

EXPRESSION OF INTEREST (EOI)

**Title of Consulting Service:
DoR_QRDC/33701168/2078/79/16**

Method of Consulting Service: National

**Project Name : Consultancy service to perform Feasibility Study of Rara
Rajmarg kusepatan-Jajarkot (Byaulidhunga) -Jumla (Imlicha khola) Road
Tunnel, Jajarkot, Jumla**

EOI : QRDC/78/79/EOI-16

Office Name: Quality, Research and Development Centre

Office Address: Chakupat Lalitpur Lalitpur

Funding agency : Government Budget

Abbreviations

CV	-	Curriculum Vitae
CC	-	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
QRDC	-	Quality Research and Development Center
QRDCT	-	Quality Research and Development Center, Tunnel Section

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A. Request for Expression of Interest

Request for Expression of Interest

Government of Nepal (GoN)

Name of Employer: Quality, Research and Development Centre

Date: 30-12-2021 10:00

Name of Project: Consultancy service to perform Feasibility Study of Rara Rajmarg kusepatan-Jajarkot (Byaulidhunga) -Jumla (Imlichha khola) Road Tunnel, Jajarkot, Jumla

1. Government of Nepal (GoN) has allocated fund toward the cost of Consultancy service to perform Feasibility Study of Rara Rajmarg kusepatan-Jajarkot (Byaulidhunga) -Jumla (Imlichha khola) Road Tunnel, Jajarkot, Jumla and intend to apply portion of this fund to eligible payments under the Contract for which this Expression of Interest is invited for National consulting service
2. The Quality, Research and Development Centre now invites Expression of Interest (EOI) from eligible consulting firms (“consultant”) to provide the following consulting services: Consultancy service to perform Feasibility Study of Rara Rajmarg kusepatan-Jajarkot (Byaulidhunga) -Jumla (Imlichha khola) Road Tunnel, Jajarkot, Jumla
3. Interested eligible consultants may obtain further information and EOI document free of cost at the address Quality, Research and Development Centre, Quality, Research and Development Centre
Chakupat
Lalitpur, Lalitpur
Bagmati Province
Nepal during office hours on or before 14-01-2022 17:00 or visit e-GP system www.bolpatra.gov.np/egp or visit the client’s website www.dor.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 or manually to the address [insert: Name of the client and address] on or before 14-01-2022 17:00
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 30.0 %, Experience 60.0 %, and Capacity 10.0 % 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 70

B. Instructions for Submission of Expression of

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.
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 consulting firm/person/ company/ organization.
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.
5. The assignment has been scheduled for a period of 6 months. Expected date of commencement of the assignment is 02-03-2022.
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 Consultancy service to perform Feasibility Study of Rara Rajmarg kusepatan-Jajarkot (Byaulidhunga) -Jumla (Imlichha khola) Road Tunnel, Jajarkot, Jumla. 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.

C. Objective of Consultancy Services or Brief TOR

TERMS OF REFERENCE FOR FEASIBILITY OF ROAD TUNNEL

1. Introduction

Rara – Rajmarga NH56 is an important Highway connecting Jajarkot and Jumla districts. The construction of Jajarkot-Byaulidhunga-Jumla-Imilcha khola Road Tunnel effects directly and indirectly positive influence on Dolpa, Mugu, Kalikot, Rukum East and Rukum West districts. It also helps in enchancing the tourism sector in these areas. The Construction of Road through Kuse Patan to Imiacha Ghari is very difficult due to its geographical conditions, steep terrain, hard rock. The approximate entry point and exit coordinate of the proposed tunnel are 29°0'24.83" N, 82°8'19.89" E and 29°3'17.33" N, 82°5'5.44" E. The construction of road tunnel reduces the tentative length of the road upto 15 Km and hence reduces the travel time making the travel safe in geographically steep terrain. The construction of road tunnel helps in enhancing the economic growth in these areas



Road tunnels are feasible alternatives to cross a water body or traverse through physical barriers such as mountains, existing roadways, railroads, or facilities; or to satisfy environmental or ecological requirements. In addition, road tunnels are viable means to minimize potential environmental impact such as traffic congestion, pedestrian movement, air quality, noise pollution, or visual intrusion; to protect areas of special cultural or historical value such as conservation of districts, buildings or private properties; or for other sustainability reasons such as to avoid the impact on natural habit or reduce disturbance to surface land.

Geotechnical investigations are critical for proper planning of a tunnel. Selection of the alignment, cross section, and construction methods is influenced by the geological and geotechnical conditions, as well as the site constraints. Good knowledge of the expected geological conditions is essential. The type of the ground encountered along the alignment would affect the selection of the tunnel type and its method of construction. For example, in TBM tunnel construction mixed ground conditions, or buried objects add complications to the TBM performance and may result in the inability of the TBM to excavate the tunnel, potential breakdown of the TBM, or potential ground failure and settlements at the surface. The selection of the tunnel profile must therefore take into account potential ground movements and avoid

locations where such movements or settlements could cause surface problems to existing utilities or surface facilities and mitigation measures should be provided. Another example of the effect of the impact of geological features on the tunnel alignment is the presence of active or inactive faults. During the planning phase, it is recommended to avoid crossing a fault zone and preferred to avoid being in a close proximity of an active fault. However, if avoidance of a fault cannot be achieved, then proper measures for crossing it should be implemented.

Geotechnical issues such as the soil or rock properties, the ground water regime, the ground cover over the tunnel, the presence of contaminants along the alignment, presence of underground utilities and obstructions such as boulders or buried objects, and the presence of sensitive surface facilities should be taken into consideration when evaluating tunnel alignment. Tunnel alignment is sometimes changed based on the results of the geotechnical to minimize construction cost or to reduce risks. The tunnel profile can also be adjusted to improve constructability or accommodate construction technologies as long as the road geometrical requirements are not compromised. For example, for TBM tunnels the profile would be selected to ensure that sufficient cover is maintained for the TBM to operate satisfactorily over the proposed length of bore. However, this should not compromise the maximum grade required for the road. If the route selection is limited, then measures to deal with the poor ground in terms of construction method or ground improvement prior to excavation should be considered. It is recommended that the geotechnical investigation start as early as possible during the initial planning phase of the project. The investigation should address not just the soil and rock properties, but also their anticipated behaviors during excavation. For example in sequential excavation or NATM, ground standup time is critical for its success. If the ground does not have sufficient standup time, pre-support or ground improvement such as grouting should be provided. For soft ground TBM tunneling, the presence of boulders for example would affect the selection of TBM type and its excavation tools. Similarly, the selection of a rock TBM would require knowledge of the rock unconfined compressive strength, its abrasive and its jointing characteristics. The investigation should also address groundwater. For example, in soft ground SEM tunneling, the stability of the excavated face is greatly dependent on control of the groundwater. Dewatering, pre-draining, grouting, or freezing are often used to stabilize the excavation. Ground behavior during tunneling will affect potential settlements on the surface. Measures to minimize settlements by using suitable tunneling methods or by preconditioning the ground to improve its characteristics would be required. Presence of faults or potentially liquefiable materials would be of concern during the planning process. Relocating the tunnel to avoid these concerns or providing measures to deal with them is critical during the planning process.

Road tunnels are more environmentally friendly than other surface facilities. Air quality would be improved because traffic generated pollutants are captured and disposed of away from the public. Similarly, noise would be reduced and visual aesthetic and land use would be improved. By placing traffic underground, property values would be improved and communities would be less impacted in the long term. Furthermore, tunnels will provide opportunities for land development along and over the tunnel alignment adding real estate properties and potential economical potential development.

In planning a tunnel, provisions should be made to address the operational and maintenance aspects of the tunnel and its facilities. Issues such as traffic control, ventilation, lighting, life safety systems, equipment maintenance, tunnel cleaning, and the like, should be identified and provisions made for them during the initial planning phases. For example, items requiring more frequent maintenance, such as light fixtures, should be arranged to be accessible with minimal interruption to traffic.

The Department of Roads, Quality Research and Development Center, Lalitpur (herein after

referred as "the Office"), intends to utilize services of engineering well experienced consulting firms, in the fields of survey and design of tunnels to provide the consultancy services, for the feasibility study of road tunnel.

2. Objectives

The objective of the consulting service is to conduct a feasibility study of road tunnel to be constructed under DB or EPC Contract Model.

3. Scope of Works

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

3.1 Existing Information Collection and Study

The Consultant shall collect and review of available information and data to develop an overall understanding of the site conditions and constraints. Existing data can help identify existing conditions and features that may impact the design and construction of the proposed tunnel, and can guide in planning the scope and details of the subsurface investigation program to address these issues.

Published topographical, hydrological, geological, geotechnical, environmental, zoning, and other information shall be collected, organized and evaluated. Historical seismic records shall be collected and used to assess earthquake hazards. Records of landslides caused by earthquakes shall be collected which can be useful to avoid locating tunnel portals and shafts at these potentially unstable areas.

Topographic maps and aerial photographs shall be used to identify the terrain and geologic features (i.e., faults, drainage channels, sinkholes, etc.). Aerial photographs taken on different dates may reveal the site history in terms of earthwork, erosion and scouring, past construction, etc. The Consultant is advised to use all such information.

3.2 Surveys and Site Reconnaissance

The reconnaissance shall cover the immediate project vicinity, as well as a larger regional area so that regional geological, hydrological and seismic influences can be accounted for. A horizontal and vertical control survey shall be carried out to obtain general site data for route selection and for design. This survey shall be expanded from existing records and monuments that are based on the same horizontal and vertical datum that will be used for final design of the structures. Additional temporary monuments and benchmarks shall be established, as needed, to support field investigations, mapping, and environmental studies.

3.2.1 Topographic Survey:

Detailed topographic maps, plans and profiles shall be developed to establish control for detail design based on a high order horizontal and vertical control field survey. A tunnel centerline developed during design shall be composed of tangent, circular, and transition spiral sections that approximate the complex theoretical tunnel centerline. The topographical survey shall be performed by using various available appropriate Survey Method, not limited to as given herewith:

- Report and Maps: Drone Mapping, 3D Modelling at 1:1000 maps scale with 1.00 m contour interval have been prepared.

- Control Station shall be established @500m DGPS Control Stations, provided that each subsequent control point shall be visible.
- The permanent control points shall be connected to National Trigonometric Points.
- Model: 3D Digital Elevation Model (DEM) of the area investigated by Drone survey;
- Pictures: Satellite Images of the area investigated by Drone Survey;
- The Control Points with RCC pillar post of size 15 cm*15 cm*50 cm with M20 or equivalent concrete, nails embedded flushed with top surface and 5cm above the natural ground level, at accessible location.

3.2.2 Hydrographical Surveys

Hydrographic surveys shall comprise the preliminary identification of ground water levels, ground water reserves and source of existing springs along the tunnel alignment.

The detailed hydrological study shall be carried out to identify the watersheds and to assess the hydrological design parameters required for crossing design along the approach road to the tunnel.

3.2.3 Identification of Underground Structures and Other Obstacles

The underground structures may exist that may impact the alignment and profile of the proposed road tunnel, and will dictate the need for structure protection measures during construction. These existing underground structures may include existing or abandoned structure foundations, underground quarry sites, soil treatment areas, and soil or rock anchors that were used for temporary or permanent support of earth retaining structures. Initial surveys for the project shall therefore include a survey of existing and past structures. In addition, historical maps and records shall be reviewed to assess the potential for buried abandoned structures.

3.3 Geological Survey and Field Investigation

After collecting and reviewing existing geological maps, aerial photos, references, and the results of a preliminary site reconnaissance, surface geological mapping of available rock outcrops shall be performed by an experienced engineering geologist to obtain detailed, site-specific information on rock quality and structure. Geological mapping collects local, detailed geological data systematically, and is used to characterize and document the condition of rock mass or outcrop for rock mass classification such as:

- Discontinuity type
- Discontinuity orientation
- Discontinuity infilling
- Discontinuity spacing
- Discontinuity persistence
- Weathering

The analysis of discontinuities shall be considered characteristic both for the road route and for the structural geological characterization in the underground.

In addition, the following surface features shall also be observed and documented during the geological mapping program:

- Slides, new or old, particularly in proposed portal and shaft areas
- Faults
- Rock weathering
- Sinkholes and karstic terrain
- Stress relief cracks
- Presence of alluvium, colluvium, talus or boulders
- Thickness of bedding rock (by Engineering Geological study)

A hydrogeological site surveys shall be carried out to identify streams & their water flow rate. The consultant shall prepare Geotechnical Design Memorandum (GDM) based Geotechnical Data Report (GDR).

3.4 Subsurface Investigations

Subsurface investigation shall be done to obtain underground conditions, as it is the principal means for:

- Defining the subsurface profile (i.e., stratigraphy, structure, and principal soil and rock types)
- Determining soil and rock material properties and mass characteristics;
- Identify geological anomalies, fault zones and other hazards (squeezing soils, methane gas, etc.)
- Defining hydrogeological conditions (groundwater levels, aquifers, hydrostatic pressures, etc.); and
- Identifying potential construction risks (boulders, etc.).

3.4.1 Subsurface Investigations by Geo-physical Methods

The Consultant shall conduct following Geophysical Investigations for following objectives;

S. No.	Geophysical Investigations	Details of Methods	Objectives
1	Seismic Methods	Multichannel Analysis of Surface Wave (MASW) 'For Shallow Overburden'	1. to calculate share wave velocity (V_s), estimate the converted blow count (N), density (ρ) and compressional wave velocities (1D) profile of surface 2. to calculate the dynamic parameters (E_{dym} , G_{dym} , V_{dym}) 3. to calculate ultimate bearing capacity (q_{alt}) and allowable bearing capacity (q_a) of base layers and average unit weight (γ_{av}) of overlying materials 4. The tests shall be carried out

			minimum 4 points.
		Microtremor Array measurement (MAM) „For Deeper Overburden“	<ol style="list-style-type: none"> 1. to explore shear wave velocity structures of the deeper parts of the area. 2. to estimate the rock mass quality of the surface. 3. The tests shall be carried out minimum 4 points.
		Seismic Refraction Tomography (SRT)	<ol style="list-style-type: none"> 1. to estimate compressional wave velocity of the subsurface for geological information 2. to estimate depth to different material types in the overburden and depth to weathered or fresh bedrock. 3. to identify weak zones in bedrock
2	Electrical Method	Electrical Resistivity Tomography (ERT)	<ol style="list-style-type: none"> 1. to estimate ground profile showing different layers of soil and rock 2. to find out depth of bedrock 3. to find out sheared zones within the bedrock 4. to find out rock mass quality. <p>The geophysical investigation shall be conducted by using any of the standard configurations that may be varied according to the depth requirement. The planned depth of investigation is between 50- 500m depending upon the type of the structure to be considered. The consultant shall follow the IS 15736: Geological exploration by geophysical method Code of practice or equivalent, to conduct the services.</p> <ol style="list-style-type: none"> 5. A total of 3-5km (approx.) survey shall be carried out along the tunnel alignment.

3.4.2 Rock Identification and Classification

The consultant shall perform geotechnical characterization of the identified tunnel alignment. An evaluation of the geological-geotechnical scenario and relevant hazards (like stones falling from the crown; unstable blocks on the excavation contour; detachment of slabs; loosening of rock mass around the tunnel; plastic deformation of the rock mass; instability of the tunnel face; water ingress etc.) shall be identified during the geological study.

The consultant shall classify the rock along the tunnel alignment based on Rock Mass Rating (RMR) System or Tunneling Quality Index (Q).

3.4.3 Construction Materials Survey

The Consultant shall conduct construction material survey in order to establish quarry sites and borrow area, mucking disposal areas. This shall cover:

Investigation for identification of locations of potential quarries/borrow pits for concrete aggregates, rock fill materials, impervious clay core materials and filter materials, etc., and preparation of maps identifying the borrow areas, mucking disposal areas.

3.5 Environmental and social issues

Although tunnels are generally considered environmentally-friendly structures, certain short-term environmental impacts during construction are unavoidable. Long-term impacts from the tunnel itself, and from portals, vent shafts and approaches on local communities, historic sites, wetlands, and other aesthetically, environmentally, and ecologically sensitive areas must be identified and investigated thoroughly during the project planning and feasibility stages, and appropriately addressed in environmental studies and preliminary design. Early investigation and resolution of environmental issues is an essential objective for any underground project since unanticipated conditions discovered later during preliminary design or construction could potentially jeopardize the project.

The specific environmental data needed for a particular underground project very much depend on the geologic and geographic environment and the functional requirement of the underground facility. Some common issues can be stated, however, and are identified below in the form of a checklist:

- Existing infrastructure, and obstacles underground and above
- Surface structures within area of influence
- Land ownership and uses (public and private)
- Ecosystem habitat impacts
- Contaminated ground or groundwater
- Long-term impacts to groundwater levels, aquifers and water quality
- Control of runoff and erosion during construction
- Naturally gassy ground, or groundwater with deleterious chemistry
- Access constraints for potential work sites and transport routes
- Sites for muck transport and disposal
- Noise and vibrations from construction operations, and from future traffic at approaches to the completed tunnel
- Air quality during construction, and at portals, vent shafts and approaches of the completed tunnel
- Maintenance of vehicular traffic and transit lines during construction
- Maintenance of utilities and other existing facilities during construction
- Access to residential and commercial properties
- Pest control during construction
- Long-term community impacts
- Long-term traffic impacts
- Temporary and permanent easements
- Tunnel fire life safety and security
- Legal and environmental constraints, enumerated in environmental statements or reports, or elsewhere

3.6 Project Specific Seismic Hazard Analysis

The release of energy from earthquakes sends seismic acceleration waves traveling through the ground. Such transient dynamic loading instantaneously increases the shear stresses in the ground and decreases the volume of voids within the material which leads to an increase in the pressure of fluids (water) in pores and fractures. Thus, shear forces increase and the

frictional forces that resist them decrease. Other factors also can affect the response of the ground during earthquakes.

- Distance of the seismic source from the project site.
- Magnitude of the seismic accelerations.
- Earthquake duration.
- Subsurface profile.
- Dynamic characteristics and strengths of the materials affected.

In addition to the distance of the seismic source to the project site, and the design (anticipated) time history, duration and magnitude of the bedrock earthquake, the subsurface soil profile can have a profound effect on earthquake ground motions including the intensity, frequency content, and duration of earthquake shaking.

The ground accelerations associated with seismic events can induce significant inertial forces that may lead to instability and permanent deformations (both vertically and laterally) of tunnels and portal slopes. In addition, during strong earthquake shaking, saturated cohesionless soils may experience a sudden loss of strength and stiffness, sometime resulting in loss of bearing capacity, large permanent lateral displacements, landslides, and/or seismic settlement of the ground. Liquefaction beneath and in the vicinity of a portal slope can have severe consequences since global instability in forms of excessive lateral displacement or lateral spreading failure may occur as a result. The Consultant shall consider all these issues in the preliminary design and analysis of the Tunnel section.

3.6 Tunnel Design Principles

The consultant shall perform the preliminary design for Drill and Blast method or other design methods as agreed by Client. The consultant shall preliminary design the tunnel excavation and support system using empirical method based on either Rock Mass Rating (RMR) System or Tunneling Quality Index (Q)

The geometrical requirement along with the cross-sectional details shall comply the Nepal Road Standard – 2070, 2013 and/or below requirements:

Inner section requirements: The space above the carriageway is determined by the required usable space, as well as the constructional and technical execution requirements. The usable space consists of the following elements:

- Usable space for traffic, consisting of:
 - clearance profile for passage through the tunnel;
 - space for walkways (service and emergency escape route);
 - space for equipment including any free space (safety margin).
- Usable space for constructional purposes, consisting of:
 - space for tolerances (a), which takes into account the deviations due to execution errors;
 - space for later constructional measures (b), which may be necessary during the service phase.

- Usable space for ventilation.

3.6.1 Tunnel Cross Section

According to the space requirements, the following preliminary design sections shall be provided.

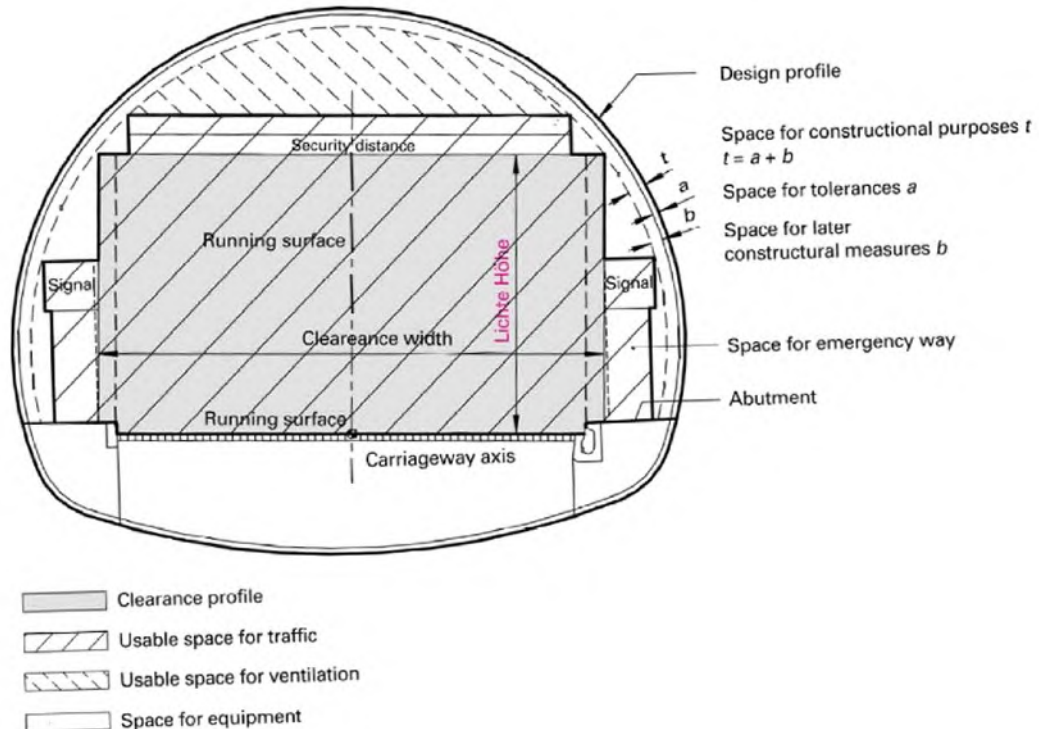
- *Typical cross section*
- *Widened typical cross section*
- *Lay by typical cross section*
- *Bypass typical cross section*
- *Bypass "air lock" cross section*

(as required)

3.6.2 Tunnel Excavation Support classes and distributions

A preliminary evaluation of the geological-geotechnical scenario and relevant hazards shall have been identified and evaluated.

According to the geo-mechanical longitudinal profile, suitable homogeneous sections shall have



been identified, on the basis of expected geology and hazards and 5 excavation support classes shall have been identified, numbered from I to V (as applicable).

Class V: Very Poor Rock with RMR value <20 or Equivalent Q

Class IV: Poor Rock with RMR value 21-40 or Equivalent Q

Class III : Fair Rock with RMR value 41-60 or Equivalent Q

Class II : Good Rock with RMR value 61-80 or Equivalent Q

Class I : Very Good Rock with RMR value 81-100 or Equivalent Q

The consultant shall design the Tunnel excavation support based on the classification of the rock class.

3.6.3 Tunnel lining/ permanent support

The Preliminary design of lining shall follow the Observation Monitoring and Analysis.

The lining concept to be applied shall be a double-shell lining, where the external lining shall support rock load during construction and inner lining loads in the long term; a proper waterproofing system is needed to guarantee serviceability of the tunnel.

As above mentioned, the waterproofing system has to be able to guarantee dry condition within the tunnel. Around it, a draining layer has been foreseen as well as drainage longitudinal pipes on both sides and at the lower points of the cross-section, in order to discharge possible water pressure and avoid water accumulation below the carriageway.

3.7 Operating and safety equipment

The following plants and equipment shall be designed and provided in order to guarantee proper operation of the tunnel and safety conditions (SIA 197/2 or equivalent code):

- **Lighting**
- **Ventilation**
- **Traffic management equipment** (traffic signals and road markings)

The implementation of the tunnel is accompanied by a larger-scale traffic and signalling concept that makes it possible to manage traffic flows as efficiently as possible, in normal conditions and in the event of tunnel closure.

- **Surveillance system:**
 - Tunnel fire detection system, which is responsible for the detection of fires in the tunnel and it is based on two separate technologies, both controlled by the detection system:
 - detection of the increase in temperature, by means of a fibre optic sensor cable
 - detection of the presence of smoke, by means of point-sensors installed.
 - Video-surveillance system, which foresees 10 IP cameras in tunnel and 2 IP cameras outside the tunnel, with a server that manages video-images and a recording server (for 72 hours), if required.

- **Control system and communication network**

To allow the monitoring and control of the tunnel facilities through the transport of data, voice and images, a communication network is required.

The communication network will be based on Gigabit Ethernet technology; all connections must allow a speed of 10 gigabit per second on the main backbone between the technical rooms by the tunnel portals and 1 gigabit within the technical rooms.

The connection topology of the main backbone between the technical rooms by the tunnel portals is a ring, in order to assure a redundancy in case of interruption of the cable. The communication ring must extend over two different cables so that the interruption of a single cable does not affect the operation of the ring.

- **Fire-fighting plant**

Moreover, the following is necessary for the operation of the above facilities:

- Energy supply
- Cabling system
- Auxiliary systems
- Control room

As for the ventilation system, design shall follow rules provided by the guidelines adopted on Swiss highway tunnel (ASTRA 13001 (2008)). In particular, the necessity for a smoke extraction system and the consequent intermediate slab, shall be evaluated depending on expected traffic and tunnel geometry, as for relevant chart in the aforementioned guidelines.

As for the fire-fighting plant, a water supply pipe shall be provided along the tunnel, designed for a discharge of at least 20 l/s and guaranteeing a minimum water pressure at the hydrants not lower than 0.6 MPa; moreover, a reservoir basin of at least 250 m³ shall be provided and linked to the firefighting system.

3.8 Portal Design and its Approach road

The portal of main tunnel and exist of the escape tunnels shall be preliminary designed to ensure the full safety and operational guarantee, including due consideration of aesthetics, slope protection, rock fall measures etc as necessary according the site.

The approach road shall be preliminary designed as per the Nepal Road Standard 2070, and the preliminary design shall ensure the full safety and operational guarantee, including slope protection, rock fall measures etc as necessary according the site.

3.9 Proposed Design and Drawings

The engineering design shall be prepared according to Nepal Road Standards published by DoR and Eurocodes or equivalent code. The engineering drawings shall have been prepared by means of Auto CAD and Civil 3D as drafting tools. In drawings, plan, profile and cross-sections shall have been published and presented for the whole length of design road; for road structures such as retaining walls, cross drainage, side drains, traffic safety, typical standard drawings with necessary detailing shall have been shown in drawings. For scaling of the drawing, standard practices are followed.

3.10 Proposed Construction Schedule

A possible Construction Time Schedule, based on the assumption of a single Contractor, working within a design-build / EPC package, shall be done utilizing the appropriate project management tool.

3.11 Project Cost Estimation

The Preliminary project cost shall be estimated considering the tunnel, its components and its portal construction cost; and approach road construction cost under the DB/EPC contract based on the reference of the **NORMS FOR ROAD TUNNEL CONSTRUCTION COST FOR DB/EPC 2020 and the NORMS FOR RATE ANALYSIS OF ROAD AND BRIDGE WORKS, 2075.**

3.12 Economic analysis

The Consultant shall perform the economic analysis to evaluate the Net Present Value, EIRR and B/C ration to justify the investment of capital for construction; at discount rate 10-12%.

3.13 Reporting Obligations

With the scope of this consultancy service, the consultant has to prepare and submit the following reports:

Inception Report

The Inception Report shall be prepared **within 2 weeks** of signing the contract agreement for the consulting services. The inception report shall in no case limit the original scope. Its purpose is to incorporate the additional services offered by the consultant in its technical proposal and to elaborate the study schedule and methodology. The report has to be submitted in 3 copies. The inception report shall be presented through suitable overhead media to a group of about 15 representatives of the DoR.

Draft Final Report

The draft final report shall fully cover the entire requirement as stated in the TOR. Draft final report shall be submitted within **4 months** of signing the contract agreement for consulting services. The report has to be submitted in 3 copies. The report shall be presented to a group of about 15 representatives as in the case of the inception reports. A CD of the report and the presentation materials shall be provided to each of the participant so that comments could be received at a later stage.

Requirement of Reports, but not limited to, are:

- ◇ TOPOGRAPHIC SURVEY REPORT OF PROPOSED ROAD CORRIDOR INCLUDING ROAD INVENTORY SURVEY OF EXISTING STRUCTURES
- ◇ PREPARE REPORT ON PROPERTY ACQUISITION PLAN
- ◇ HYDROLOGICAL SURVEY
- ◇ MATEROLOGICAL STUDY AT SUITABLE LOCATIONS SHOULD BE PEFORMED.
- ◇ SURVEY OF SERVICES TO BE RELOCATED INCLUDING IRRIGATION CANAL
- ◇ QUANTITY AND COST ESTIMATE REPORT

- ◇ GEOTECHNICAL DATA REPORT FOR GEOTECHNICAL INVESTIGATION AND LABORATORY TESTS
- ◇ GEOPHYSICAL REPORT FOR GEOPHYSICAL SURVEY
- ◇ ROADS WORKS -
- ◇ EXPLOITATION AND SAFETY EQUIPMENT -
- ◇ VENTILATION SYSTEM -
- ◇ LIGHTING SYSTEM –
- ◇ PREPARATION OF PRELIMINARY DRAWINGS

Final Report

The Final Report shall be submitted after incorporating the comments from the Client and the Stakeholders. The report shall be delivered in 5 hard and soft copies (3 copies of drawings in A1 Size and 2 copies in A3 size) at the client's office. The Volume of Final Report will be same as Draft Final report.

The Final Report all complete shall be submitted within **2 weeks after the comments on draft report**. Draft and final reports shall consist of the following volumes.

4. Working Team

The working team for the field and office works in general shall consist of the following experts' personnel:

S.N.	Experts	Input In days(for upto 5km)
1	Team Leader (Highway Engineer/Tunnel Engineer)	64
2	Engineering Geologist/Geotechnical Engineer/Geo-physicist	54
3	Hydrologist	45
4	Structural Engineer	43
5	Environmental/Environmental Engineer	40
6	Traffic/Road Safety Engineer	25
7	Electro/Mechanical Engineer	34
8	Socio-economist	40
9	Engineering Economist	33
10	Drone Technician	25
11	GIS Analyst Engineer(Data Processing)/GPS Engineer (Surveyor)/Co-pilot	42
12	Equipment and Electrical Appliances Planner	42
13	Legal Expert	24
	Total	511 Days

A. Key Professionals (CV will be Evaluated)	
Team Members	Education Qualification and Experience
Tunnel Engineer (Team leader)	<p>Education:</p> <ul style="list-style-type: none"> • Minimum: Graduate in Civil Engineering • Desirable: Masters in Tunnel Engineering /Mining/Rock Mechanics. <p>Experience:</p> <ul style="list-style-type: none"> • Total Experience- 12 years • Experience of 10 years in Road Tunnel/Hydropower Tunnel / Irrigation Tunnel

Geologist/Geotechnical Engineer	<p>Education:</p> <ul style="list-style-type: none"> • Minimum: Graduate in Civil Engineering/ in related field • Desirable: Masters in Geology or Geotechnical Engineering. <p>Experience:</p> <ul style="list-style-type: none"> • Total Experience- 12 years • Experience of 10 Geological-Geotechnical Study/Investigation of Tunnels/hydropower Projects.
Transportation Engineer	<p>Education:</p> <ul style="list-style-type: none"> • Minimum: Graduate in civil Engineering • Desirable: Masters in Transportation. <p>Experience:</p> <ul style="list-style-type: none"> • Total Experience- 12 years <p>Experience of 10 years feasibility study of Road tunnel/ Road tunnel / Design of DPR of Road.</p>
Structure Engineer	<p>Education:</p> <ul style="list-style-type: none"> • Minimum: Graduate in civil Engineering • Desirable: Masters in Structure <p>Experience:</p> <ul style="list-style-type: none"> • Total Experience- 12 years • Experience of 10 years feasibility of Roads / Design of DPR of Road / /Hydropower tunnel/ Road tunnel works.

5. Method of Payment

Method of Payment as follows:

- a) The client shall pay 20% of the contract amount after submission of the **Inception Report**
- b) The client shall pay 50% of the contract amount after submission of the **Draft Final Report**.
- c) The client shall pay remaining of the contract amount after submission of the **Final Report**.

D. Evaluation of Consultant's EOI Application

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

Sl. No.	Criteria Title	Compliance
1	Corporate Registration	
2	Tax Clearance/Tax Return Submission [upto FY 077/78]	
3	VAT/PAN Registration	
4	EOI Form 1: Letter of Application	
5	EOI Form 2: Applicant's Information Form	
6	EOI Form 3: Experience (3(A) and 3(B))	
7	EOI Form 4: Capacity	
8	EOI Form 5: Qualification of Key Experts	
9	In case of a natural person or firm/institution/company which is already declared blacklisted and ineligible by the GoN, any other new or existing firm/institution/company owned partially or fully by such Natural person or Owner or Board of director of blacklisted firm/institution/company; shall not be eligible consultant.	
10	If the 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 shall not be eligible to participate in procurement process till the concerned Court has not issued the decision of clearance against the Corruption Charges.	

ii) EOI Evaluation Criteria

A. Qualification

Sl. No.	Criteria	Minimum Requirement
1	Qualification of Key Experts	<p>Team Leader /Tunnel engineer: Minimum: Graduate in Civil Engineering - 1 Points Desirable: Masters in Tunnel Engineering /Mining/Rock Mechanics – 2 points</p> <p>Highway Engineer: Minimum: Graduate in Civil Engineering - 1 Points Desirable: Masters in transportation/highway Engineering– 1 points</p> <p>Geologist/ Geotechnical Engineering: Minimum: Graduate in Civil Engineering or related field - 1 Points Desirable: : Masters in Geology or Geotechnical Engineering – 2 points</p> <p>Structure Engineer: Minimum: Graduate in Civil Engineering - 1 Points Desirable: Masters in Structural Engineering– 1 points</p>
2	Experience of Key Experts	<p>1. Team Leader /Tunnel engineer: ? Total Experience: 12 years (2 Points) ? Minimum 5 years Experience :0.5 ? Between 5 to 12 years : 0.5 - 2 points on pro-rata Basis ? Greater than 12 years : 2 points ? Specific Experience: 10 years(5 points) Experience in Feasibility study / DPR of Road</p>

Sl. No.	Criteria	Minimum Requirement
		<p>Tunnel/Hydropower Tunnel / Irrigation Tunnel - 10 year</p> <p>? Minimum 5 years Experience: 2.0 points.</p> <p>? Between 5 to 10 years : 2-5 points on pro-rata Basis</p> <p>? Greater than 10 years : 5 points</p> <p>Highway Engineer:</p> <p>? Total Experience: 12 years (1 Points)</p> <p>? Minimum 5 years Experience: 0.5 points</p> <p>? Between 5 to 12 years : 0.5 - 1 points on pro-rata Basis</p> <p>? Greater than 12 years : 1 points</p> <p>? Specific Experience: 10 years (3 points)</p> <p>Experience in Feasibility study of Road Tunnel/ Road Tunnel / Design of DPR of Road- 10 years</p> <p>? Minimum 5 years Experience :1.0 points</p> <p>? Between 5 to 10 years : 1-3 points on pro-rata Basis</p> <p>? Greater than 10 years : 3 points</p> <p>Geologist/ Geotechnical Engineering:</p> <p>? Total Experience: 12 years (2 Points)</p> <p>? Minimum 5 years Experience: 1.0 points</p> <p>? Between 5 to 12 years : 1-2 points on pro-rata Basis</p> <p>? Greater than 12 years : 2 points</p> <p>? Specific Experience: 10 years (3 points)</p> <p>Experience in related field: Geological-Geotechnical study/ Investigation of Tunnel/hydro power/ irrigation/water supply/Road/ or related Field - 10 years</p> <p>? Minimum 5 years Experience:1.0 points</p> <p>? Between 5 to 10 years : 1-3 points on pro-rata Basis</p> <p>? Greater than 10 years : 3 points</p> <p>Structure Engineer:</p> <p>? Total Experience: 12 years (1 Points)</p> <p>? Minimum 5 years Experience: 0.5 points</p> <p>? Between 5 to 12 years : 0.5-1 points on pro-rata Basis</p> <p>? Greater than 12 years : 1 points</p> <p>? Specific Experience: 10 years (3 points)</p> <p>Experience in related field: feasibility of Roads / Design of DPR of Road / /Hydrpower tunnel/ Road tunnel works - 10 years</p> <p>? Minimum 5 years Experience: 1.0 points</p> <p>? Between 5 to 10 years : 1-3 points on pro-rata Basis</p> <p>? Greater than 10 years : 3 points</p>

Score: 30.0

B. Experience

Sl. No.	Criteria	Minimum Requirement
1	General Experience of consulting firm	<p>Feasibility Study/ DPR preparation/ Construction Supervision/ Detail Engineering Survey of Construction works. Road/Tunnel/Hydropower.</p> <p>1.8 points for each contract; maximum points = 18</p> <p>* No points is awarded if the completion certificate is not provided.</p>
2	Specific experience of consulting firm within last 7 years. In case of person, specific experience of the person within last 4 years.	<p>Feasibility Study/ DPR preparation/ Construction Supervision/ Detail Engineering Survey & Design of Road Tunnel or Hydropower tunnel or Irrigation tunnel or Railway tunnel or Water Supply Tunnel or Navigation Tunnel Projects experience of the firm (s) in during last 7 years.</p>

Sl. No.	Criteria	Minimum Requirement
		<p>7 points for each contract with contract amount greater than NRs. 5 Lakhs excluding VAT; maximum points = 42</p> <p>* No points is awarded if contract amount is not specified in experience certificate.</p>

Score: 60.0

C. Capacity

Sl. No.	Criteria	Minimum Requirement
1	Financial Capacity.[Average turnover required shall not exceed 150% of cost estimate]	<p>Average annual Turnover of best three (3) fiscal years of last Seven (7) fiscal years: Minimum NRs. 1. Million Between NRs 1 Million & NRs 10 Million: 0-5 points on prorata basis Greater than NRs 10 Million- 5 points</p>
2	Infrastructure/equipment related to the proposed assignment.[This Evaluation criteria should be deleted if infrastructure/equipment are not the part of the proposed assignment]	<p>At least one 1. Soil Drilling Equipment (SPT/ DCPT/ other drilling Equipment) - 2.5 points for any one equipment (Max. 2.5 points) And, 2. Geophysical Survey Equipment: (Electrical Resistivity Test (ERT), Seismic Refractive Tomography (SRT), Micro tremor Array Measurement (MRM), Permeability testing- 2.5 points for any one equipment (Max. 2.5 points) Note: Must submit ownership evidence or lease agreement attested by notary public.</p>

Score: 10.0

Minimum score to pass the EOI is: 70

Note : If the 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 consultant's proposal shall be excluded during the evaluation.

E. EOI Forms & Formats

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

Standard EOI Document

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.¹
5. All further communication concerning this Application should be addressed to the following person,

[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

¹ Applications by joint ventures should provide on a separate sheet, relevant information for each party to the Application.

Standard EOI Document

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):

Standard EOI Document

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.)

Standard EOI Document

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.						

Standard EOI Document

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) ² :
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): Completion date (month/year):	No. of professional person-months provided by the joint venture partners or the Sub-Consultants:
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: _____

² Consultant should state value in the currency as mentioned in the contract

Standard EOI Document

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.			

Standard EOI Document

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**

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

Standard EOI Document

4(B). Infrastructure/equipment related to the proposed assignment³

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

³ Delete this table if infrastructure/equipment for the proposed assignment is not required.

Standard EOI Document

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)

Evaluation Criteria

SECTION A: Eligibility Criteria:

S.N.	Eligibility Criteria	Compliance	Status
1	Corporate Registration	Yes/No	Pass/ Fail
2	Tax Clearance / Tax Return Submission / Letter of Time Extension for Tax Return Submission [upto FY 077/78]	Yes/No	Pass/ Fail
3	VAT / PAN Registration	Yes/No	Pass/ Fail
4	EOI Form 1: Letter of Application	Yes/No	Pass/ Fail
5	EOI Form 2: Applicants Information Form or related documents	Yes/No	Pass/ Fail
6	EOI Form 3: Experience (3(A) and 3(B)) or related General, Specific work experience certificates	Yes/No	Pass/ Fail
7	EOI Form 4: Capacity or Tax clearance certificates	Yes/No	Pass/ Fail
8	EOI Form 5: Qualification of Key Experts or related CV documents	Yes/No	Pass/ Fail
9	Year of Standing min. 5 year (At least one firm in case of JV)	Yes/No	Pass/ Fail
10	JV Agreement in case of Firms in JV	Yes/No	Pass/ Fail
11	Power of attorney	Yes/No	Pass/ Fail
12	Adherence to code of Ethics and Anti-Corruption Policy	Yes/No	Pass/ Fail

Notes on Eligibility Criteria:

1. Consulting Firms can form Joint Venture (JV) with maximum number of 3 (three) single entity firms. The submitted EOI document must clearly mention the name of the leading firm with financial liabilities.
2. In case of a firm which is already declared blacklisted and ineligible by the GoN shall not be eligible.
3. In case, a corruption case is being filed to Court against the firm or any partner of JV, such firm or JV shall be excluded from the evaluation, if public entity receives instruction from GoN.
4. The same firm shall not be allowed to submit EOI individually and in JV for same packages. ("Example 1: EOI submitted by Firm A and that submitted by Firm A JV

with Firm B" - Not Allowed) ("Example 2: EOI submitted by Firm A JV with Firm B and that submitted by Firm B JV with Firm C" - Not Allowed).

5. The documents under eligibility criteria shall be uploaded under the Particular Section named same as specified in document description. If the documents are not uploaded in respective sections, the documents shall not be considered for evaluation

Section B: Evaluation & Qualification Criteria

A. QUALIFICATION OF EXPERTS	
Qualification and Experience of Key Experts	
Team Leader /Tunnel engineer:	Minimum: Graduate in Civil Engineering Desirable: Masters in Tunnel Engineering /Mining/Rock Mechanics Total Experience: 12 years Specific Experience:10 years
Highway Engineer:	Minimum: Graduate in Civil Engineering Desirable: Masters in transportation/highway Engineering Total Experience: 12 years Specific Experience:10 years
Geologist/ Geotechnical Engineering:	Minimum: Graduate in Civil Engineering Desirable: Masters in transportation/highway Engineering Total Experience: 12 years Specific Experience:10 years
Structure Engineer:	Minimum: Graduate in Civil Engineering Desirable: Masters in transportation/highway Engineering Total Experience: 12 years Specific Experience:10 years

Breakdown of Qualification and Experience of Key Expert.

A. QUALIFICATION OF EXPERTS	
Team Leader /Tunnel engineer: Minimum: Graduate in Civil Engineering - 1 Points Desirable: Masters in Tunnel Engineering /Mining/Rock Mechanics - 2 points	3
Highway Engineer: Minimum: Graduate in Civil Engineering - 1 Points Desirable: Masters in transportation/highway Engineering- 1 points	2
Geologist/ Geotechnical Engineering: Minimum: Graduate in Civil Engineering or related field - 1 Points Desirable: : Masters in Geology or Geotechnical Engineering - 2 points	3

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Structure Engineer: Minimum: Graduate in Civil Engineering - 1 Points Desirable: Masters in Structural Engineering- 1 points	2
SUB- TOTAL	10
Experience of Key Experts	
Team Leader /Tunnel engineer: <ul style="list-style-type: none"> ▪ Total Experience: 12 years (2 Points) <ul style="list-style-type: none"> ➤ Minimum 5 years Experience :0.5 ➤ Between 5 to 12 years : 0.5 - 2 points on pro-rata Basis ➤ Greater than 12 years : 2 points ▪ Specific Experience: 10 years(5 points) Experience in Feasibility study / DPR of Road Tunnel/Hydropower Tunnel / Irrigation Tunnel - 10 year <ul style="list-style-type: none"> ➤ Minimum 5 years Experience: 2.0 points. ➤ Between 5 to 10 years : 2-5 points on pro-rata Basis ➤ Greater than 10 years : 5 points 	7
Highway Engineer: <ul style="list-style-type: none"> ▪ Total Experience: 12 years (1 Points) <ul style="list-style-type: none"> ➤ Minimum 5 years Experience: 0.5 points ➤ Between 5 to 12 years : 0.5 - 1 points on pro-rata Basis ➤ Greater than 12 years : 1 points ▪ Specific Experience: 10 years (3 points) Experience in Feasibility study of Road Tunnel/ RoadTunnel / Design of DPR of Road- 10 years <ul style="list-style-type: none"> ➤ Minimum 5 years Experience :1.0 points ➤ Between 5 to 10 years : 1-3 points on pro-rata Basis ➤ Greater than 10 years : 3 points 	4
Geologist/ Geotechnical Engineering: <ul style="list-style-type: none"> ▪ Total Experience: 12 years (2 Points) <ul style="list-style-type: none"> ➤ Minimum 5 years Experience: 1.0 points ➤ Between 5 to 12 years : 1-2 points on pro-rata Basis ➤ Greater than 12 years : 2 points ▪ Specific Experience: 10 years (3 points) Experience in related field:Geological-Geotechnical study/ Investigation of Tunnel/hydro power/ irrigation/watersupply/Road/ or related Field - 10 years <ul style="list-style-type: none"> ➤ Minimum 5 years Experience:1.0 points ➤ Between 5 to 10 years : 1-3 points on pro-rata Basis ➤ Greater than 10 years : 3 points 	5
Structure Engineer: <ul style="list-style-type: none"> ▪ Total Experience: 12 years (1 Points) <ul style="list-style-type: none"> ➤ Minimum 5 years Experience: 0.5 points ➤ Between 5 to 12 years : 0.5-1 points on pro-rata Basis ➤ Greater than 12 years : 1 points ▪ Specific Experience: 10 years (3 points) Experience in related field: feasibility of Roads / Design of DPR of Road / /Hydrpower tunnel/ Road tunnel works - 10 years <ul style="list-style-type: none"> ➤ Minimum 5 years Experience: 1.0 points ➤ Between 5 to 10 years : 1-3 points on pro-rata Basis ➤ Greater than 10 years : 3 points 	4
SUB- TOTAL	20

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Notes on Qualification of Experts

1. The year of experience of professional key expert, after bachelor degree, shall be counted from passed date as mentioned in educational qualification certificate (transcript).
2. CV of each professional key personnel shall be submitted with signature of professional key personnel and authorized representative of the firm/JV.
3. Proposed professional key personnel shall not be repeated by the same firm/JV and/or another firm/JV. In case of repetition of professional key personnel, QRDC, DoR shall ask, via letter/email, the person for his / her physical presence within three days to declare him/herself to the firm/JV whom he/she shall want to be associated.
4. CV of personnel shall clearly mention his/her e-mail address and mobile number.
5. The firm/JV shall have to submit the NEC registration certificate for engineer professionals
6. The firm/JV shall have to submit any certificate as evidence of proposed key personnel's education (degree) as required above with his / her notarized academic certificate.
7. The work experience for all key personnel shall be mentioned in following format:

Name of Project	Road Length	Name of Client	Start Date- Completion Date	Name of Firm involved in as (Single/JV)
Scope of Project				
Professional involved as (Position held)				
Description of Duties				

B. Experience of the firm		
General Experience of consulting firm		
S.N	Minimum Requirements	Maximum Points
1	Feasibility Study/ DPR preparation/ Construction Supervision/ Detail Engineering Survey of Construction works. Road/Tunnel/Hydropower. 1.8 points for each contract; maximum points = 18 * No points is awarded if the completion certificate is not provided.	18

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Specific Experience of the consulting firm		
2	<p>Feasibility Study/ DPR preparation/ Construction Supervision/ Detail Engineering Survey & Design of road Tunnel or Hydropower tunnel or Irrigation tunnel or Railway Tunnel or Water supply Tunnel or Navigation Tunnel Projects experience of the firm (s) in during last 7 years.</p> <p>7 points for each contract with contract amount greater than NRs. 5 Lakhs excluding VAT; maximum points = 42</p> <p>* No points is awarded if contract amount is not specified in experience certificate.</p>	42
	SUB- TOTAL	60

Notes on Experience of the Firm:

1. The firm shall have to submit notary public attested experience certificates. No marks shall be given for the experience of the firm if the certificate of completion is not attached.
2. The services for Government of Nepal (GoN) organizations (fully or partially owned) shall only be considered as firm's experiences during evaluation of EOI. The specific experience by the firm as JV partners shall be considered and evaluated as firm's experience and any specific experiences by the firm as "in association with" shall not be considered during evaluation.
3. Any sublet service for Government of Nepal (GoN) organizations (fully or partially owned) by a firm from another private firm shall not be evaluated as firm experience for the EOI.
4. Any service experience older than 7 years (counted from the last date of submission of EOI) shall not be evaluated as firm/JV experience for the EOI.
5. Each experience certificate shall clearly indicate the description of service, service amount (including / excluding VAT), date of commencement and date of completion of service.
6. Each consultant must fill the form 3 (A) for general experience within last 10 (Ten) years. Only the first 12 (Twelve) projects among the listed experiences provided by a firm shall be considered for evaluation. No marks shall be given for the experience of the firm if the certificate of completion is not attached.
7. Each consultant must fill the form 3 (B) for specific experience within last 7 (Seven) years. Only the first 10 (Ten) projects among the listed experiences provided by a firm shall be considered for evaluation. No marks shall be given for the experience of the firm if the certificate of completion is not attached.

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C. CAPACITY	
Financial Capacity of the firm	
Average annual Turnover of best three (3) fiscal years of last Seven (7) fiscal years: Minimum NRs. 1 Million Between NRs 1 Million & NRs 10 Million: 0-5 points on prorata basis Greater than NRs 10 Million- 5 points	5

Notes on Financial Capacity of Firm:

1. Average Annual Turnover of firm/JV shall be average of annual turnover of best 3 (three) fiscal years out of last 7 (seven) fiscal years.
2. The firm and/or JV shall have to submit notary public attested tax clearance certificate of each fiscal year, supposed to be evaluated for EOI evaluation. Submission of audit report or any other tables shall not be considered for EOI evaluation. Notary public signature shall be verified, if required.
3. In case of JV business, the firm and/or JV shall have to submit notary public attested tax clearance certificate of each fiscal year along with the JV agreement of that business, supposed to be counted for EOI evaluation.
4. In case of JV, average annual turnover of the JV shall be evaluated considering % of financial liability as stated in the JV agreement for the EOI. If the JV agreement is submitted without mentioning the % of financial liability, the marks for financial capacity shall be evaluated to zero.
5. For the evaluation of financial capacity, inflation adjustment shall be done using overall wholesale price index (WPI computed at the end of last fiscal year) published by Nepal Rastra Bank.

Infrastructure/equipment related to the proposed assignment.		
1	At least one 1. Soil Drilling Equipment (SPT/ DCPT/ other drilling Equipment) - 2.5 points for any one equipment (Max. 2.5 points) And, 2. Geophysical Survey Equipment: (Electrical Resistivity Test (ERT), Seismic Refractive Tomography (SRT), Micro tremor Array Measurement (MRM), Permeability testing- 2.5 points for any one equipment (Max. 2.5 points) Note: Must submit ownership evidence or lease agreement attested by notary public.	5
TOTAL		100

Minimum score to pass the EOI is: 70

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