Staffs			
1	TL / Senior Construction Management Engineer/ Senior Structural Engineer	1	1.5	At least Master degree on related field with 10 years of working experiences.
2	Structural Engineer	1	1	At least Master degree on related field with 5 years of

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				working experiences.
3	Architect Engineer	1	.5	At least Bachelor degree on related field with 5 years of working experiences.
4	Agricultural Engineer	1	1	At least Bachelor degree on related field with 3 years of working experiences.
5	Mechanical Engineer	1	.5	At least Bachelor degree on related field with 5 years of working experiences.
6	Electrical Engineer	1	.5	At least Bachelor degree on related field with 5 years of working experiences.
7	Environmental Expert/Engineer	1	.5	At least Bachelor degree on related field with 5 years of working experiences.
8	Sociologist	1	.5	At least Master degree on related field with 5 years of working experiences.
9	Agri Economist	1	.5	At least Master degree on related field with 5 years of working experiences
10	Quantity surveyor	1	.5	At least Master degree on related field with 5 years of working experiences
	Support Staffs			
12	Sub Engineer/ Surveyor	1	1	
13	Auto CAD Expert	1	1	
14	Computer Assistant	1	1.5	
15	Assistants/ Helper	1	1.5	

(Note: Key experts purposed by the consultant cannot be replaced other than the critical needs & same key experts purposed full time to this task cannot be purposed

to any other consulting task within the time frame as per the public procurement regulations specified at 69)

7. INPUTS TO BE PROVIDED BY CLIENT.

CAIDMP will provide the following support to the consultant.

- CAIDMP can provide Data/information, reports and references up to availability upon request from the consultant.
- Officials from the CAIDMP will facilitate/guide for the task up to their availability of time and resource.
- CAIDMP may provide space for discussions and meeting upon request from the consultant

8. OUTPUT

A comprehensive report giving outcomes of all the tasks described in the scope of the work has to be produced. The report needs to be fully referenced (with data sources identified). The final report should be submitted in 5 sets of hardcopy and electronic copies in CD each for individual market locations.

Time Schedule and Reporting Requirements

The consultancy assignment will be effective with the contract. The consultant will be required to prepare and submit Inception Report, Progress Report and Draft Final Report; and 5 copies of Final Report (hard copy and electronic copy) in accordance with the time schedule presented below.

Reporting Time Schedule

Inception Report	Within 15 days of Contract
Progress Report	Each Month.
Draft Final Report	Within 2 Months of Contract.
Final Report (comments of incorporated)	Within 3 Months of Contract

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9. MODE OF PAYMENT

The amount shall be paid as per agreement to the consultant assigned for the study. However, the consultant can claim the payment either in a single installment after submission and acceptance of final report as per TOR or in installment as follows;

SN	Installment	Schedule
1	First Installment *(if necessary)*	**10%** of the total amount upon submission and acceptance of desk study/inception report
2	Second Installment	**20%** of the total amount upon submission and acceptance of field report (progress report).
3	Third Installment	**30 %** of the total amount upon submission and acceptance of draft final report.
4	Final Installment	Remaining **40%**of the total amount upon submission and acceptance of final report complying with TOR.

D. Evaluation of Consultant's EOI Application

Consultant's EOI application which meets the eligibility criteria will be ranked on the basis of the Ranking Criteria.

i) Eligibility & Completeness Test	**Compliance**
Copy of Registration of the company/firm	
VAT/PAN Registration	
Tax Clearance/Tax Return Submission/Letter of Time Extension for Tax Return Submission	
Audit Report and financial statement (last 5 year)	
EOI Form 1: Letter of Application	
EOI Form 2: Applicant's Information Form	
EOI Form 3: Experience (3(A) and 3(B))	
EOI Form 4: Capacity	
EOI Form 5: Qualification of Key Experts	

ii) EOI Evaluation Criteria	**Insert Minimum Requirement if Applicable**	**Score [Out of 100%]**
A. Qualification		
Qualification of Key Experts		***40***
Experience of Key Experts		
B. Experience		

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General of consulting firm		***40***
Specific experience of consulting firm within last 7 years. *In case of person, specific experience of the person within last 4 years.*		
Similar Geographical experience of consulting firm		
C. Capacity		
Financial Capacity[3] (average turnover required shall not exceed 150% of cost estimate)		*20*
Infrastructure/equipment related to the proposed assignment[4]		

Note : In Case, a corruption case is being filed to Court against the Natural Person or Board of Director of the firm/institution /company or any partner of JV, such Natural Person or Board of Director of the firm/institution /company or any partner of JV such firm's or JV EoI shall be excluded from the evaluation, if public entity receives instruction from Government of Nepal.

[3] *Average turnover required shall not exceed 150% of cost estimate*

[4] *This Evaluation criteria should be deleted if infrastructure/equipment are not the part of the proposed assignment.*

E. EOI Forms & Formats

Form 1. Letter of Application

Form 2. Applicant's information

Form 3.Experience *(General, Specific and Geographical)*

Form 4. Capacity

Form 5. Qualification of Key Experts

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1. Letter of Application

(Letterhead paper of the Applicant or partner responsible for a joint venture, including full postal address, telephone no., fax and email address)

Date: .....

To,

Full Name of Client: _____

Full Address of Client: _____

Telephone No.: _____

Fax No.: _____

Email Address: _____

Sir/Madam,

1. Being duly authorized to represent and act on behalf of (hereinafter "the Applicant"), and having reviewed and fully understood all the short-listing information provided, the undersigned hereby apply to be short-listed by ***[Insert name** of Client)* as Consultant for ***{Insert brief description** of Work/Services}.*

2. Attached to this letter are photocopies of original documents defining:

    a) the Applicant's legal status;

    b) the principal place of business;

3. ***[Insert name of Client]*** and its authorized representatives are hereby authorized to verify the statements, documents, and information submitted in connection with this application. This Letter of Application will also serve as authorization to any individual or authorized representative of any institution referred to in the supporting information, to provide such information deemed necessary and requested by yourselves to verify statements and information provided in this application, or with regard to the resources, experience, and competence of the Applicant.

4. ***[Insert name** of Client)* and its authorized representatives are authorized to contact any of the signatories to this letter for any further information.[5]

5. All further communication concerning this Application should be addressed to the following person,

[5] Applications by joint ventures should provide on a separate sheet, relevant information for each party to the Application.

[Person]

[Company]

[Address]

[Phone, Fax, Email]

6. We declare that, we have no conflict of interest in the proposed procurement proceedings and we have not been punished for an offense relating to the concerned profession or business and our Company/firm has not been declared ineligible.

7. We further confirm that, if any of our experts is engaged to prepare the TOR for any ensuing assignment resulting from our work product under this assignment, our firm, JV member or sub-consultant, and the expert(s) will be disqualified from short-listing and participation in the assignment.

8. The undersigned declares that the statements made and the information provided in the duly completed application are complete, true and correct in every detail.

Signed **:**

Name **:**

For and on behalf of (name of Applicant or partner of a joint venture):

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2. Applicant's Information Form

(In case of joint venture of two or more firms to be filled separately for each constituent member)

1. Name of Firm/Company:

2. Type of Constitution (*Partnership/ Pvt. Ltd/Public Ltd/ Public Sector/ NGO)*

3. Date of Registration / Commencement of Business *(Please specify):*

4. Country of Registration:

5. Registered Office/Place of Business:

6. Telephone No; Fax No; E-Mail Address

7. Name of Authorized Contact Person / Designation/ Address/Telephone:

8. Name of Authorized Local Agent /Address/Telephone:

9. Consultant's Organization:

10. Total number of staff:

11. Number of regular professional staff:

(Provide Company Profile with description of the background and organization of the Consultant and, if applicable, for each joint venture partner for this assignment.)

3. Experience

3(A). General Work Experience

(Details of assignments undertaken. Each consultant or member of a JV must fill in this form.)

S. N.	Name of assignment	Location	Value of Contract	Year Completed	Client	Description of work carried *out*
1.						
2.						
3.						
4.						
5.						
6.						
7.						

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3(B). Specific Experience

Details of similar assignments undertaken in the previous seven years

(In case of joint venture of two or more firms to be filled separately for each constituent member)

Assignment name:	Approx. value of the contract (in current NRs; US$ or Euro)[6]:
Country: Location within country:	Duration of assignment (months):
Name of Client:	Total No. of person-months of the assignment:
Address:	Approx. value of the services provided by your firm under the contract (in current NRs; US$ or Euro):
Start date (month/year):	No. of professional person-months provided by the joint venture partners or the Sub-Consultants:

[6] Consultant should state value in the currency as mentioned in the contract

Completion date (month/year):	
Name of joint venture partner or sub-Consultants, if any:	Narrative description of Project:
Description of actual services provided in the assignment: **Note: Provide highlight on similar services provided by the consultant as required by the EOI assignment.**	

Firm's Name: _____

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3(C). Geographic Experience

Experience of working in similar geographic region or country

(In case of joint venture of two or more firms to be filled separately for each constituent member)

No	***Name of the Project***	***Location (Country/ Region)***	***Execution Year and Duration***
1.			
2.			
3.			
4.			
5.			

6.			
7.			

Chief Administrative Officer

4. Capacity

4(A). Financial Capacity

(In case of joint venture of two or more firms to be filled separately for each constituent member)

Annual Turnover	
Year	**Amount Currency**

- **Average Annual Turnover of Best of 3 Fiscal Year Of Last 7 Fiscal Years**

(Note: Supporting documents for Average Turnover should be submitted for the above.)

Chief Administrative Officer

4(B). Infrastructure/equipment related to the proposed assignment[7]

No	Infrastructure/equipment Required	Requirements Description
1.		
2.		
3.		
4.		
5.		

[7] *Delete this table if infrastructure/equipment for the proposed assignment is not required.*

5. Key Experts *(Include details of Key Experts only)*

(In case of joint venture of two or more firms to be filled separately for each constituent member)

SN	Name	Position	Highest Qualification	Work Experience (in year)	Specific Work Experience (in year)	Nationality
1						
2						
3						
4						
5						

(Please insert more rows as necessary)

Chief Administrative Officer