



Government of Nepal
Ministry of Federal Affairs and Local Development
Office of the District Development Committee
District Technical Office
UNNATI - Inclusive Growth Programme in Nepal
Bhojpur

"EXPRESSION OF INTEREST"

For

"Detailed Engineering Survey, Design and Road Inventory of Proposed Roads and Other Structures (for upgrading of this Section to all weather standards) and Preparation of Detailed Project Report (DPR), Contract Documents"

Consulting Firm/Joint Venture:

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.....
.....

Prime Consultant (in case of a JV):

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Notice No: **Consult.1/EOI/UNNATI/BHOJ/073-074**
First Date of Publication: **2073/08/2 (November 17, 2016)**

EXPRESSIONS OF INTEREST

The Government of Nepal has undertaken the implementation of the UNNATI, Inclusive Growth Programme in Nepal, (UNNATI, the Programme) started in January 2014 with assistance from Government of Denmark and it intends to apply a part of this grant to payment to the Contract for which this Expression of Interest is issued. The Programme is being implemented in the districts of Taplejung, Panchthar, Ilam, Sankhuwasabha, Dhankuta, Terhathum, and Bhojpur.

District Technical Office, **Bhojpur**, UNNATI - Inclusive Growth program in Nepal invites Expressions of Interest (EOI) for the purpose of short listing the qualified, eligible and experienced domestic consulting firms for Detailed Engineering Survey, Design and Road inventory of Proposed roads and Other Structures (for upgrading of this Section to all weather standard) and Preparation of Detailed Project Report (DPR), Preparation of Contract Documents of , **Bhojpur district** with approximate length as given in table below which cover three commodities are tea, ginger ,cardamom and dairy products and provision of access points to the proposed commodities.

Package: , Bhojpur District

SN	Name of road	Proposed length (km)	District
1	Hilebhanjyang-Helaucha- Boya - Sangpang- Deurali Road (10DR024)	38.52	Bhojpur

Experienced, eligible and willing Consulting Firms are invited to submit their EOI, either alone or in joint Venture with Maximum 3 number of firms. The EOI shall be submitted in a sealed envelope and must reach District Technical Office, **Bhojpur** no later than the working hours on **Mansir -17, 2073 (December- 2, 2016)**.

The received EOI shall be subjected to evaluation criteria based on general experience, experience in similar works as well as available equipment and human resources and financial capabilities to produce a short list. Certified evidences of completion of GON or private funded projects as a corporate entity, individually or as one of the major companies with a legal association from concerned agencies of GON, only will be counted. The Standard EOI form will be available upon request at dtobhojpur.2014@gmail.com and can be collected from website www.ddcbhojpur.gov.np

In case the day of submission of the EOI falls on a public holiday, it shall then be submitted on the following working day. Only the shortlisted Consulting Firms shall be invited for RFP (Request for Proposal). **DTO, Bhojpur** reserves the right to shortlist any or all of the Firms without assigning any



reasons whatsoever. Further information or clarification can be obtained from **DTO Bhojpur** during office hours.

INFORMATION ON THE CONSULTING FIRM

Information shall be provided in the following format. No field shall be left vacant. In case of a joint venture, the same form shall be filled by each of the JV partners separately. The form shall be submitted in the time, date and venue as mentioned in the published notice.

1. General

Name of Firm	Address	Telephone	Email	Fax	JV Percent

Out of the above list,will be the Prime Consultant.

2. Financial Capacity

Annual turnover over the five years are as follows. The auditor's report/tax clearance certificates are attached.

Fiscal year	Turnover (Rs)
2072/073	
2071/072	
2070/071	
2069/070	
2068/069	

3. General Experience*

General experiences of the firm in Civil Engineering Works during the last 5 years with contract amount. The information must be supported by works completion certificates with clearly Work completion certificates with clearly indicated contract amount.

Fiscal year	Project	Client	Contract amount (excluding VAT)	Year of completion	Variation if any
2072/073					
2071/072					
2070/071					
2069/070					
2068/069					

4. Specific Experience*

Work Experience in Detail Engineering Survey, Design and Preparation of DPR of motorable roads during the last 5 years.

Fiscal year	Project	Client	Contract amount (excluding VAT)	Year of completion	Variation if any
2072/073					
2071/072					
2070/071					
2069/070					
2068/069					



* The firm/s shall produce certified evidences of completion of the job either as a corporate entity individually or as one of the major companies with legal association from concerned agencies of Government of Nepal. Sublet works or assignment as a sub consultant shall not be considered for evaluation.

5. Unfinished Works

Uncompleted works over the past 5 years are as follows. Copies of relevant correspondence are attached.

Year of Agreement	Due Date of Completion	Project	Client	Contract amount (excluding VAT)	Reason for Incompletion
2072/073					
2071/072					
2070/071					
2069/070					
2068/069					

6. Human Resources

The resource persons and supporting staff working with the consulting firms for execution of DPR.

Staff Member	Number	
	Permanent	On-call
Team Leader		
Highway/Civil Engineer		
Highway/Civil Engineer (Design)		
Environmental Engineer		
Geologist/Geo-tech Engineer		

Note: Provide CVs of only the technical resource persons. The CVs shall be signed in blue indelible ink by the respective personnel declaring the correctness of the information.

7. Office Equipment and Facilities

List office space, Survey equipment and vehicles available with and owned by the firms.

Lease or hire agreement/Proposals are not accepted.

Resource	Unit	Total Available	Engaged by Works on Hand
Photocopy machine			
Computer			
Printer / plotter			
Level Machine			
Road Design software			
Total Station or electronic Theodolite			
Office Space (Area in m ²)			

a) Ownership evidence is mandatory.

Authorized signature:

Seal:

Date:



ANNEX 1: INFORMATION TO THE CONSULTING FIRM

General Information

- Purpose of inviting the EOI: The main purpose is short-listing suitable consulting firm for Detailed Engineering Survey and Design of Proposed and Other Structures (for upgrading of this Section to all weather standard) and Preparation of Detailed Project Report (DPR) and Contract Documents so that proposals could be invited from them only. However, the client may extend the short-list to include additional relevant consulting firms which are capable of giving the desired output.
- Minimum eligibility of the firm: Registered civil engineering consulting firm, registered at VAT office, tax clearance certificate.
- Deadline for submission of EOI: 17th Mansir, 2073 (December-2, 2016) from the date of first publication of the Invitation notice for EOI.
- Number of copies to be submitted: One
- Joint Venture: A firm may apply to be short-listed alone or in joint venture with other firms. However once short- listed, JV partners are unchangeable.
- Duration of the assignment: The work shall be completed within Three months from the date of signing of the contract.
- Information from the Client: The shortlist shall be published on the Client's notice board and an email with the shorlist of the firms shall be emailed to the applicants.



ANNEX 2: EVALUATION CRITERIA

A. ELIGIBILITY AND QUALIFYING CRITERIA

S.N.	Eligibility Criteria	Requirement	Compliance	Remarks
1	Company Registration	Mandatory	Yes/No	Pass/ Fail
2	VAT Registration	Mandatory	Yes/No	Pass/ Fail
3	Tax clearance for F/Y 2072/73	Mandatory	Yes/No	Pass/ Fail
4	Minimum Year of Standing is 5 years (Lead Firm-5 Years)	Mandatory	Yes/No	Pass/ Fail
5	JV agreement in Case of JV	Mandatory	Yes/No	Pass/ Fail

B. DETAILS OF EVALUATION CRITERIA

Description of Criteria	Marks out of 100	Minimum Marks to be obtained in each Criteria
1 Financial Capacity of Firm	10	6
2. Experience of Firms		
A. General Experience	20	12
B. Specific Experience	40	24
3. Office set up and Logistics	5	3
4. Manpower Resources	25	15
	100	60

B1 Financial Capacity of Firms

Maximum Marks-10

Average Annual Turnover of Last Five years	Marks
Less than 5 Millions	3 Marks
5-10 Millions	6 Marks
More Than 10 Million	10 Marks

B2 General Experience of Firms

Maximum Marks-20

General Civil Engineering Experiences works of last Five years with Consulting Service cost of More than 10 Lacks (Excluding VAT)	4 Marks for each Projects (Maximum 5 Projects)
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B2 Specific Experience of Firms

Maximum Marks-40



Completion of work of "Detailed Engineering Survey and Design" or "DPR" or "Construction Survey, Design and Supervision" of a Road (Road Length more than 20KM) over the past 5 years	4 Marks for each projects (Maximum 10 Projects)
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B3 Office Set-up and Logistics Maximum Marks-5

Resource	Unit	min ^m Required
Office area	sq.ft	>1000
Total station or electronic theodolite with accessories	set	1
Levelling machine with accessories	set	2
Design software	Nos	1
Computer / Laptop	Nos	2
Printer/plotter	Nos	2
Photocopy machine	Nos	1

B4 Manpower Resources Maximum Marks-25

Professional Experts Available with Firms	Basic Qualification	Marks(max)
Team Leader	Master in Highway/ Transportation with 7 years Experience	5
Highway/Civil Engineer	BE in civil engineering with 3 years Experience	8
Highway/Design Engineer	BE in civil engineering with 3 years Experience	8
Geo-Tech Engineer/Geologist	B.E Civil or Bachelor Degree in Geology/ Geo-Tech with 5 year Professional Experience	2
Environmentalist	Bachelor's Degree in relevant subject with 5 years Professional Experiences	2
		Max 25 Marks

NOTE: A successful Firm or JV shall score minimum 60% of the total marks.



TERMS OF REFERENCE (TOR) FOR PREPARATION OF DETAIL PROJECT REPORT (DPR) CONSISTING OF DETAILED ENGINEERING SURVEY, DESIGN, DRAWING AND COST ESTIMATE, ROAD INVENTORY OF PROPOSED ROAD.

1.0 Introduction

Nepal having poverty-stricken rural countryside communities, rural development is one of the main agenda of development. The ultimate goal of rural development is attainment of sustainable livelihood and improved well-being of rural people. In the absence of better access to the goods and services that they value the same suffers. Rural people's needs for sustainable livelihood and improved well-being are such that they require better access to information, markets and opportunities; they need better access to health, education and other goods and services.

The UNNATI-Inclusive growth programme in Nepal comprises three components: 1) the Value chain component; 2) the Infrastructure component; 3) the enabling environment component.

The infrastructure component addresses the infrastructure constraints of the selected value chains tea, ginger, cardamom and dairy. Because the most significant constraints are found in the mountain and hill districts of Koshi and Mechi corridors, it is in these districts that the main activities of the component will be focused. These are also the relatively poorer areas of the selected corridors.

The Government of Nepal has undertaken the implementation of the UNNATI, Inclusive Growth Programme in Nepal, (UNNATI, the Programme) started in January 2014 with assistance from Government of Denmark. The Programme is being implemented in the districts of Taplejung, Panchthar, Ilam, Sankhuwasabha, Dhankuta, Terhathum, and Bhojpur.

Rural transportation infrastructure (RTI) facilities to be provided could include motorable roads, motorable bridges, foot trails, trail bridges and gravity ropeways. Public market related infrastructure (PMI) might consist of collection centers, storage facilities, market place facilities, small-scale irrigation schemes, and possibly other types of works.

The development objective of the programme is "promotion of sustainable inclusive growth that reduces poverty and raises living standards" and the intermediate objective of the infrastructure component is "A sustainable improvement in rural infrastructure that supports local economic development". This will address rural infrastructure that leads to poor and seasonally interrupted access to social and economic services, high transaction costs, low competitiveness and low productivity of rural economy.

Consultancy services on preparation of Detail Project Report (DPR) Consisting Detailed engineering survey, Design and Cost estimate, Drawing, Road inventory, of following roads as given in the table number 1 under UNNATI-Inclusive Growth Programme in Nepal.

Name of Roads and details are given in Table 1

Table no. 1: Package No:1 (Koshi Cluster)

SN	Name of road	Proposed length (km)	District
1	Hilebhanjyang-Helaucha-Boya-Sangpang-Deurali Road (10DR024)	38.52	Bhojpur

The consulting service has to conduct detail engineering survey, design and prepare detail drawings and cost estimate according to based on the 'DoLIDAR Technical guideline (Nepal Rural Road Standards) Including criteria fulfilling in Annex A .



1.1. Objectives

The overall objective of the consulting services is to prepare conduct detailed engineering survey, design and prepare detailed drawings and cost estimate of above proposed road of the district. The consultant should follow the DoLIDAR's Norms, Specifications and design standard.

The specific objectives, but not necessarily limited to the following, are:

- Analyze the existing situation on topographic map as well as on field.
- Conduct detailed engineering survey of the alignment and its corridor.
- Conduct hydrological studies for cross drainage works and fixing of embankment height.
- Design the road details.
- Prepare working drawings.
- Prepare cost estimate with analysis of rates.
- Prepare survey and design reports.
- Prepare the contract Documents (bid document, Technical Specification, Design Drawing etc.)

1.2. Scope of Services

The consulting service is to provide high quality professional services for detail engineering survey, design and prepare detail drawings and cost estimate according to the 'DoLIDAR Technical guideline (Nepal Rural Road Standards) on Planning and DoLIDARs design standard, Design and Construction of Rural Roads'. The consultant shall carry out the necessary field works along the alignment. The team personnel to be mobilized for field visit and schedule of field tasks should be prepared and should be included in the proposal. The center line should be set out with proper establishment of bench marks, as far as possible following the existing trail or alignment. The consultant shall then carry out further survey works necessary for detailed design of the road. The consultant shall be responsible for the analysis and interpretation of the data. The scope of services to be carried out by the Consultant shall broadly include, but not be limited to, the following:

1.2.1. Engineering Details (Field Survey)

- The horizontal alignment of the road (i.e. centre line) should be determined within the survey strip of proposed corridor of the optimum alignment between control points specified as a result of the engineering investigation.
- Accurate traverse line shall be run along the route selected.
- In case of improvement of existing road, efforts should be made to adjust the alignment so as to match the existing road track wherever possible.
- Strip of sufficient width (10m on either side) to accommodate cut/fill and for possible shift in the centre line at the final design shall be surveyed.
- Traverse survey shall be done by Total station/Theodolite with angles using double reversed method.
- Appropriate and accurate method shall be adopted for the distance measurement between two consecutive transit stations.
- Transit stations shall be pegged and numbered following a sequential order.
- Features like buildings, monuments, cremation center and graveyards, temples, power and telephone lines, pipelines, existing roads and trails shall be located by offset measurements from the traverse line.
- Cross section shall be taken at 10-15m interval and at closer intervals in places having abrupt slope changes or different soil type.
- Classification of soil in chainage wise is absolutely necessary.
- Benchmarks shall be fixed at every 250 m intervals or at 500 m intervals in special cases. Benchmarks shall also be fixed at bridge and culvert sites.
- Check all levels with the levels of established Benchmarks by fly leveling for accuracy.
- Single datum preferably geodetic survey datum shall be used to tie up all levels.
- Grid survey at 1 or 2 m intervals may be necessary at places of sharp curves of difficult places and at all bridge sites.



- Data information should be taken on all gullies, depressions, streams and rivers where cross drainage structures are required.
- Every retaining structures, breast structures, drainage structures, slope protection measures should be supported by justification and photographs.
- Road Inventory with details such as: existing retaining walls, check dams, chutes, pipe and slab culverts, causeways, drain, rehabilitation of existing canal works and other structures and the consultant shall produce road inventory drawings as per DoLIDAR or other appropriate formats

1.2.2. Environmental Consideration

The basic intention of environmental consideration is to develop the best possible rural road in the given environmental settings. Environmental consideration basically addresses two aspects: *risks or threats*, which are the likely damages to the environmental quality, services and natural wealth; and *opportunity or potential* in the given natural setting for road works to harness the same. Environmental considerations should, therefore, focus on avoiding or minimizing damages and, at the same time, promoting sensible use of opportunities to improve the natural environment. So, during the detail site visit consultant should prepare the site specific Environmental Management Plan (EMP) of the proposed roads. The EMP should be prepared as per prescribed format by DoLIDAR.

1.2.3. Engineering Design Calculation

Engineering design must be shown with calculation. The format should be described properly declaring the meaning and source of variable, constants and multiplication factors should be referenced and justified. Technical Guidelines on Planning, Design and Construction of Rural Roads provided by DoLIDAR and UNNATI should be strictly followed in design works. The road should be designed according to all weather road (well graded gravel surface)

1.2.4. Preparation of Contract Documents

The contract documents shall be prepared based upon the Standard Bidding Documents (SBD) issued by PPMO.

In general it will contain:

Introduction

Section I Invitation for Bids (IFB)

Section II Instruction to Bidders (ITB)

Section III Sample Forms of Bid, Qualification

Information, Letter of Intention to Award, Letter of Acceptance and Agreement

Section IV General Condition of Contract (GCC)

Section V Special Condition of Contract (SCC)

Section VI Specifications

Section VII Drawings

Section VIII Bill of Quantities

Section IX Sample Forms of Securities

The contract documents shall be submitted in 5 sets with electronic copy.

1.2.5. Preparation and Presentation of Project Documents

All project data and information collected during the above survey should be compiled as a project document. The project document should comprise of:

- report
- cost estimate, and
- construction drawings



1.2.5.1. Report

It contains the following:

- a) **Background Information**
 - Name of the work and its scope of activities
 - Authority and plan provision
 - History, geography, climate, etc.
 - Necessity, or other words, project justification
- b) **Road's Salient Features**
 - Route selection
 - Alignment
 - Environmental considerations
 - Right of way, roadway, carriageway and other cross-sectional elements
 - Salient features of road structures
 - Present / anticipated traffic
- c) **Road Design and Specification**
 - Road design
 - Pavement design (Gravel Surface)
 - Protection works (other than cross - drainage works)
 - Specifications
- d) **Drainage facilities including cross-drainage structures**
 - Discuss investigations carried out
 - Give details of the surface / sub-surface drains and drainage measures, attach design calculations / drawings.
 - Highlight and propose special measures to check soil erosion and environment.
 - Discuss the proposals on small cross-drainage structures i.e. Culverts / causeways.
 - In case of improvement of existing roads, list out the cross-drainage structures proposed to be improved.
 - State whether any standard designs were followed.
- e) **Materials, Labor and Equipment**
 - Type, quantity and specifications of materials required and their availability.
 - Type, number and skills of labor required and its availability.
 - Type, number and specifications of tools/equipment/plants required.
- f) **Rates**
 - Give reference to the schedule of rates of the year adopted.
 - Highlight the items for which suitable rates are not available in the schedule and for such items give reference to the analysis of rates attached to the estimate.
 -
- g) **Construction Schedule**
 - Mention the proposed system of work execution to be adopted
 - Mention the proposed project period.
 - Discuss the prevailing and anticipated constraints to project implementation
 - Draw up a construction schedule in the form of bar chart along with the responsible parties. This should be done after scheduling the activities according to the Critical Path Analysis.
- h) **Miscellaneous**
 - Indicate the camping, store and office requirements.
 - Mention identified diversions and borrow pit.
 - Mention arrangements for water supply and other site amenities.
 - Indicate proposed roadside plantation and wayside amenities.
 - To prepare the EMP



1.2.5.2. Cost-Estimate

The project's cost-estimate should provide all financial requirements and it should be realistic too. In the project's cost-estimate, it is ensured that all

- The work items are carefully listed.
- The quantities are determined to a reasonable degree of accuracy, and
- The rates provided are workable.

The cost -estimate should consist of

- A general abstract of cost , and
- The detailed cost - estimate for each major activity as described below.

General abstract of cost provides the total cost of the scheme along with a general break-down given under the

Following major heading:

- Site clearance
- Earthwork
- Sub-bases
- Bases
- Surfacing
- Cross drainage and other structures
- Provision for tools, equipment and plants
- Provision for contingencies
- Work charges of the establishment
- Quality control, etc.
- Road furniture or safety major

The detailed cost-estimate for each major activity consists of

- Abstract of cost
- Estimate of rates for work items not covered by relevant schedule of rates and
- Chart of quarry / material sources

Where the project work is proposed to be executed in stages, the cost – estimate should be prepared for each stage separately. The cost- estimates for respective stage should be presented in a logical sequence.

1.2.5.3. Construction Drawings

The construction drawings should clearly show and interpret the proposed works in relation to the existing features with other necessary information for accurate translation of the proposed in the field. All the drawings should follow a uniform standard with regard to:

- Size
- Scale, and
- Details

a) Drawing size

Drawing should be of adequate size to accommodate a reasonable length of the road or an independent structure such as a culvert in full details but, at the same time, should not be incontinently large which may require many folds.

The appropriate size of a drawing sheet is 594 mm x 420 mm corresponding to A2 size which can easily be stitched in a folio. The standard size of the folded compact is 297 mm x 210 mm.

In each sheet of this size, it is possible to accommodate the plan and longitudinal section of one kilometer length of the road with reasonable overlaps at the sides if they are drawn to the horizontal scale of 1:2500.



To facilitate the stitching of drawings into a folio, a margin of 40 mm should be kept on the left hand side of the drawing sheets.

b) Component of a set of Project Drawings

- i) Locality map-cum-site plan
 - Key map also called as locality map
 - Index map also called as site plan

Key map and index map are usually drawn in a single sheet and this sheet forms the first sheet in the folio of project drawings.

Where the length of the road is substantially long, locality map and site plan are separated in such a manner that locality map is accommodated in one sheet and the site plan on a series of sheets.

The locality map or “Key Map” should be drawn to a scale of 1:250,000 and should have a bird’s eye view of the proposed work with respect to the

- Road network serving the area
- Important town / village centers, and
- Other prominent places

The site plan or “Index Map” should be drawn to a scale of 1:25000 and should show the project road with chain ages and its immediate neighborhood covering the important physical such as hills, rivers, tracks, main trails, etc.

The sheet which contains the locality-cum-site plan should have a legend to explain the abbreviations and symbols used in subsequent drawing sheets. Alternately, the legend could be shown on a separate sheet at the beginning of the folio.

- ii) The elements in a rural road are generally same for most of the length. They are:
 - Width of carriageway
 - Width of roadway, i.e. formation width
 - Width of shoulder
 - Right of way
 - Side slopes
 - Pavement cross fall

It is desirable to show the above mentioned elements as a typical section instead of repeating the same details on every cross-section.

- iii) The cross-sections of the road should be presented serially according to the chainage starting from 0+000. Each sheet should accommodate a number of cross-sections.
- iv) Standard design and drawings of cross-drainage structures should be used wherever possible, thus avoiding repetitive design/drawing work for similar structures. The drawings should be prepared for all:
 - Cross-drainage structures, drain
 - Retaining walls
 - Breast walls, and
 - Other road side structures

The drawings should show clearly the details of foundation, proposed materials, etc. and should be prepared on a scale which is large enough to accommodate all details comprehensively.



1.2.5.4. Bill of Quantities

Bill of quantities of a project should cover all the required items listed in the cost estimate. All the details of labor and materials should be given as a break-down under respective work item. In general, quantities of the work items and their units should be given in the approved format.

1.2.5.5. Schedules of Labor and Materials

Schedules of labor and materials are essential, in advance, for construction planning and management purposes.

1.3. Use of Computer and Design software

Consultants are encouraged to use computers and appropriate design software. The consultant should submit the soft (electronic) copy of reports of the total output of the works.

1.4. Liaison with engineer in-charge

The consultants are required to maintain close liaison with the Management Contractor and DTO Engineer. Draft design for alignment, earthwork and pavement design and other technical aspects of the design shall be discussed with the Management Contractor and DTO Engineer for approval prior to proceeding with the final detailed design

1.5. Client's Proposed Composition of Staff

a) Professionals:

Team Leader
Transportation/Highway /civil engineer
Highway/civil engineer (Design)
Environmental Engineer
Geologist/Geo tech engineer

b) Support Staffs

Sub engineer/Surveyor
Auto CAD Operator

1.6. Qualification and Experience:

a) Team Leader: The Team Leader will take the overall responsibility for the execution of the work in accordance with the TOR and also for the co-ordination of all professional inputs.

He will be responsible to the Client. He will also maintain close contact with DTO of the programme districts to ensure that the contract is implemented in accordance with the government's policies and objects.

The team leader should have a Master degree in civil engineering and should preferably have a Master's Degree in the field of Highway/Transportation. He should have 7 years of general experience in road sector and 3 years in specific experience in similar nature of works as design/ construction supervision of road improvement/upgrading/ rehabilitation projects

- b) Transportation/Highway Engineer:** should have wide experience and expertise in planning, detail engineering surveying, designing and construction of rural roads, including:
- ❖ Must have completed Bachelor's Degree in Civil Engineering.
 - ❖ More than 3 years experience in planning, detail engineering survey, design and construction supervision of rural roads in hilly districts



- ❖ Must be registered in Nepal Engineering Council.
- c) **Highway/Civil Engineer (Design):** should have wide experience and expertise in planning, detail engineering surveying, designing and construction of rural roads, including:
 - ❖ Must have completed Bachelor's Degree in Civil Engineering.
 - ❖ More than 3 years experience in planning, detail engineering survey, design and construction supervision of roads in hilly districts.
 - ❖ Should have three years specific experience in Design of hilly roads using different road software.Must be registered in Nepal Engineering Council
- d) **Environmental Engineer:**
 - ❖ Must have completed Bachelor's Degree in Environmental Engineering.
 - ❖ More than 5 years experience in related field.
 - ❖ Must be registered in Nepal Engineering Council.
- c) **Geologist/Geo tech engineer:**
 - ❖ Must have completed Bachelor's Degree in Geology/Geo tech Engineering or B.E in civil Engineering.
 - ❖ More than 5 years experience in related field.
 - ❖ Must be registered in Nepal Engineering Council.
- e) Sub engineer/Surveyor
 - ❖ Must have completed Diploma in Civil Engineering.
 - ❖ More than 3 years experience in detail engineering survey, design and construction supervision of rural roads.
- f) Auto CAD Operator
 - ❖ Must have completed Assistant Sub-Engineer course in Civil Engineering or auto CAD course
 - ❖ More than 3 years experience in Auto CAD to prepare design drawing of road works.

1.7. Duration of the Study and Reporting

The duration for the assigned task is three month. The consultant shall submit the following reports:

- i) **Inception report** The consultant shall submit 2 (Two) copies of Inception report within 1 month of signing the contract agreement for the consulting services.
- ii) **Draft report:** The consultant shall submit 2 (Two) copies of the draft report within 2.5 months of signing the contract agreement for the consulting services. The report should have two volumes. **Volume I** should contain the main report and cost estimate and **Volume II** should contain detail engineering drawings, maps and contract documents (bidding documents, Technical specifications, Drawing of structures etc of package)
- iii) **Final report:** The consultant shall submit 6 (Six) copies of final reports within 15 (Fifteen) days after receiving comments, incorporating comments and suggestions on the draft reports. The report should be also in three Volumes of each, as mentioned for draft report. The final report and maps should be in hard as well as in soft copies in CD.

Note:- Before replacing proposed staff approval is required from client.

1.8 Indicative Reporting Outline

Acknowledgement
Synopsis
Salient Features
Summary of Cost
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Executive Summary

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- 1.2 Objective
- 1.3 Scope and Limitation
- 1.4 Approach and Methodology

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- 2.2 Design speed
- 2.3 Horizontal curves
 - 2.3.1 Minimum radius of curve
 - 2.3.2 Super elevation
 - 2.3.3 Transit curves
 - 2.3.4 Extra widening
- 2.4 Vertical curves
 - 2.4.1 Minimum radius of curve
 - 2.4.2 Gradient
- 2.5 Sight distance
- 2.6 Lateral and vertical clearance
- 2.7 Right of way
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3. Alignment Survey

- 3.1 Survey procedure
- 3.2 Alignment description
- 3.3 Bench marks and other reference points
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- 4.1 Horizontal alignment
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- 4.3 Cross-section design
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5. Quantity Survey and Cost-Estimate

- 5.1 Project costs
 - 5.1.1 Summary of cost
 - 5.1.2 Cost of site clearance
 - 5.1.3 Cost of earthwork
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 - 5.1.5 Cost of retaining structures
 - 5.1.6 Cost of breast structures
 - 5.1.7 Cost of slope protection
 - 5.1.8 Cost of pavement construction if any
 - 5.1.9 Cost of road side development works if any

6. Conclusion

7. Recommendation



1.9. Proposal Submission

The consultants shall submit technical and financial proposals under two-envelope system. The technical and financial proposals must be enclosed in separate wax sealed envelopes, Then both the sealed envelopes must be enclosed in an outer waxed sealed envelope, clearly stating the name of proposal, purchaser's address and the firms' name and address.

1.10. Payment Schedule

The payment schedule will be as per the following:

After submission of inception report = 20% of the total contract amount.

After submission of the draft report = 50 % of the total contract amount.

After submission and approval of the final report = 30% of the total contract amount.



ANNEX A :

Road Geometrics Design Standards and Surfacing Options for UNNATI

Road Geometrics Design Standards				
Sr. No	Road Components	Design Standards		Remarks
		Terai	Hills	
1.	Carriageway Width (m) • Traffic < 100 VPD • Traffic > 100 VPD < 400 VPD	3.00 3.75	3.00 3.75	
2.	Shoulder Width (m)	1.50	0.75	On both sides
3.	Roadway Width (m) • Traffic < 100 VPD (see notes below) • Traffic > 100 VPD < 400 VPD	6.00 6.75	4.50 5.25	Excludes width of drain, parapet & retaining wall top
4.	Right of Way (m)	20.00	20.00	10m RoW on either side from the road centerline
5.	Corridor of Impact or COI (see notes below)	As specified in as per the provision of the Environmental and Social Management Framework (ESMF) of SNRTP		COI will be the minimum width to cover the actual road construction boundary plus 1.00m on each side of the construction line.
6.	Design Speed • Ruling • Minimum	50 40	25 20	
7.	Stopping Sight Distance (m)	45.00	20.00	
8.	Lateral Clearance (m) • Normal • Minimum	1.50 1.00	1.00 0.50	
9.	Vertical Clearance (m)	5.00	5.00	
10.	Radius of Horizontal Curves (m) • Ruling • Minimum	≥90.00 60.00	≥20.00 12.50	Exceptional case: 10m
11.	Hairpin bends			
	Desirable Spacing (m)	NA	100	Distance between two bends
	Minimum Radius (m)	NA	12.5	Exceptional Case: 8.5m
	Minimum Roadway width at apex(m)	NA	5.5	For curves with radius < 12.5m provide 7.00 width
12.	Gradient (%)			
	Ruling	5	7	
	Limiting	6	10	
	Exceptional	7	12	Up to 15% in hill roads for short stretch of 50m in unavoidable situation except in hairpin bends.
	Maximum for Bridge approach	5	6	
	Minimum in hill roads	NA	0.50	
13.	Extra Widening (m)			



	For curve radius ≤ 20 m	1.5	1.5	
	For curve radius 20 -60 m	0.60	0.60	
	For curve radius > 60 m	Nil	Nil	
Road Geometrics Design Standards				
Sr. No	Road Components	Design Standards		Remarks
		Terai	Hills	
14.	Camber minimum (%)			
	Earthen Roads	5	5	Hills: Unidirectional camber sloping either towards hill side or valley side <i>Terai</i> : both side camber from center line
	Gravel Roads	4	4	Hills: Unilateral camber in carriageway sloping towards hill side <i>Terai</i> : both side camber from center line
	Bituminous Roads	3	3	Hills: Unilateral camber in carriageway sloping towards hill side <i>Terai</i> : both side camber from center line
15.	Passing zone/Bus lay Bys	Width 2.5m in addition to carriageway width and length 30m along the edge of carriageway tapered to 20m along the outer edge or at least of dimensions as specified in NRSS-2013		
16.	Traffic Signs and Road Safety	As detailed in the NRRS 2013		
17.	Carriageway Width (cross-drainage structures)			
	Culvert	6.00	4.5	Distance between parapet walls
	Bridge	4.25	4.25	Distance between kerb on one side and footpath (min ^m 1.00m width) on the other side (see notes below)
18.	Road side drains	Hill roads: tick drain with masonry (1:4) back wall and 10cm thick M-15 grade concrete sloped bed throughout the road length as required Built up areas: Type G drain specified in DoLIDAR Technical Guideline with adequate cover slabs for crossings.		
Surfacing Options				
1.	Gravel Surface	15 cm thick in carriageway for both hill and terai roads.		Hill roads : 15cm gravel surfacing in carriageway to be extended in the hill side shoulder up to inner edge of the drain. Tapering gavel hard shoulder (15cm to 6cm) in the valley side with slope towards the valley. Terai Roads: 1.00m wide tapering gavel hard shoulder (15cm to 6 cm) with slope towards the embankment on either side of the carriageway

Notes:

- The standards are mainly adapted from Nepal Rural Road Standards (NRRS), 2013. However, in some cases separate standards are proposed where NRSS standards are found to be inadequate or missing.
- VPD - Vehicles per Day (VPD) as per definitions of NRRS, 2013.
- Main objective of the capping layer is to increase CBR of sub grade to at least 10%. Locally available suitable materials will be used for the capping layer.