Curriculum Vitae of Tuk Lal Adhikari

1.	**Field**	**:**	**Geotechnical Engineering**
2.	**Name of Firm**	**:**	**ITECO Nepal (P) Ltd.**
3.	**Name of Staff**	**:**	**Tuk Lal Adhikari**
4.	**Date of Birth**	**:**	27th January 1959 **Nationality** **:** Nepali
5.	**Education**	**:**	• **M. E. in Geo-technical Engineering** from Asian Institute of Technology (AIT), 1998, GPA 3.63/4.00 • **B.E. (Civil Engineering),** University of Roorke, India,1984, First Division, 74.7%
6.	**Membership of Professional Associations**	**:**	• Engineering Council Registration No 302 A • Life Member, Nepal Engineers' Association (LM 1558) • Life Member, Nepal Geological Society, LM 421 • Life Member, Indian Roads Congress (LM 19811) • Life Member, Nepal Geotechnical Society, Currently President of Nepal Geotechnical Society • Life Member, Nepal Landslide Society • Life Member, Nepal Tunneling Association
7.	**Other Training**	**:**	• Training in Lakhwar Hydropower Dam Project, Dehradoon, India, February / March 1984. • Training on river training and landslide stabilization analyses / designs and project management during Charnawati Rehabilitation Project in Switzerland, August 1989 to February 1990. • Participated in training on project management, construction supervision and quality control based on FIDIC, 1991. • Training in use of Mountain Risk Engineering Handbook published by International Centre for Mountain Development (ICIMOD) for design of mountainous infrastructures, 1991.
8.	**Countries of Work Experience**	**:**	Nepal, Bhutan, Switzerland, Thailand, India
9.	**Languages**	**:**	

Language	**Speaking**	**Reading**	**Writing**
English	Excellent	Excellent	Excellent
Nepali	Excellent	Excellent	Excellent
Hindi	Good	Good	Good

10.	**Employment Record**		
	From 2005	**:**	**To** Date
	Employer	**:**	ITECO Nepal (P) Ltd.
	Position Held	**:**	**Managing Director / Geotechnical Engineer / Project Director / Team Leader** **Team Leader / Geotechnical Expert for four laining of Ramban-Banihal section of NH-44 in Jammu & Kashmir, India**

From 1998	**:**	**To** 2005
Employer	**:**	ITECO Nepal (P) Ltd.
Position Held	**:**	**Technical Director / Geotechnical Specialist / Project Coordinator**
From 1996	**:**	**To** 1998
Employer	**:**	Asian Institute of Technology (AIT), Thailand
Position Held	**:**	**Student for M E (Geotechnical Engineering), Thesis Title: "Piled Raft Foundation in Bangkok Subsoils". Participated in Project Works in Thailand.**
From 1992		**To 2002 (Intermittently)**
Employer		**ITECO Nepal (P) Ltd.**
Position Helt		**Regional Civil Engineer / Geotechnical Expert for Road Bank Stability, Bhutan**
From 1990	**:**	**To** 1996
Employer	**:**	ITECO Nepal (P) Ltd.
Position Held	**:**	**Road Engineer / Geotechnical Expert**
From 1989	**:**	**To** 1990
Employer	**:**	ITECO Engineering Ltd., Switzerland
Position Held	**:**	**On-the-job Training for Landslide Stabilization and River Training Works**
From 1988	**:**	**To** 1989
Employer	**:**	ITECO Nepal (P) Ltd.
Position Held	**:**	**Road Engineer / Civil Engineer**
From 1984	**:**	**To** 1987
Employer	**:**	Department of Electricity, Ministry of Water Resources, Nepal
Position Held	**:**	**Construction Supervision Engineer for Salleri Chialsa MHP**
From 1980	**:**	**To** 1984
Employer	**:**	University of Roorkee (Currently IIT)
Position Held	**:**	**Student for B E (Civil), Trainee in Lakhwar Hydropower Dam Project, Dehradoon**

11. Details of Activities Performed

Name of assignment or project: Various projects undertaken by ITECO Nepal (P) Ltd.;
Year: April 2005 to Date
Location: Kathmandu, Nepal
Client: ITECO Nepal (P) Ltd.
Main Project Features: Overall management of the company and technical superintendence of project activities
Position Held: Managing Director / Project Director / Geotechnical Expert
Activities performed: Overall management of the company, technical superintendence, quality assurance and monitoring of all projects undertaken by the company, preparation of proposals and reports, liaison with clients and donors and

provide input as geotechnical engineer in projects undertaken by the firm.
Also responsible as Team Leader / Geotechnical Design Expert for slope stability design for 36 km road and design of six highway tunnels (10.5m diameter) with total length of 3 km (from June 2016 to date) for a substantial project with cost of INR 18 billion.

Name of assignment or project: Likhu IV Hydroelectric Project (120 MW)
Year: 2008 to 2009
Location: Kathmandu, Nepal;
Client: JV of ITECO Nepal (P) Ltd. CEMAT Consultants and ICGS in Association with ITECO Engineering Ltd., Switzerland
Main Project Features: Detailed geological mapping and supervision, construction material survey, identification of infrastructure facilitates of detailed project report of Likhu IV Hydroelectric Project (120 MW)
Position Held: Geotechnical Engineer
Activities performed: detailed geological mapping and supervision, construction material survey, identification of infrastructure facilitates for the detailed project report of Likhu IV hydroelectric project (120 MW), review of suitability of sites for major project component from geotechnical view point. Responsible for assessment for the supplementary geotechnical investigations. Responsible for soil / rock classification, geophysical survey, laboratory tests. Assessment of construction material availability survey, identity quarry sites and assessment of suitability of materials by laboratory tests.

Name of assignment or project: For Salleri Chialsa Electricity Company (SCECO), Solukhumbu
Year: May 2007 to December 2007
Location: Kathmandu, Nepal
Client: Salleri Chialsa Electricity Company, Solukhumbu;
Main Project Features: Overall project management, planning and materials study for an add-on mini hydro plant of 270 kW
Position Held: Project Manager / Geotechnical Engineer
Activities performed: Overall project management, planning, and materials study for an add-on mini hydro plant of capacity 270 kW for Salleri Chialsa Electricity Company, Solukhumbu

Name of assignment or project: North South Fast Track Project (TA 4842-NEP)
Year: April 2007 to April 2008
Location: Kathmandu – Pathaliaya
Client: Asian Development Bank (ADB)/DoR
Main Project Features: The new road is planned to be built as a high class access controlled expressway with tunnel to Asian Highway standards. The road is to be constructed to Asian Highway design for a Class I road, feasibility as a two lane road, but with climbing lanes for slower vehicles on uphill grades. The estimated forecast traffic volumes indicate that the road will need to be widened to four lanes from Kathmandu to Pathalaiya
Position Held: Geotechnicla Engineer / Project Coordinator
Activities performed: Surface geological studies combined with trial pitting and laboratory testing. Identify investigation requirements for bridges, Investigation of existing landslides and instabilities with field and laboratory testing. Carrying out of geophysical exploration with 2D-ERT at critical landslides and tunnel portals. Carry out slope stability analysis using computerized methods. Supervision of field and laboratory testing.

Name of assignment or project: Road Maintenance Development Project (RMDP), Institutional Strengthening Component
Year: October 2005 to 15 December 2006
Location: All divisions within DoR
Client: Asian Development Bank(ADB) / Department of Roads
Main Project Features: The IDA/HMG funded RMDP consists of various components such as new road and upgrading component, rehabilitation component and institutional strengthening component. The institutional strengthening component includes strengthening of Geo-environmetnal Unit of DOR through preparation and training of DOR division level

engineers in solving problems related to roadside geo-technical engineering
Position Held: Geo-technical Specialist
Activities performed: Preparation of geotechnical manual for use of Department of Roads, Nepal. The activities consists providing expert service and advice for preparation of inventory of existing geo-technical practices in Nepal, preparation of inventory of international standards and codes, stakeholder consultation through workshops, preparation of a practical geo-technical manual for use by DOR division level engineers, training of engineers on use of the manual, identification and procurement of the suitable geotechnical software for slope stability analysis for use in the road bank stabilization in Nepal. The selected software for DoR included SLIDE, SWEDGE and DIPS.

Name of assignment or project: Transport Connectivity Sector Project ADB Loan No. TA NEP-4347
Year: December 2004 to October 2005
Location: All regions of Nepal
Client: Asian Development Bank / Department of Roads
Main Project Features: The ADB funded PPTA project consisted of long-listing of candidate feeder road projects providing connectivity to poverty stricken remote districts of Nepal consistent with the government;s 10th Plan (PRSP), 20 year road master plan and ADB's CSP, screening and prioritisation and preparation of medium term investment sector project
Position Held: Road Engineer / Geo-technical Specialist
Activities performed: Preparation of 10 years transport connectivity programme, focusing on technically feasible projects, recommendation to the Government measures to be taken to strengthen, manage and operate the road network safely and efficiently. Proposed methods to strengthen local contractor's capabilities to improve and maintain roads. Selected Core Feeder Roads, where topographic survey, preliminary design and bid document preparation were made include: Upgrading Phidim-Taplejung (86 km), Tamakoshi-Manthali Khurkot (69 km) and upgrading Syaprubesi – Trishuli – Galchhi (90 km). The activities included screening and prioritisation, field reconnaissance, carrying out of traffic, engineering, materials and geotechnical surveys, preparation of inception, interim and final reports including ADB RRP.

Name of assignment or project: Road Maintenance and Development Project (RMDP) DoR / IDA (Credit No. NP-3293)
Year: March 2004 to November 2004
Location: Narayanghat-Mugling
Client: International Development Agency of WB / Department of Roads
Main Project Features: The IDA/GON funded RMDP consisted of various components such as new road and upgrading component, rehabilitation component and institutional strengthening component. The rehabilitation component consisted of rehabilitation of Narayanghat-Mugling road 36 km.
Position Held: Road / Geotechnical Engineer;
Activities performed: Survey, investigation and design of bituminous road pavement and slope stabilization works along Mugling – Naryanghat road (36 km), design of stabilization and drainage structures like soil nail walls, horizontal drains, culverts, bioengineering methods, design of sabo engineering works, river training works and road sub-grade improvement works etc.

Name of assignment or project: Road Network Development Project, ADB Loan 1876-NEP(SF);
Year: September 2003 to February 2004
Location: Eastern and Central Regions of Nepal; **Client:** Department of Roads under ADB / GON funding
Main Project Features: The ADB / GON funded RNDP consisted of strengthening and upgrading of about 406 km of roads, about 100 km of new road using RAP approach and another 400 km of performance based maintenance of highway in different regions of Nepal.
Position Held: Geo-technical Engineer / Pavement Engineer
Activities performed: Review of detailed engineering survey, carrying out of geotechnical investigation, pavement investigation of entire stretch of about 406 km road in and worked out detailed engineering design of pavement of different road section. The activities also included preparation of specifications of works related to quality control / assurance, assistance in pavement materials studies including field investigation, laboratory testing and preparation of geo-technical and materials report. The design and backstopping works included: Dolalghat-Chautara (24 km to bituminous pavement),

Pauwabhanjyang-Phidim (24 km to bituminous standard), Hile Basantapur (24 km to bituminous standard), Basantapur Khandbari (96 km to gravel and bituminous standard) etc.

Name of assignment or project: Hilepani – Jayaramghat – Diktel Environment Friendly Road (88 Km)
Year: May 2003 to August 2003
Location: Khotang
Client: Rural Access Programme, DFID, UK
Main Project Features: The project under DfID special fund intended to complete the ongoing construction of the road to provide seasonal connection to the Khotang district headquarter Diktel through environment friendly green road (later modified to RAP approach).
Position Held: Project Coordinator;
Activities performed: Supervision and management of surveys, review of the designs, new designs of road alignment and road structures, preparation of action plan and reports, preparation of drawings. Coordination and monitoring of implementation activities, organizing orientation training to project staff, on-the-job training to local craftsmen and workers, formation of road building groups, works slicing, procurement of works, liaison with central and district level authorities and project stakeholders including roadside communities, preparation of reports and documents.

Name of assignment or project: Geotechnical Investigation of Kalidaha Landslide
Year: March 2003 to April 2003
Location: Dolakha
Client: Himal Power Ltd.
Main Project Features: The project consisted of studies intended to provide geotechnical solutions to the most problematic landslide at Kalidaha of Nayapul-Manthali road.
Position Held: Geotechnical Engineer
Activities performed: Undertaking the geotechnical investigation and detailed design of Kalidaha Landslide at km 4+000 in Nayapul to Kirne road. The road is a part of Lamasangu – Ramechhap Feeder Road. The road was constructed as an access road to Khimti Hydropower Project. The activities consisted of planning, survey, investigation; analysis and design of stabilization structures at Kalidaha landslide are to ensure permanent serviceability of the road. The designed slope stabilization measures included soil nailing, horizontal drains, French drains, catch drains, bioengineering measures, check dams and retaining / revetment structures.

Name of assignment or project: Dhobi Khola Corridor Project 12 km (Four Lane Road)
Year: July 2002 to September 2002
Location: Kathmandu
Client: Kathmandu Valley Mapping Programme (KVMP)
Main Project Features: The project intended improvement of Dhobi Khola corridor through combined link roads on either banks, trunk sewers on either banks, river training
Position Held: Road Design Engineer / Geotechnical Engineer
Activities performed: Expert inputs for sub-grade investigation, laboratory testing, material studies and pavement design for proposed four lane road and design of road works including embankment, river training works, road pavement, asphalt concrete pavement layer etc.

Name of assignment or project: Upper Sagarmatha Agricultural Development Project, USADP (142 km) (Built with environment – friendly road construction method)
Year: November 2001 to June 2002
Location: Khotang, Okhaldunga and Solukhumbu districts
Client: Asian Development Bank / Ministry of Agriculture and Cooperatives
Main Project Features: The ADB / GON project intended to carry out an integrated development in the upper Sagarmatha region through a multitude of infrastructures including environment-friendly road access to farms and settlements, community buildings, suspension bridges and trails, training programs, agricultural and horticultural intervention programs etc.

Position Held: Project Coordinator
Activities performed: Monitored detailed surveys including geotechnical investigation and designs, review of the designs, carrying out of new designs of road alignment and road structures from the geotechnical perspective, preparation of action plan and reports. Expert input in the area of geotechnical, slope stabilisation etc. The roads include for design and construction supervision include: Okhaldunga Salleri Phaplu road (59 km) and Hilepani Diktel (81 km)

Name of assignment or project: Kharibot- Musikot Rural Road Project
Year: June 1996 to December 1996
Location: Salyan and Pyuthan;
Client: Department of Roads
Main Project Features: The project intended to determine an optimum alignment to connect Rukumkot from Tulsipur-Salyan road.
Position Held: Senior Road Engineer
Activities performed: Feasibility survey and design of Kharibot- Musikot Road (45 km) including desk study, road alignment survey, traffic survey, material study, geometric design of road, cost estimate, preparation of feasibility study report and environmental impact examination.

Name of assignment or project: International Centre for Mountain Development (ICIMOD) and Water Induced Disaster Prevention Technical Centre (DPTC)
Year: February 1996 to May 1996
Location: ICIMOD, Jawalakhel
Client: ICIMOD
Main Project Features: ICIMOD intended to prepare a reference manual for international training to engineers and geo-scientists on landslide management.
Position Held: Geo-technical Expert / Resource Trainer;
Activities performed: Preparation of case study report on landslide control and stabilization measures to serve as training material for pilot training at regional level in Himalayan and Hindukush region. Also conducted geotechnical training to divisional engineers of Department of Irrigation, Bhutan in Trashigang Division in collaboration between ICIMOD, ITECO Nepal and Tribhuwan University.

Name of assignment or project: Arniko Highway Project
Year: July 1995 to January 1996
Location: Arniko Highway
Client: Department of Roads (DOR) / Swiss Agency for Development Assistance (SDC)
Main Project Features: The Swiss funded project intended to establish a model for road maintenance management through capacity building of the DOR, consultants and contractors in Nepal.
Position Held: Geo-technical Design Engineer
Activities performed: Investigation and design of stabilization measures through expert inputs / advices which included option studies of the stabilisation measures, preliminary design, option comparisons, detailed design calculations, detailed design report and detailed working drawings for subsurface drains, horizontal drains (20 m), rock/soil nails / anchors (ϕ32mm, length 15m), RCC wall, gravity retaining walls, gabion walls etc. The survey and design of about 27 km of road from Dhulikhel to Dolalghat (rehabilitation of paved road to two lane bituminous pavement standard) was also carried out as a part of the assignment.

Name of assignment or project: Tribhuvan Rajpath Project
Year: April 1994 to July 1994
Location: Makwanpur and Dhading
Client: Department of Roads / Kreditanstalt fuer Wideraufbau (KfW), Germany
Main Project Features: The KfW funded project intended to prepare an inventory of damages along TRP and rehabilitate most affected Bhainse-Hetauda section as an aftermath of 1993 cloudburst event and subsequent debris flows and flash floods.

Position Held: Design Engineer / Resident Engineer
Activities performed: Contract management, supervision and quality control for three rehabilitation sites at km 127+200, km 130+400 and km 130+530. Design of Bhainse and Bulbule through expert inputs and advices for river training using flexible protection with tetrapoles and boulder riprap and related structures. The assignment also included geotechnical assessment of the entire stretch of Tribhuwan Rajpath from Naubise to Hetauda (133 km) along with recommendations for mitigation works.

Name of assignment or project: Lateral Highway in Bhutan under Food and Agricultural Organization (FAO) Project
Year: March 1994 to March 1994
Location: Bhutan
Client: Department or Roads, Bhutan
Main Project Features: The project intended to introduce cost-effective slope stabilization techniques along lateral highway and feeder roads in Bhutan and to build capacity of DOR Bhutan through trainings, trials and on-the-job trainings.
Position Held: Regional Civil Engineer / Geotechnical Trainer
Activities performed: Demonstration of rehabilitation (including field surveys, investigations and designs) trials using bioengineering and small scale drainage measures to stabilize slides and along 550 km long Lateral Highway in Bhutan under Food and Agricultural Organization (FAO) Project "Adhoc Study for the preparation of implementation plan for environmental measures to minimise risk on road". Monitoring of the success of the applied stabilization measures. Conducted a workshop / training to Bhutanese divisional engineers and forest officers in the field of slope stabilization using bio-engineering, small scale engineering and civil engineering measures

Name of assignment or project: Road Flood Rehabilitation Project (45 km)
Year: June 1992 to September 1993
Location: Tinkune
Client: Department of Roads / Road Flood Rehabilitation Project (RFRP)
Main Project Features: The International Development Agency (WB) funded project consisted of rehabilitation of flood damages along Arniko highway (25 km), Thankot Naubise road (21 Km), East-West Highway and construction of bridges in Kathmandu.
Position Held: Deputy Resident Engineer
Activities performed: Construction supervision of landslide stabilizations, river training and road rehabilitation; contract management and review of technical designs.

Name of assignment or project: Arniko Highway Maintenance Project (30 km);
Year: April 1992 to June 1992
Location: Arniko Highway
Client: Department of Roads/Swiss Agency for Development Assistance (SDC)
Main Project Features: The project intended to introduce a model road maintenance management system in Nepal through capacity building of DoR, consultants and contractors.
Position Held: Civil Engineer / Geotechnical Engineer
Activities performed: Survey, investigation, slope stability assessments and analyses for landslide along Dhulikhel – Dolalghat sector (30 km) of intermediate lane width bitumen sealed road.

Name of assignment or project: Road Flood Rehabilitation Project (RFRP, Thankot-Naubise, 21 km);
Year: March 1991 to May 1992;
Location: Kathmandu and Dhading
Client: Department of Roads / RFRP
Main Project Features: The IDA funded project consisted of rehabilitation of flood damages along Arniko highway, Thankot Naubise road, east-west highway and construction of bridges in Kathmandu.
Position Held: Geo-technical Engineer
Activities performed: Landslide surveys, slope stability analysis and design of retaining structures for landslide along Thankot-Naubise Road (km 13 to km 26) including pavement rehabilitation for two lane bituminous pavement works.

Special investigation and design included comprehensive investigation, slope stability analysis and design of soil nail walls at TN10A and TN04 sites of Thankot-Naubiese road.

Name of assignment or project: Agriculture and Rural Development (45 km)
Year: August 1991 to December 1991
Location: Dang, Salyan & Pyuthan
Client: USAID
Main Project Features: The USAID funded integrated Rapti integrated development project consisted of various infrastructure works, capacity building and community development works in Rapti zone, Midwestern Development Region.
Position Held: Highway Engineer / Geotechnical Engineer
Activities performed: Survey and design of 45 km mule track for Agriculture and Rural Development under USAID. Geotechnical design for 30 km road from Ghorahi to Holeri to gravel standard.

Name of assignment or project: Baitadi - Darchula Road (Detailed Design for 20 km stretch and Feasibility Study for 200 km stretch)
Year: May 1990 to September 1990, October to February 1991
Location: Baitadi and Darchula
Client: Department of Roads
Main Project Features: The study was conducted as a pilot study to introduce innovative and emerging concepts of mountain risk engineering manual developed by ICIMOD.
Position Held: Deputy Team Leader / Highway Design / Geotechnical Engineer
Activities performed: Detailed engineering survey and design of Baitadi-Darchula Road (20 km stretch to gravel standard) including geotechnical studies and hazard assessment and mapping. Feasibility study of 200 km long stretch of Baitadi-Darchula Road as per the geotechnical and other guidelines prescribed by the mountain risk engineering manual published by the International Centre for Integrated Mountain Development (ICIMOD) including hazard and risk Assessment and mapping.

Name of assignment or project: Charnawati Rehabilitation Project
Year: July 1987 to May 1990
Location: Dolakha
Client: Swiss Agency for Development Assistance (SDC) and Department of Roads
Main Project Features: The project was designed to rehabilitate the road from extensive damages caused by 1987 debris flows / floods using innovative stabilization solutions.
Position Held: Assistant Project Leader
Activities performed: Supervision of works related road rehabilitation, river training and landslide stabilization. Also responsible for site level designs of slope stabilization, river training, gully control, sabo engineering and rock / CAB armour works. Also carried out detailed geotechnical designs of stabilization measures under an on-the-job training in Switzerland.

Name of assignment or project: Salleri-Chialsa Small Hydropower Project
Year: 1984 to 1987
Location: Solukhumbu
Client: Swiss Agency for Development Assistance (SDC) and Department of Electricity
Main Project Features: The project was designed to implement a small hydropower plant of capacity 400 kW in remote rural region near Mt. Everest to illuminate district headquarter and villages.
Position Held: Site Engineer
Activities performed: Supervision of works related construction of 400 kW small hydropower project for civil works, electro-mechanical works, hydro-mechanical works, transmission / distribution works.

12. Certification:

I, the undersigned, certify that to my best of my knowledge and belief, this CV correctly describes myself, my qualifications and my experience.

_____ Date:

[*Signature of the Expert*] *Day/Month/Year*