

**Department of Hydrology and Meteorology
(DHM)
Babarmahal, Kathmandu**

Terms of Reference (TOR)

Of

Consulting Services for

Planning, designing & Supervision of the Building Project

September, 2013

**Terms of Reference
For
PLANNING, DESIGNING & SUPERVISION OF THE BUILDING
PROJECT**

1. INTRODUCTION:

Nepal is one of the Climate Investment Fund's (CIF) pilot countries for the Pilot Program for Climate Resilience (PPCR). The Government of Nepal (GoN) has accepted the offer to participate in the PPCR since 13 May, 2009. As a first step, the GoN with support of the Asian Development Bank (ADB), the International Finance Corporation (IFC), and the World Bank (WB), developed Nepal's Strategic Program for Climate Resilience (SPCR). The SPCR identified 5 projects.

One of the 5 projects identified by the GoN is the Building Resilience to Climate Related Hazards (BRCRH) project. The main objective of this proposed project is to increase resilience to climate-related hazards by improving the accuracy and timeliness of weather and flood forecasts and warnings for vulnerable communities; as well as develop agricultural information management system services to help farmers mitigate climate-related production risks. The Department of Hydrology and Meteorology (DHM) under the Ministry of Science, Technology and Environment (MOSET) is responsible for the implementation of three components, namely component A, B, and C, that is proposed under BRCRH.

DHM is the only department of Government of Nepal working in hydrological and meteorological issues with two hundred thirty three working staffs headed by Director General and four Deputy Director Generals. It has four Divisions, five regional offices, three basin offices and thirteen sections with more than five staffs in each section. The present infrastructure is not sufficient to accommodate all staffs. The human resources doubtlessly will not be limited in present quantity and when the number is increased, it shall be quite congested.

DHM owes responsibility of weather forecast and it requires a well-equipped studio which can deliver daily weather forecast to national and international electronic and printing media. Along with this, it requires advanced RADAR which can receive signals

of rainfall, flood, climate change and disaster causing other facts for a land locked country like Nepal. For this matter, there is a need of environment friendly structures with sufficient space, which can energize the working human resources as well as entice them to work longer hours with environment that is available within this area. DHM is planning to build a new Office building by demolishing existing one at Babarmahal, Kathmandu through the financial and technical support of PPCR project and is developing the modern hydro-met information disseminating system of DHM to its stakeholder.

2. OBJECTIVES:

Objectives of this Job are to supervise the works from the demolition of existing buildings of DHM to design and full construction of supervision of a new multi storey office building, details of which are as under:

- (i) Design of a new multi- storey Office Building having more than four storeys. The new building should be safe, reliable, cost effective, energy saving (aiming zero energy loss), well ventilated with adequate light, environment friendly, seismic resistant, differently-able people friendly, well-equipped with CCTV& fire fighting, parking, plumbing, drainage, boundary wall and communication facilities. Design will consider vastu - sastra also.
- (ii) Assist employer in procurement activities.
- (iii) Construction supervision of the demolition of existing DHM office building and construction supervision of new office building having more than four storeys.

3. SCOPE OF WORK

The Consulting services have been divided in three major Phases namely,

Phase I: Detailed Engineering Design,

Phase II: Preparation of Bidding Documents and Assisting the Procurement Process

Phase III: Construction Supervision

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

Phase I: Detailed Engineering Design

3.1. Desk study:

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

3.2. Detailed Engineering Study and Survey:

3.2.1. Technical Feasibility study:

It should include reviewing the available data, collecting, reviewing and analysis of field data including topographic survey, nature and structure of surface soil and subsurface soil including groundwater, and other information as required for the study and conducting analysis to decide upon the technical feasibility of the Technical and Administrative Building. The Consultant shall assess the floor area requirements for the office and other purposes in consultation with the DHM officials. A cost comparison of different types of Building shall be made and discussed with the DHM before proceeding to Building site for soil investigation. The Consultants shall also propose methodology for the demolition of existing DHM office buildings and managing the materials following demolition of buildings in consultation with DHM.

3.2.2. Master Plan & Conceptual Designing:

The Consultants shall:

- i) Prepare and submit conceptual master Plan / Architectural design / Outline proposal as well as cost estimate of the project for approval by the Client.
- ii) Prepare and submit preliminary design and cost estimates incorporating the Client's suggestions and comments.
- iii) Prepare and submit by-laws drawings to local approving agencies (if required).

Deliverables shall include:

- a) Master Plan and Conceptual Architectural Design.
- b) Cost Estimates

3.2.3. Building Layout Selection:

The most suitable Layout for the Building based on the access to the road, adequacy of light as well as other building on the surrounding location shall be selected. The building layout should also be guided by climatic factors and environmental considerations such as solar, rain, wind, temperature, noise, light, energy efficiency, ventilation, etc.; and other existing and/or planned facilities in the area. The selected layout should be clearly indicated in the map and should be as per the norms of Department of Urban Development & Building Construction (DUDBC) / Kathmandu Metropolitan City Office. All the characteristic features of the chosen Building site shall be given in order to facilitate easy reference while designing the Building.

3.2.4. Topographical Survey:

The topographical survey of the 4 Ropani areas of land of the proposed building site shall be carried out. The Topographic map should show the following:

- (i) Contours at 0.1 m. intervals
- (ii) Govt. and/or public establishments
- (iii) Traverse lines, benchmarks reference lines and/or points with respect to which the present topographical map is prepared.
- (iv) Other information relevant to design, construction and/or maintenance of the building.

The survey should also produce a map showing other important features and facilities in the surrounding areas including roads, buildings, sewer lines, electric lines, trees, temple/ cultural sites, historic buildings, flooding areas, etc.

3.2.5. Seismological Study:

The consultants shall collect and refer to the available seismic data/ records of the area. Seismic Forces: According to the Indian Standard Criteria for Earthquake Resistant Design of Structures, Nepal National Building Code (NBC-1994), Municipality Norms, Rule and Regulation may be followed.

3.2.6. Consideration on Environment Protection:

Environmental consideration should start early-on. Layout plan of the building should be guided by environmental and climatic factors, and alternative layouts will be compared on environmental and climatic grounds. The design of the building should incorporate environmental concepts such as avoiding/ minimizing adverse environmental impacts, recycling or reusing and proper handling of wastes, making optimal use of natural systems (such as solar energy and natural lights), health & safety as well as accident/ emergency management measures, contributing to positive environmental aspects (such as recharging groundwater) etc. The proposed layout and designs should be screened for any environmental risks. The consultant shall carry out environmental assessment to predict damages of the building construction to the Environment and attempt first to avoid and then to minimize the risks or damage through appropriate lay-out and design features. The unavoidable risks should be mitigated through appropriate mitigation measures (technology, type of structures, management etc). The consultant will suggest appropriate measures in the design for protection of surrounding environment. Environmental and Social Management Framework for Implementation of Building Resilience to Climate Related Hazards (2012) as well as the GoN environmental policies, Environmental Protection Act and Environmental Protections Rules should be followed

3.3. Subsurface Exploration:

After the selection of the proposed building type and Layout of site with alternatives and preparation of topographic maps, the Consultant shall discuss the following with concerned Project In-charge of the DHM for final decision of the building size, type and Layout of site:-

- (i) Anticipated soil condition for foundation
- (ii) The most appropriate proposed building type and Layout of site
- (iii) Type of proposed foundation, substructure and superstructure.

The discussion will be done on the basis of the topographic maps, preliminary findings of the parameters (i to iii) above, location of the building type and Layout of site. After discussion and finalizing of the building size, type and Layout of site the consultant shall carry out subsurface exploration which shall include the followings:

3.3.1 Soil Exploration

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

SN	Type of soil	Number of Bore-holes	Governing depth	Remarks
1	Silty, sandy, clayey soil or Granular soil (gravels, boulders)	At Least Three	30 m	

The above mentioned depths and Number are indicative. The Consultant shall decide the actual required depth of soil investigation according to the field condition and design parameters.

3.3.2. Bore-holes, field tests and laboratory tests

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

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

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

3.3.5. Soil exploration works to be certified:

The DHM, if required, may ask the Consultant to submit the soil/rock samples obtained from the drilling works in core boxes and/or a bore-log certified by the consultants

3.4. Analysis of Data, Conclusion and Recommendation of Design Parameters.

Based upon the above mentioned studies and investigations the consultants shall make best use of their technical know-how and professional skill to arrive at and recommend the most cost effective design parameters. The consultant shall discuss in detail at least three different options and shall recommend the most appropriate option. The consultants are required to design the building keeping in view of the introduction of modern construction materials and technology into building construction industry. It is highly recommended to use high grade concrete in their design. Ordinary RCC structures shall only be accepted if there is sufficient ground in favor of them as compared with the high grade concrete.

3.5. Miscellaneous

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

Deliverable shall include:

Survey Report covering topographical, Seismological, Environmental and Soil Investigation Report

3.6. Detailed design and quantity/cost estimates

Based on the collected information and results of the discussions mentioned above the consultants shall design the building, following the standard codes of practice, norms and guidelines. The relevant codes of IS for the design of Nepal National Building Code (NBC-1994), Municipality Norms, Rule and Regulation shall be followed. The list of all reference literature and materials shall be provided on the report. As

mentioned earlier, the design will, to the extent possible, be guided by environmental and climatic factors and reflect state of the art practice in environmental consideration.

The consultants shall produce detailed design and all structural drawing as per Municipality Norms, Rule and Regulation and preparation of all documents need for Kathmandu Metropolitan City Office, consultants shall take certificate for further procedure with the help of DHM.

The consultants shall produce detailed quantity estimate of the building and its accessories including provisions of demolition of existing DHM office buildings. The consultants shall collect information on sources of materials and their lead distances and prepare rate schedules and cost estimates based on the standard norms and prevailing district rates.

The Consultants shall:-

i) Prepare detailed design and drawings for:

- Architectural
- Structural
- Mechanical
- Electrical and Allied system
- Communication and Computer Networking
- Fire Alarm and Fire fighting system
- CCTV system
- AC system
- Water Supply and Sanitation (Sewerage, Drainage etc)
- Environmental enhancement and protection measures
- Interior detail
- Detailed list of furniture and equipment for the project
- Site Development Works

ii) Prepare Technical Specifications and cost estimate

iii) Prepare Municipality Drawings and assist Employer for its approval

iv) Prepare Bill of quantities for each building

v) Any other document necessary for the bidding process & construction permit.

Note:

- Drawings should include Design / Working drawings

- The Consultant shall conduct soil test on the site to determine its bearing capacities prior to carrying out the structural design of the project.
 - The consultant should present three dimensional animation of building to DHM

Deliverable shall include:-

- a) *detailed design and Tender Drawings*
- b) *Municipality Drawings*
- c) *Detailed Cost Estimates, Work Specifications*
- d) *Complete set of Tender Documents*

Phase II: Preparation of Bidding Documents and Assisting in the Procurement Process

3.7 Bidding and Award of Contract

The consultant shall prepare Bidding Documents including Technical Specifications, Drawings, Bills of Quantities covering both the demolition of existing buildings and new buildings. The consultant will assist DHM in the bidding process including the preparation of procurement plan, inviting bids, bid opening and evaluation. Upon receipt of bids, the Consultant shall guide the evaluation committee in the evaluation of the bids, and preparing bid evaluation report in accordance with the GON/World bank procurement procedures and guidelines.

After the approval of the Bidder(s) selection, the consultant shall prepare and facilitate the contract agreement to be signed between the winning bidder and the DHM as per the specified agreed conditions.

Deliverable of this item of work include:-

- a) *Bid invitation.*
- b) *Record of clarifications, pre-bid meetings.*
- c) *Bid evaluation Report*

3.8 Environmental Impact:

The Consultant should follow the process and procedures explained in the ESMF. Environmental screening needs to be carried out at early stage to identify potential

environmental issues and to decide level of environmental investigation necessary. Two categories of risks should be clearly identified: first is risk to building from environmental factors, and second is risk to environment due to the building. Also identify whether the risk is construction period or operational period risk. The Initial Environmental Examination (IEE) or an Environmental Impact Assessment (EIA) process should start as early as possible, if an IEE or an EIA is necessary, so that this completed in time. Broadly, environmental consideration (IEE or EIA or in other form) will cover the following: baseline environmental conditions, potential environmental impacts and their mitigations (both direct and indirect impacts, and impacts during construction and/or operation), opportunities for environmental enhancement, and proposed design and other measures for protection of the environment.

Phase III: Construction Supervision

Detailed design and Construction Drawings:-

The Consultants will be required to submit supplementary detailed design and construction drawings which may be required for the execution of construction of the Project. Such construction drawings / documents may comprise:-

- a) Detailed architectural design and drawings
- b) Structural design and drawings.
- c) Water Supply, sewerage and drawings design and drawings.
- d) Internal and external lighting system / design and drawings.
- e) Other system detailed drawings
- f) Landscaping design and details.
- g) Design and details of parking areas, roads and walkways.

Deliverable shall include:

Complete set of working drawings

3.9 Contract Administration

The consultant shall take responsibility of contract administration in accordance with the provisions of the contract between the DHM and the construction contractor and ensure the quality of works executed by the Contractor as per the contract. The Consultant shall be responsible for construction supervision to ensure timely completion of the contract, providing working drawings and instructions to the contractor, checking and approving Contractor's shop drawings, laying out the

buildings on site as per the Plan, measurement of works executed by the Contractor, certification for payments for the works executed in conformity with the contract requirements.

3.10. Review of Contractor(s)' Implementation Schedule

The Contractor(s)' proposed implementation schedule shall be reviewed thoroughly by the Consultant. Interrelations between the various activities shall be carefully reviewed particularly with respect to time allocation, commencement and completion dates. At the end of this procedure, an agreed implementation schedule should be provided by the contractor(s) to the satisfaction of all parties.

3.11 Supervision of Construction Works

- The Consultant should provide the necessary supervisory staff to be employed during the period of implementation in executive and supervisory capacities in respect of the construction contracts. The Consultant will be delegated with all normal duties and powers of the "Residential Engineer as a project manager" for the implementation of the project.
- It will be the responsibility of the Consultant to supervise all operations from the time of demolition of existing buildings to the handover of the completed new building on behalf of the DHM and to ensure that the work of the Contractor(s) carried out in a proper workmanship and expeditious manner and in accordance with the contract documents.
- The Consultant will check, approve, reject and record, as the case may be, inter alia, the following:
 - Contractor(s)' construction plant and equipment
 - Materials of construction
 - Concrete testing, procedures and results
 - Construction of site works: concrete structures, steel structures, finishing, mechanical, water supply, sanitation & electrical works and other utilities as required.
- Review and approve all methods proposed by the Contractor(s) for permanent and temporary works, formwork, etc. to ensure conformity with construction

contracts and that the work can be carried out safely and in accordance with recognized and accepted practices.

3.12 Issue of Instructions to the Contractor(s)

- These services will relate to the fulfillment of the contractor(s)' duties from drawing up and approval of the work program till the completion of works. The services will include issuing field instructions in writing as required relating to:
 - Quality of materials used in the works.
 - Equipment and methods of construction
 - Supervision, checking and testing of works carried out.
 - Clarification of drawings and specifications.
 - Progress of works to ensure that the work program is adhered to.

- The Consultant shall not give any instructions which in his opinion are likely to increase the cost of works without the prior approval of the DHM.

3.13 Advice to the DHM on Progress of Works

It is of utmost importance that the progress of the works is in accordance with the programmed implementation schedule since the timely implementation of the project necessitates the strict adherence to the approved timetable. The Consultant will keep the DHM advised continuously as to work progress. If any deviation from the implementation schedule occurs, the Consultant will inform the DHM about the necessary measures to be taken to avoid dalliance of the project.

3.14 Inspection and Testing of Works

- At all stages of implementation, the consultant shall carry out regular inspection of materials and workmanship and acceptance tests on his own cost to ensure compliance with the specifications. Where work on site at any time during the implementation does not meet the requirements of the specifications, it shall be removed or rectified.

- Carry out inspection at time of substantial completion of the works and arrange, for issue of the Initial Hand-Over Certificate in coordination with the DHM.

- Undertake periodic inspections during the Defects Liability Period and notify the DHM and Contractor of any defect on the construction works, and supervising their repair. Following the expiry of the Defects Liability period, arrange for issuing the Final Hand-Over Certificate in coordination with the DHM.

3.15 Approval of Payment Certificates

- The consultant shall check, verify the measurements of works done by the Contractor and submitted through interim/ final payment certificates and certify payments due to the Contractor to the DHM for approval and payments.
- Certify all of the Contractor(s)' monthly statement and final statement within the time specified in the contract and forward to the DHM for arranging payment.
- The Consultant shall, during the course of works, keep accurate records of all dates and quantities of work carried out, all payments made to the Contractor(s), and all materials and equipment supplied to the site.

4. SUBMISSION OF REPORTS AND PRESENTATION OF THE WORKS

In accordance with DHM's and procedures the consultant shall submit his reports as under phase wise:

Phase I: Detailed Design of the project

4.1 Inception Report:

This report will contain building size, type and layout plan and locations of bore holes, logs with description of samples taken at every change of strata. Preliminary inception report shall be submitted to DHM in four copies and should be discussed with DHM. This should contain Master concepts of overall project as well as time schedule with respect to complete the phase-I

4.2. Preliminary Design Report:

This report shall contain the preliminary design concepts and short descriptions relating to the proposed structure and its major components, e.g. architectural,

Structural, water supply, sanitation, electrical, mechanical, and others. It shall include location of proposed foundations and arrangement of the building components along with comparison between the possible alternative types. This report shall be submitted in four copies and the content shall be discussed with DHM before proceeding to the detailed design of the building. The DHM may also ask to present the Preliminary Design Report to the DHM audience. The cost of such presentation shall be borne by the Consultants.

4.3. Reports for Kathmandu Metropolitan City Office

This report shall in all respect be complete, containing all the required components of the design and be presented in clear and easy to refer formats as per the Nepal National Building Code (NBC-1994) and Municipality Norms, Rule and Regulation.

4.4. Draft Report

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

- (i) Volume I – Main Report
- (ii) Volume II – Drawings (structural / working)
- (iii) Volume III – Design Calculations
- (iv) Volume IV – BOQ and Special Provisions to Standard Specifications, if any
- (v) Appendices

This report shall be submitted in four copies. The Report shall also include the drawings, quantity and cost estimate of any Standard Design that is used in the Design.

4.5. Presentation of the Draft Report

The Consultants shall present the design report in specified standard format and defend it to the DHM audience prior to the submission of the final report. They shall review the issues raised during the presentation while finalizing the report and make necessary amendments/corrections if needed. The date and venue of the presentation

shall be determined by mutual agreement between the DHM and the consultants. The cost of such presentation shall be borne by the consultants.

4.6. Final Report

Apart from the presentation, the DHM will verify the content of the report against the Terms of Reference and the checklist. The DHM may also discuss upon the technical content of the report and may suggest some changes if thought necessary. While preparing the Final Report the consultants shall consider the comments/suggestions and make corrections or amendments if required. It does not, however, relieve the consultants of their responsibility over the technical content of the design. The final report shall be submitted in four copies as indicated in the checklist.

4.7. Soft copy (electronic copy) of the design

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

Phase II: Tendering and Award of Contract

The consultant shall assist to prepare the bidding documents, shall assist to invite for competitive bidders to be advertised in newspaper which should contain essential information about the project and also process the advertisement in coordination with the DHM

Phase III: Construction Supervision

- The Consultant will keep the DHM continually informed on the progress of the works, and all budgetary and financial matters pertaining to the project, by submitting to him the following reports:
- Monthly progress reports including: information on measurements of work executed, equipment and material supplied to site, used and/or stored – quality tests on earthworks, concrete works, construction materials and equipment – labor force - variation orders if any - payments made to the Contractor(s) – acceptance tests of structures - problems encountered and recommendation made by the consultant -

photographs recording the progress of work. This report shall be submitted in four copies.

- Final report on completion of works and/or Consultants' assignment. The consultant will prepare and advice on the issue of the Initial and Final Hand-Over Certificates. This report shall be submitted in four copies
- Arrange site meetings with Contractor(s) at regular intervals to discuss progress and quality of works, and resolve any pertaining problem.
- The Consultant shall issue Variation order and claims for extension of time or any change in works according to the contract after obtaining the approval of the DHM. The Consultant shall also monitor the contract costs relative to the DHM's budgetary provisions.

5. TIME SCHEDULE

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

Phase I: Detailed Engineering Design

- i) Inception Report within 3 (Three) weeks from the date of signing of the contract.
- ii) Preliminary Design Report within 2 (Two) months from the date of signing of the contract.
- iii) Draft Report within 3 (Three) months from the date of signing of contract.
- iv) Final Report within 4 (Four) months from the date of signing of contract.

Phase II: Preparation of Bidding Documents and Assisting in the Procurement Process

Tendering and Award of Contract for construction within 12 (Twelve) weeks after the completion of first Phase

Phase III: Construction Supervision

Project Supervision until handover of the completed building from the date of signing of Contract (with consultant).The construction period is estimated to be

6. PAYMENT SCHEDULE

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

Phase I: Detailed Engineering Design

60 % of total payment will be made during the phase I. Payment of phase I will be as following schedule:

- i) 30 % of Phase I payment after submission and Acceptance of Inception Report & Preliminary Design Report.
- ii) 50 % of Phase I payment after submission and Acceptance of Draft Report.
- iii) 20% of Phase I payment after submission and Acceptance of Final Report.

Phase II: Tendering and Award of Contract

10% of total payment will be made after completion of phase II work.

Phase III: Construction Supervision

30% of total payment will be made in the phase III as in following schedule:

- (i) 20 % of Phase III payment after 30% completion of the building construction work.
- (ii) 50 % of Phase III payment after 60% completion of the building construction work.
- (iii) 30 % of Phase III payment after handover of the completed new building to DHM.

7. TENTATIVE STAFFING REQUIREMENTS

7.1 The consulting services shall be carried out by National consultants. The firm shall have extensive experience in the planning, survey, investigations, design and documentation, procurement and construction supervision of modern Office Building. It is anticipated that the consultant organization will be as set out in Staff Input, although in preparing their proposals the consultants may propose alternative arrangement which in their opinion, will provide required services of an equivalent or better quality.

7.2 The total minimum key staffing inputs has been estimated at about 84 person-months (25 person-months for the design phase, 3.5 person-months for the Tendering phase and 55.50 person-months for the construction supervision phase). It is expected that the consultants will propose their required person-months to carry out the task as per the Terms of Reference. The consultant's should include in their proposal the cost of all facilities and services required by them for the execution of their services including vehicles, miscellaneous transportation, offices ,equipment and stationary etc. The breakdown of estimated staff input is given below.

The tentative staffing requirements of the Key Personnel

Description of Staff	No.	Design Phase (Person Months)	Tendering period (Person Months)	Supervision Phase (person Months)	Total
Key Staff					
Team Leader/Coordinator	1	2	0.5	8	10.5
Resident Engineer	1	NA	1	23	24
Architect/Urban planner	1	3	NA	NA	3
Structure engineer	1	2	NA	4	6
Geotechnical Engineer/Material Engineer	1	2	NA	1.5	3.5
Environmental Engineer	1	1	NA	NA	1
Water supply/Sanitary Engineer	1	2	NA	4	6
Electrical Engineer	1	2	NA	4	6
Quantity Engineer	1	2	1	4	7
Mechanical Engineer	1	1	NA	3	4

Surveyor	1	2	NA	1	3
CAD Engineer	1	3	NA	NA	3
Computer Networking and Communication Specialist	1	2	NA	1	3
Procurement/Contract Specialist	1	1	1	2	4
Total	15	25	3.5	55.5	84
	Support Staff				
Office Manager	1	2	1	8	11
Draft persons	1	3	NA	NA	3
Sub Engineer/Overseer (civil)	1	3	NA	20	23
Sub Engineer/Overseer (Electrical)	1	3	NA	12	15
Computer operator	1	3	1	20	24
Office Assistant	1	3	1	20	24
Total	7	17	3	80	100

8. QUALIFICATION, EXPERIENCE AND RESPONSIBILITIES OF KEY STAFF

Position	Minimum Qualification	Desirable Qualification	General Experience	Desired Experience	Relevant Training	Role and Responsibilities (Design Phase)	Role and Responsibilities (Tendering & Supervision Phase)
Team Leader/ Senior Architect	Graduate in Civil Engineering	Masters in Architecture/Urban planning	15-years experience in Planning, Design and supervision of Building Structures	<ul style="list-style-type: none"> • Experience as a Team Leader • Minimum experience of 2 Office Building design projects size > NRs 200 	Relevant training exceeding two weeks	<ul style="list-style-type: none"> - Ensure overall coordination and assist the entire team of consultants in performing their responsibilities and inputs to complete the design works on time. - Supervise consulting team member and monitor their performance to ensure quality of design works. - Carryout need analysis for the office building and prepare, 	<ul style="list-style-type: none"> - Ensure overall coordination and assist the entire team of consultants in performing their responsibilities and inputs to complete the design works on time. - Supervise consulting team member and monitor their performance to ensure quality of design works. - Carryout need analysis for the office building and prepare, master plan preliminary architectural design drawings - Prepare detail architectural design /drawings and working drawings

				Millions.		<ul style="list-style-type: none"> master plan preliminary architectural design drawings - Prepare detail architectural design /drawings and working drawings 	
Resident Engineer	B.E in Civil Engineering	Master in Project/ Construction Management	10-year experience in General Civil Engineering construction works	3 year Experience in construction of WB/ADB /UN funded government building projects	Relevant training exceeding two weeks		<ul style="list-style-type: none"> - Supervision of building works from demolition of existing building to completion of new building - Assist on preparation of bidding documents - Monitoring of the civil engineering works. - Assist on preparation of BOQ and Reports. - Other works as required by Project. - Assessment of technical needs based on client Needs
Architect	B.E.in Architectural Engineering	Master in Architectural /Urban planning Engineering	10-year experience in Architectural design of Buildings.	Experience in Architectural design of WB/ADB /UN funded multistoried office building projects	Relevant trainings (Auto-CAD-2D&3D) exceeding two weeks	<ul style="list-style-type: none"> - Detailed Architectural design & Preparation of multistoried building drawings - Preparation of tender and working drawings 	Supervision of the building construction works.
Structural engineer	B.E. in Civil Engineering	Master's degree in structural Engineering	10-year experiences in structural design of Multistoried Buildings	Experiences in structural design of WB/ADB /UN funded multistoried office building projects	Relevant trainings (SAP, ETABS Auto-CAD etc) exceeding two weeks	<ul style="list-style-type: none"> - Structural Analysis of the buildings using SAP/other appropriate software - Detailed Structural design & Preparation of multistoried building drawings - Preparation of tender and working structural drawings 	Supervision of the building construction works specially in structural parts
Electrical Engineer	B.E. in Electrical Engineering	M.E. in Electrical Engineering or equivalent	10-year experiences in Electrical Designs of Building works	Experiences in Electrical design of WB/ADB /UN funded multistoried office building projects	Relevant training exceeding two weeks	<ul style="list-style-type: none"> - Detailed Electrical design & Preparation of multistoried building drawings - Preparation of tender and working drawings (Electrical) 	Supervision of Electric works.
Computer	Bachelor in	Masters in	10-year experience	Experience in	Relevant	<ul style="list-style-type: none"> - Designing of various communication 	-Supervision of networking and communication works.

Network ing and Commu nication Specialis t	compu ter Engin eering/ Electr onics & Comm unication, or Compu ter scienc e	compute r Engin eering/ Electr onics and Comm unication or Compu ter or Informat ion Technol ogy	ces in Compu ter Network ing and Comm unication	computer Network ing, web based system developm ent, , Visualizat ion tools, Server design and, IT system requireme nt analysis.	trainin g exceed ing two weeks	<ul style="list-style-type: none"> - &computer network systems - Database system designing. - Work stations designing for climate, agro-met, weather and flood forecasting services. - Dissemination system design and Visualization tools design. - IT system requirement analysis. 	
Water supply/S anitary Enginee r	Bachel or in Civil Engin eering.	Masters in water supply /Sanitary /Environ mental Engin eering.	10-years experien ce in Water Supply and sanitatio n works.	Experienc e in design and implemen tation of water supply and sanitation works Office buildings	Relevan t trainin g exceed ing two weeks	<ul style="list-style-type: none"> - Planning & Designing of water supply and sanitation system in the multistoried building. - Preparation of drawings & estimation of water supply and sanitation works . 	-Supervision of the water supply and sanitation system in the building works.
Environ mental Enginee r	Bachel or in Civil Engin eering	Masters in Environ mental Engin eering	10-year experien ce in Environ mental monitori ng s as well as EIA/IEE study works	Experienc e in planning, designing and developin g Environm ental friendly office building works.	Relevan t trainin g exceed ing two weeks	<ul style="list-style-type: none"> - Planning, designing and developing Environmental friendly office building works - EIA/IEE study for building works. 	-Supervision and monitoring of building construction works related to environmental issues.
Geotech nical Enginee r/Materi al Enginee r	Bachel or in Civil /Materi al Engin eering	Masters in Geotech nical /Materi al Engin eering	10-year experien ce in Geotech nical design and analysis of civil infrastru ctures -10-year experien ce in Materi al Engin eering works.	Experienc e in Geotech nical design and analysis of office building(More than 4 storey) works in Kathman du valley.	Relevan t trainin g exceed ing two weeks	<ul style="list-style-type: none"> - Geotechnical Analysis of surface and subsurface soil strata of building site. - Stability analysis of foundation. - Planning and designing of suitable type of foundation based on geotechnical analysis. - Preparation of drawings & reports related to geotechnical works 	-Supervision of all geotechnical works
Mechani cal Enginee r	Bachel or in Mecha nical Engin eering	Masters in Mecha nical Engin eering	10-year experien ce in general mechani cal works	Experienc e in designing and erecting of lift system	Relevan t trainin g exceed ing	<ul style="list-style-type: none"> - Planning and designing lift system and other mechanical works in the multistory - buildings - Preparation of 	-Supervision of all mechanical works on building construction.

				and generator system in the multistory - buildings.	two weeks	drawings and estimation of lift system and other mechanical works	
Technical Procurement /contract Specialist	Master Degree in Engineering (civil, electronic), applied science, technology or relevant Field.	Addition al Master degree in the field of management will be preferable	10- years of experience in the field of procurement management in Government, INGO/ donor funded project.	Preference will be given having the technical procurement management experience in ADB or World Bank or UN funded project.	Relevant training exceeding two weeks	<ul style="list-style-type: none"> - Preparation of procurement related documents required for the procurement of goods, consulting services and works; - Decide on optimal procurement methods, including packaging, and processing procurement, including advertising, pre-qualifying and short listing etc; - Prepare project specific scope of work, Terms of Reference, Specification, Cost estimates and work schedules, evaluation criteria etc; - Assist in receiving bids/proposals and examining the same and in writing evaluation reports; - Assistance in development of bidding document as per GON/World Bank requirement; - Assistance in Tender Evaluation and contract negotiation; 	<ul style="list-style-type: none"> - Contract performance monitoring; - Operational acceptance of technical equipment; installation and commissioning; <p>-Provide periodic analysis of contract performance and preparation of reports on overall Building construction Progress Report.</p>
Surveyor	Bachelor degree in Civil/ Geomatic/ Survey Engineering or equivalent	Masters degree in Civil/ Survey Engineering or equivalent	10-year experience in General land survey works	Experience in Survey and Preparation of Topographic maps as well as building layout works.	Relevant training exceeding two weeks	<ul style="list-style-type: none"> -To make property and land surveys and valuations. - To prepare topographic map of building site 	<ul style="list-style-type: none"> -To layout the building works -To supervise the survey related works
CAD Engineer	Bachelor in CAD/ Civil/ Architect Engineering or	Masters in CAD/Civil/Architect Engineering or Equivalent	10-year experience in General CAD works in construction field	Experience in design and drawing of Multi-storied building drawings.	Relevant training exceeding two	<ul style="list-style-type: none"> - Need assessment - Preparation of detailed drawings of a multistoried office building. 	Preparation of tender and working drawings of a multistoried office building.

	Equiv alent				weeks		
Quantit y Surveyor/ Engineer	Bachel or in Civil /Quant ity survey Engin eering or Equiv alent	Masters in Civil /Quant ity survey Engin eering or Equivale nt	10- year experien ce in quantity and cost estimatio n of general building works	Experienc e in quantity and cost estimatio n of Multi- storey building works	Relevan t trainin g exceed ing two weeks	-Cost estimation, cost planning, feasibility studies, cost benefit analysis, lifecycle costing and valuation of building works. -To provide methods for Efficient and effective utilization of resources (materials, manpower, money) - planning and scheduling of construction activities and resource allocation. -Risk analysis	- Cost control works -contract procurement, tender evaluation and dispute resolution
Office Manager	Master degree civil engine ering/ manag ement or equiv alent	Ph.D. in civil engineer ing/man agement or equivale nt	10 -year experien ce in office manag ement	3 year Experien ce in managem ent of WB/ADB /UN funded governme nt building project s	Relevan t trainin g exceed ing two weeks	- responsible for organizing and coordinating office operations and procedures - ensure organizational effectiveness and efficiency	-maintaining office services and -Maintain office efficiency -supervising office staff - maintaining office records. -Perform other related duties as required
Draft person	Diplo ma in Engin eering (civil, Archit ect)	Bachelor in Engin eering (civil, Archit ect)	10 years of experien ce in drafting works	Experienc e in drafting works of office buildings in ADB or World Bank or UN funded project.	Relevan t trainin g(Auto CAD software) exceed ing two weeks	- responsible for drawing land surveys onl AutoCAD program - preparation of detailed and working drawings required for the building construction.	
Sub Engineer/ Overseer (civil)	Diplo ma in Civil Engin eering	Bachelor in Civil Engin eering	10-year experien ce in site supervisi on of general building construct ion works.	Experienc e in site supervisi on of Multi- storey office building construct ion works.	Relevan t trainin g(Auto CAD software) exceed ing two weeks	- Responsible for site survey and measurement. - Responsible for assisting on preparation of design, drawing and estimation of the office building	-Site supervision according to drawing and estimates -Assist on preparation of BOQs.

Sub Engineer/Overseer (Electrical)	Diploma in Electrical Engineering	Bachelor in Electrical Engineering	10-year experience in site supervision of general building electrification works.	Experience in site supervision of Multi-storey office building electrification works.	Relevant training (AutoCAD software) exceeding two weeks	- Responsible for site survey and measurement. - Responsible for assisting on preparation of design, drawing and estimation of building electrification works.	-Site supervision on electrification according to drawing and estimates -Assist on preparation of BOQs.
Computer operator	S.L.C.	Intermediate in computer science	10-year experience in computer operating works.	Experience in preparation of reports, email/internet	Relevant training exceeding two weeks	- As required by the office	-As required by the office

9. DEFECT LIABILITY

9.1. Responsibility for survey and design

- i. Submission of the final reports does not relieve the consultant from their responsibility to the design. They shall bear full responsibility for:
- ii. Authenticity of all the field data including socio-economic, environmental, topographic and geological information
- iii. Correctness of the design and all the calculations (except for the Standard Design, if used)
- iv. Correctness of the drawings
- v. Correctness of any other details related to construction

9.2. Assistance during construction phase

During construction, the consultants should visit the Building and provide necessary technical assistance. If any changes in the design are required, the consultants should furnish it free of cost as per the Condition of Contract.

9.3. Acceptance of responsibility

The Consultants may be asked to submit signed Statement of Acceptance of Responsibility as per DHM.

