

**Ministry of Works and Human Settlement (MoWHS)  
Department of Urban Development and Engineering Services (DUDES);  
Environment and Urban Sector Programme Support**

**Terms of Reference  
For  
Architectural and Structural Consultant,**

**Background:**

The Royal Government of Bhutan (RGoB) has identified urban development, as a priority area in its long-term development strategy. In support of this development objective, the Government of Denmark provides support to the RGoB through Environment and Urban development in five district towns.

As a part of the program, there is a provision for construction of Town Hall or Multi Purpose Hall, municipal Office in Gelephu and Damphu Towns. EUSPS decided to recruit an Architectural and Structural Consultant for preparation of Building Plan, Architectural drawings, Structural design and drawings, bill of Quantities and Landscaping for the aforementioned structures.

**Requirement:**

To Prepare the building plan, architectural drawings, structural design & drawings, BOQ & Costing preparation and landscaping for a facility with the following spatial Programme;

- a) Town hall or Multi Purpose Hall with a capacity of 500 seats in Gelephu and 300 seats in Damphu, stage with green rooms, toilets, parking area, internal roads etc.
- b) Library (area 30 to 35 sqm)
- c) Municipal Office to accommodate the following staff: Thrompon, Engineer (WTP, water supply & Plumbing), Engineer ( Sanitation, STP, Sewer Net Work, and Solid Waste Management), (Electrical), Architect & Surveyor cell, Accountant cell, Stores, Conference hall, Receptionist room, Visitors Waiting room. Canteen, Toilets and Common room to accommodate assisting filed staff.
- d) The approximate area requirement shall be Thrompon room with attached toilet – 25 to 30 sqm, Engineer ( Water) – 12 to 15 sqm, Architect & Surveyor cell – 20 to 25 sqm, Accountant cell – 10 to 12 sqm, bill Payment Section – 10 to 12 sqm, Stores – 15 to 20 sqm, Conference hall – 40 to 45 sqm, Receptionist room – 12 to 15 sqm, Visitors Waiting Room - 20 to 25 sqm, Cantee3n – 25 to 30

sqm, toilets – 30 to 35 sqm, Field Staff – 25 to 30 sqm. The total area shall be approximately 268 to 324 sqm,. There may not be same area for Gelephu and Damphu. After preparation of plan, there is likely to change the area as per requirement.

### **Design Brief :**

In designing the buildings, the consultant shall apply the highest quality of architectural and technical skills through drawings, details and specifications. All drawings shall be prepared in the metric system and at the required scales.

The Consultant shall prepare Technical Documents and other drawings as specified in the Agreement together with any other related documentation as may be deemed necessary for the Project. Technical calculation and Structure Designs shall be prepared and signed by a qualified Structural Engineer. The Consultant shall also involve the services of any such Specialists and other Technical Consultant as may be deemed essential to carry out the requirements of the Project. Technical data pertaining to Soil Investigations and Site Surveys etc., shall be carried out by the Consultant prior to the designing of the buildings or at least before the technical drawings are made.

### **The scope of the consultancy service is to:**

- 1.1 Carryout Detailed survey of the area including
  - Contours @ 1 meter interval ( at 1:1000 or 1:500 scale)
  - Watercourses – Centerline and banks
  - All existing buildings
  - Any Permanent features
  - Fences and Footpaths
  - Placing of Permanent benchmarks (Concrete foundation with steel pins )
  - Boundary should be permanently marked if necessary at appropriate places
  - Roads. Trees
  - Existing services (Electrical/Telecom lines Water pipes, Manholes, Sewers, Sub-Station).
  - Soil investigation.
- 1.2 Prepare preliminary Architectural plans and design:
  - The consultant shall present a draft brief layout plan of the area, the preliminary cost estimate and the architectural plans and related drawings to supplement the design to a meeting to be attended by Dzongkhag Municipality and DUDES
- 1.3 Preliminary cost estimates; Cost based on floor area/ standard unit rates to come in line with the final in the exact area. (constants match condition).

1.4 Detailed site development plan and design with the proposed buildings, existing infrastructure, contours, retaining walls, surface water drainage, parking areas and steps/ footpaths, detail landscaping.

1.5 Detailed architectural after approval of the preliminary drawings from the respective Dzongkhags supplemented by models.

1.6 Detailed structural design and drawings

1.7 Electrical and plumbing layout.

1.8 Detailed Estimate including specification of works.

1.9 Bidding documents for tendering out for construction.

1.10 Attend meetings as and when required by Dzongkhag Municipality and DUDES

### **Time Schedule for Project Implementation ;**

SI.NO	STAGES OF WORK	DURATION	DATE OF COMPLETION
1	Programme analysis, site survey, preliminary designs and initial Cost estimate. Followed by presentation & approval		
2	Final design & presentation		
3	Model and working drawings		
4	Statutory drawings – 4 sets for municipality approval.		
5	Tender Documents		
6	Tender evaluation and Municipality Approval		

Detail break up time schedule should be provided by the bidder (Consultant) in their Methodology. (Total time period of 4 months for completion of work).

**List of Construction Drawing Requirements, which shall be prepared by the project for the consultant.**

This list is subject to revisions by the Consultant after giving prior notice therefore any further details, drawings, designs, documents, specifications, etc., that are deemed necessary for proper execution, approval and verification of the work may be added, amended or revised from this schedule.

Site Layout Plan: Scale 1:200	The following shall be indicated:
	a) Setting out procedure (in relation to an existing landmark or some other means)
	b) Location of the major buildings in terms of distances, building sizes and orientation in relation to the setting out points.
	c) Internal Roads layouts, gradients, widths, turning rails, sizes of parking lots, their locations etc., in relation to the building.
	d) Layouts for landscaping in terms of levels, cut and fill areas, outdoor courts, trees, lawns, paved paths, retaining walls, flower beds etc., together with their location and sizes where applicable in relation to the buildings.
	e) Water supply scheme with designs and details for water tanks over head/ underground) outlining the specifications for materials, capacity and sizes, necessary fitting required and location of each.
	f) Sewerage treatment proposal together with specifications of location, materials, sections, sizes for manholes, soak pits, septic tanks etc., as per the number of users.
	g) Storm water drainage scheme layout along with specifications for locations, materials and sizes of all major and minor drains.
	h) Compound electrification scheme.
	i) Location, security fencing, entrance gates, gate house incinerator, link passages etc
	j) Other relevant site planning details.
1. The Building Plans: Scale 1:100/ 1:50	The following shall be indicated:
	a) Location and sizes of the various rooms, passages, outdoor terraces, courts etc., to cover all floor levels including basement and foundations.
	b) Location and sizes of structural elements.
	c) Wall thickness, location of doors windows,

	staircases, steps, levels etc., together with building materials used.
	d) Schedules of doors, windows, ekras etc.
	e) Partition, counters, cupboards and other built-in furniture locations.
	f) Reflected ceiling plans where applicable, along with material specification and fixing details.
	g) Schedule of finishes and specifications for different areas and surfaces.
2. The Building Sections: Scale 1:100/ 1:50	All relevant longitudinal and cross-sections indicating:
	a) All major changes of levels and building heights, clearly defining the relationship of the various building elements with each other, in terms of vertical heights and the distances to be drawn.
	b) Heights of basic elements and levels such as plinths, sills, lintels, beams, ceilings, floors, ekras, cornices, eaves, cross ties, truss bottom etc.
	c) Slopes of roof and floors applicable to be defined.
	d) All the materials to be specified.
3. The Building Elevations: Scale 1:100/ 1:50	Basic elevations indicating:
	a) Elevation features of doors, windows, ekras, clerestory, columns, brackets, railings, roof profiles etc., and showing all external faces of the buildings to be drawn.
	b) Details of the elevations and corresponding external wall sections, defining the arrangement of various elements whether in different or the same vertical plans etc., along with the building materials used.
4. Construction Details: Scale: 1:20/ 1:10/ 1:5	Construction details for al building features indicating:
	a) Flooring, steps and step guards, sills, railing, lintels, columns, beams, brackets, cornices, ekras, ceilings, roofing, plinth protection etc., along with materials to be used.
	b) Partition walls, paneling, skirting, false ceilings, shelving, counters, cupboards and other miscellaneous built-in furniture along with materials, specifications and hardware to be used.
	c) Staircase treads and risers and their relation to floor finishes, hand railings and fixing details

	along with materials and specification used.
5. Doors/Windows/Ekras: Scale 1:20/ 1:10/ 1:5	The following shall be indicated together with the schedule of finishes.
	a) Details elevations clearly showing all traditional features and elements to be incorporated and prepared.
	b) Details sections explaining the opening, frame, threshold, shutter sizes etc. to be prepared, along with a drawn description of traditional detailing aspects and materials to be used.
	c) Details for grills and security bars together with material used, specifications fixing details.
	d) Schedules and specification for hardware.
6. Toilets Details: Scale 1:20	The following shall be indicated:
	a) Detail plans and sectional elevations clearly explaining the number, sizes, location and types of all fixtures and fittings i.e water closets, urinals, wash basins, tapes, geysers, towel rails, soap trays, mirrors, floor traps, etc., along with arrangement of tile facing, materials specifications and catalogue reference where applicable.
	b) Layout plans for water supply and drainage lines required for each floor including specification of sizes, necessary fittings and materials.
7. Pantry Details: Scale 1:20	The following shall be indicated:
	a) Detailed plans and sectional elevations clearly explaining the location of various fixtures i.e. sinks and drain boards, exhaust fans, etc., along with all materials specifications and catalogue references where applicable.
8. Structural Drawings: Scale 1:100/ 1:50	The following shall be indicated together with the relevant schedules:
	a) Layout plans with complete centre-to-centre measurements.
	b) Foundation plan up to plinth level, complete with details for column footings, load bearing walls, partition walls, plinth beams, etc., with sections at various points and supports showing the entire arrangement of reinforcement with full measurements.
	c) Design and details for retaining walls, breast walls, etc., where applicable, with plans and sections showing the whole

	structure and complete measurements.
	d) Design and details for lintels, beams, cornice beams, suspended floors, columns, pillars, posts, struts, brackets, etc., at all floor levels with complete sections showing the entire arrangement of reinforcement for the complete structure together with full measurements.
	e) Design and details for stair cases with plans and sections at all levels showing the whole reinforcement arrangement with all measurement for stairs, landing, slabs, beams and foundations.
	f) Details of ceilings, sizes of joists, suspenders and fixing details complete with sections showing the structural arrangement and measurements.
	g) Design and details for trusses, purlin, rafters, posts, struts, post plates, etc., complete with sizes, sections and fixing details.
	h) Design and details of all steel sections with complete measurements, showing the entire structure arrangement, details of connections, etc.
9. Electrical Layout: Scale 1:50	Proposal for electrification of all floors together with related furniture layouts indicating:
	a) Internal electrical layout with respect to location and height of fixture/fittings such as light points, switches, switch boards, power outlets, exhaust fans, bulk heads, sub distribution boards, main control board, etc.
	b) Layout for compound electrification inside plan along with specification of fittings, poles, brackets, etc., as proposed.
	c) Layouts and sections where applicable for cable trenches, cable routes and earthing and its specification/ recommendations thereof.
	d) Single line diagram in respect of main control board and energy meter, sub distribution boards and load circuits.
10. Services Layout: Scale 1:100	The following information as per the manufacturer's standard and specification shall be incorporated in all relevant drawings where ever applicable:
	a) Layout showing the location of security gates and walls with required height

	clearances, check points, save doors, grills, partitions, special reinforcement, security rooms, etc.
	b) Location of fire alarm sensors and fire fighting equipments together with provision for installation details as per the manufacturer's specifications.
	c) Location and provision for installation of freight/passenger elevators.
	d) Layout showing the location of electrical heating/ mechanical ventilation equipment.

### **Submission of Reports by the Consultant.**

Reports are to be made, examined and submitted to the Dzongkhag Municipality (client) after each stages of work (as mentioned above 4-F) within a stipulated period of time.

### **Basic Consultancy Service :**

1. The Consultant shall ensure that all Architectural, Structural, Services drawings, details, specifications, calculations and schedules are as far as possible correct and accurately incorporated, in order to avoid related contractual complications and constructional faults.
2. The structural and building services work shall cover all details for complete execution of the Project on site by the Contractor and shall be based on the Indian Standards Institute Codes. of Practice governing loading, analysis and designs. Special attention shall be paid to seismic resistant design.
3. Prevailing norms and guidelines, regarding building regulations governing plot coverage, set backs etc., as formulated by the Government/ Municipal Corporation shall be followed. The consultant shall also arrange for obtaining necessary approvals of all concerned authorities for which no extra charges will be payable to him. However, processing fees payable to the Govt. Authorities/city Corporation will be borne by the client.

### **Description of Basic Service;**

The purpose of this clause is to obtain professional Architectural and all necessary Engineering Services in the Design Stages of the Project.

**In consideration of the fees to be paid, the Consultant shall provide drawings and documents to cover the following:**

- Prepare room requirements based on the Client's program and utilizing Standards and Norms specified by the Client if any.
- Preparation of Preliminary Design Drawings and Initial Cost Estimate based on plinth area calculations.
- Design Development and preparation of Final Architectural Design Drawings.
- Preparation of Architectural Working Drawings and the model.
- Submission of drawings required for approval of the Design from statutory agencies such as Municipal Corporation.
- Preparation of Bills of Quantity and Specifications.
- Preparation of Detailed Estimates for Total Construction Costs.

### **Structural and Engineering Services ;**

- Structural Analysis and Preliminary Design of the Structural System to be employed
- Preparation of Final Structural Design drawings showing the structural system used for RCC, Wood, Steel etc., as necessary together with reinforcement details, construction details, sizes etc. The structural drawings shall be accompanied by a compiled report giving verifiable calculations for all structural members.
- Preparation of Specifications for Structural Design Components.
- Preparation of Bills of Quantity and Cost Estimates.

### **Building Services ;**

Building Services shall include Electrical, Water Supply, Sanitation, Heating and Ventilation and lifts, together with Specialized Service inputs as required.

- The Consultant shall advise the Client regarding the appropriate selection of all the Specialized Services such as Fire and Security System, Elevators, Waterproofing, Mechanical Ventilation, Communications etc., as may be deemed necessary, so that their inputs may be obtained at an early stage of the Design.
- Incorporation of Services in the Final Design Drawings.
- Preparation of Specifications.

- Preparation of Bills of Quantity and Cost Estimates for each of the required Building services.

**Bid and Contract Documents :**

- Compilation of the aforementioned Bills of Quantity and Abstract of Costs based on the Bhutan Schedule of Rates 2005 and any subsequent revisions
- Preparation of Terms and Conditions of the Contract.
- Preparation of Forms for Agreement and Contract Documents.
- Tender Notification documents.
- Evaluation of tender.

**Stages Of Work :**

In order to ensure proper co-ordination and maintain progress during the design and execution stages, the Project shall be carried out in the following stages:

Stage I	-	Programme analysis, site survey, preliminary designs and initial Cost estimate.
Stage II	-	Final design
Stage III	-	Model and working drawings
Stage IV	-	Statutory drawings – 4 sets for Municipal Corporation approval.
Stage V	-	Tender Documents
Stage VI	-	Tender evaluation and Municipal Corporation approval.

**Qualification Criteria:**

The consultant or his organization should have experience in design of town hall/ multipurpose hall and other civil buildings during the last three years.

**Completion Time:**

4 Months from the date of work order.

**Payment Terms:**

10% after approval of preliminary design, including building plan, architectural drawings and landscaping drawings

40% after approval of final design, including Structural calculations and structural drawings

10% after approval of plumbing and sanitation works

5% after approval of electrical drawings

25% after approval of BOQ and costing

10% security deposit to be released after completion of construction or within one year whichever is later.