

## TERMS OF REFERENCE

### **1.0 SALIENT FEATURES OF THE WORK**

1.1 Name of work: **“COMPREHENSIVE CONSULTANCY SERVICES FOR INFRASTRUCTURE DEVELOPMENT OF THE 200-BEDDED CANCER HOSPITAL (STATE CANCER INSTITUTE) AT GAUHATI MEDICAL COLLEGE, GUWAHATI ASSAM ”.**

#### 1.1.1 **THE SITE**

The Premises is situated adjacent to Gauhati Medical College & Hospital, Guwahati Assam

#### 1.1.2 **Brief Description of Work:-**

Please see website notice inviting bids for the above description which is brief and only indicative. There will be other relevant infrastructures required to develop the campus.

#### 1.1.3 **SCOPE OF WORK:-**

Consultant has to prepare a Master Layout Plan per (having total area of approximately 06 Acres) requirement as shown in NIT.

Consultant shall provide comprehensive consultancy services as per the scope and terms and conditions of NIT. Consultancy work shall include site survey, preparation of Master Plan, Architectural/Structural Drawings, Preliminary Estimate, Detailed Estimate, assisting in all necessary approvals and Building Plans and all rendering assistance and documentation as required for mandatory clearances/environmental clearance from Local Authorities/concerned authorities. The consultant have to provide Comprehensive Consultancy Services as per details given in the paras stated below.

### **2.0 ROLE OF THE CONSULTANT**

2.1 As briefed in notice inviting bids, the Role of the Consultant is to provide **“COMPREHENSIVE CONSULTANCY SERVICES FOR INFRASTRUCTURE DEVELOPMENT OF THE 200-BEDDED CANCER HOSPITAL (STATE CANCER INSTITUTE) AT GAUHATI MEDICAL COLLEGE, GUWAHATI ASSAM”** and he shall remain involved with the project from its inception to satisfactory and successful completion in all respects.

2.2 The consultant shall provide comprehensive consultancy services in project conceptualization covering space utilization, functional requirements, preparation of Master Plan, Project cost estimation, Working Architectural drawings, Structural drawings and various services design, Detailed Project Report etc. The Preliminary project report shall cover all project components.

- 2.3 The consultant shall prepare Preliminary Estimate based on DPAR 2016 and submit to the Engineer-in-charge. The Consultant shall make necessary corrections/modifications as suggested by the Engineer-in-charge and finally approved PE should be submitted.
- 2.4 The consultant shall assist for all necessary statutory approval from local bodies, including but not limited to obtaining related No-Objection-Certificates (NOCs), obtaining water connection, power connection, sewage connection, Storm water drain connection, Tree Cutting Permission if required, NOC & Approval from Garden Superintendent, NOC & Approval from Civil Aviation Authority, NOC & Approval from Respective Urban Art Commission and Heritage Committee, NOC & Approval from Environment Committee, NOC & Approval Respective Metro Rail Corporation / PWD / Telephone / Police / Electricity Boards, NOC & Approval from any other Office as may be necessary for Completion of the project as a whole. For the Project, IGBC Gold Rating shall be obtained as per site condition. Accordingly, the Consultant has to maintain the relevant record and if required, he has to engage a sub- consultant for IGBC Gold certification.
- 2.5 All Environmental Impact Assessment, if required has to be done by the consultant.
- 2.6 The consultant and his sub consultant shall have regular interaction with the Engineer-in-charge for formulating the design philosophy and parameters, preparation of preliminary estimate, designs/ drawings and specifications.
- 2.7 The consultant shall prepare Detailed Estimate showing details of measurement, analysis of rates etc. and submit to the Engineer-in-Charge for formal approval. The corrections / observations, if any, is made by the Engineer-in-charge, the same shall be complied by consultant till final approval by the competent authority. The approved tender documents shall also be submitted in hard copy as well as soft copy.
- 2.8 The Consultant shall have to perform in an efficient, orderly and professional manner and shall deploy necessary qualified and skilled persons according to the requirement of the services.
- 2.9 The consultant shall have to prepare design philosophy and the design methodology, listing out relevant codes, related references, sound-engineering practices etc.
- 2.10 The consultant shall have to design all the structure and prepare the structural drawing and design the same shall be got proof checked from NIT/IIT or as decided by the Engineer-in-Charge.
- 2.12 The Consultant shall comply with all applicable laws, bye-laws, and statutory provisions etc. in the performance of the consultancy assignment.

- 2.13 The Consultant shall comply with the applicable norms of local as well as Central Govt. Bodies.
- 2.14 The consultancy services shall be provided through a Team Leader supported by experienced professionals. The Consultant will deploy adequate number of professionals and other staff to deliver the requisite services as per time schedule. The Consultant shall have to submit an Organogram giving details of proposed team detailing the roles/work to be performed by each personnel, their tentative duration, inter-relationships of each personnel etc.
- 2.15 The Consultant shall get the conceptual approval of the DME Assam or both through presentations, Comments and suggestions or alternate proposal of the client and his representatives shall be evaluated and suitably incorporated till the concept design is accepted and frozen.
- 2.16 The Consultant shall develop the concept drawings for each of the building for submission to all the statutory authorities/bodies, incorporate changes, if suggested by the statutory authorities / bodies and obtain approvals from all regulatory authorities.
- 2.17 The Consultant shall ensure that the various building/engineering services are suitable and economically designed without any discrepancies between the structure and finishes, and the requirements of service installation. The Consultant shall ensure that the nature, position, and appearance of all
- 2.18 controls of piped services and electrical installation satisfy user and aesthetic requirements, and ensure that adequate coordination drawings are included. He shall also ensure that the various building/engineering services are suitable and economically designed without any discrepancies between the structure and finishes, and the requirements of service installation.
- 2.19 The Consultant shall have to co-ordinate with the office of the DME Assam and attend meetings with the DME Assam, Director Cancer Hospital, GMCH Assam/Project Management Unit as and when required including meeting with the contractors.
- 2.20 The consultant shall obtain fire clearance from competent authority on completion of the construction work. The consultant shall submit the required structural Stability Certificate/s from the Design Proof Consultant/ structural designer and submit the same to the Engineer-in-charge

### **SCOPE OF SERVICES**

#### **3.0**

As briefed in website notice inviting bids, the consultant shall provide  
**3.1 Comprehensive**  
Consultancy Services in the following areas. The consultant shall appoint specialized consultants for which in-house arrangement is not available:

- a) Architectural Services including building plans/ Landscaping /Signage
- b) Medical and Equipment Planning
- c) Quantity Surveying Services
- d) Civil & Structural Engineering Services
- e) Electrical Engineering Services and Solar Energy Services.
- f) Mechanical Engineering Services
- g) Public Health Engineering Services
- h) Waste water management system
- i) Green Building Concept

Any other services which are required but not specifically indicated.

3.1.1 The consultant shall provide comprehensive consultancy services broadly described hereinafter. However, it should be clearly understood that the description of services is only indicative and the Consultant shall be required to perform any other services which may be required.

### **3.2 Preliminary Stage**

#### **3.2.1 Master Plan/Lay out plan**

3.2.1.1 Development and Submission of the Draft Master Plan for “**COMPREHENSIVE CONSULTANCY SERVICES FOR INFRASTRUCTURE DEVELOPMENT OF THE 200-BEDDED CANCER HOSPITAL (STATE CANCER INSTITUTE) AT GAUHATI MEDICAL COLLEGE, GUWAHATI ASSAM**”. Modifications of the draft master plan for taking into account the comments and suggestions of the client and Engineer-in-charge.

3.2.1.2 Submission of the Final Master Plan to local bodies and incorporating changes, if any, suggested by them and re- submitting the same.

3.2.1.3 Obtaining approval of the master Plan from local authorities.

#### **3.2.2 Concept Design.**

3.2.2.1 Interact with the Engineer-in-charge and representative of the client for development and finalization of concept plan.

3.2.2.2 Submission of draft concept design and presentation of the scheme before the DME Assam.

3.2.2.3 Modifications of the draft concept plan taking into account the comments suggestions etc. of the DME Assam, Director Cancer Hospital, GMCH, Assam.

### **3.2.3 Project Report**

3.2.3.1 Preparation of Project Report and Project cost estimate covering all Project components including any other equipment required etc.

### **3.2.4 Approval Stage**

3.2.4.1 Development of the Submission Plans to local bodies.

3.2.4.2 Submission of the design, drawing and related document to concerned local authorities

3.2.4.3 Modifications of the design, drawing etc taking into account Comments, The suggestions etc. of the local bodies

3.2.4.4 Re-Submission of the design and drawings to local authorities.

3.2.4.5 Obtaining approval of the design, Drawing etc from local

3.2.4.6 Carrying out Environment Impact Assessment, submission of the same and getting approval from concerned authorities.

## **3.3 DETAILED DESIGN STAGE**

### **3.3.1 ARCHITECTURAL SERVICES**

3.3.1.1 Preparation of drawings, schedules and specification of materials and workmanship, in sufficient detail so as to enable to prepare a tender document. The drawings & documents shall include detailed site plan, detailed drawings for each buildings including floor plans, elevations, door & window schedules, finishing schedules, wall profiles, Staircases, ramp and lift details, details of important building parts / areas, landscape & horticulture details etc. As far as possible standards of quality performance requirement and descriptive names shall be used rather than specific products or brand names.

3.3.1.2 Prepare and issue "Good for construction" drawings. Drawings shall be adequately detailed and shall contain enough information to enable construction, full measurement, pricing and production of bill for payment.

3.3.1.3 Layout Plan showing:-

- All proposed buildings, green area, location of tank, STP, Sump, RWH, Elect. Sub-Station etc.
- Blow up of road junction / parking area and other such area as required.
- Coordinated External services

3.3.1.3 Detailed Drawings :-

- Floor plans, fully coordinated with all services/disciplines
- Elevations
- Sections
- Wall profiles
- Doors & Window details

- Stairs/Ramps/Lifts details
- Details of building parts, areas, critical special treatments.
- Toilet details.
- Flooring pattern and details
- Dado details

3.3.1.4 Landscape & Horticulture:-

- Drawings of landscape including blow up of critical areas / landscapes / plant scapes in detailed coordination with all external service.
- Horticulture details

3.3.1.5 Any other details required for completion of the buildings/services.

3.3.1.6 Inspect the works and attend meetings during execution to give clarifications, if any, and to modify the drawings as per the site/construction requirements

## **4.0 CIVIL & STRUCTURAL ENGINEERING SERVICES**

### **4.1 General**

4.1.1 The Consultant shall perform all the Civil & Structural design work necessary by utilizing the most economical, effective and widely accepted engineering concepts/practices and shall at all times show a high degree of professionalism in his work.

4.1.2 The Consultant will be fully responsible for the design of all the Civil, Elect. & structural engineering works. The services to be provided by the Consultant shall include but not be limited to the following:

#### **4.1.2.1 Design Basis**

- i. Conduct surveys, tests and other investigations as required to determine the basis to accomplish economic and safe designs.
- ii. Planning for the structural arrangements with the architectural design.
- iii. Co-ordination & finalization of structural arrangement
- iv. Finalization of design basis & structural systems.
- v. Proof checking of structural design / drawings and issuing the "Good for construction" drawings. The consultant shall also submit the structural design / details (input / output) by the structural consultant and the proof checking thereof along with comments etc. of proof consultant.

#### **4.1.2.2 Structural Design Development**

- Design of all the structural and non-structural elements

#### **4.1.2.3 Drawing Stage**

- Foundation plans & details

- Column, walls and beam layout plans
- Floor Framing plans, fully coordinated with all disciplines
- Floor slab structural details
- Column & beam structural details
- Staircases, ramps, lifts shafts and machine room details, rain water harvesting chamber.
- Requirement of Green Building Concept
- All other details and sketches required for proper execution of the works.

## **5.0 ELECTRICAL ENGINEERING SERVICES**

### **5.1 General**

- Design of electrical installations including all electrical fittings/fixtures, water supply pumps, d-watering pumps etc., as necessary.
- Power Supply & Distribution system including emergency and backup supply, sub-station etc.
- Telephone system, intercom communications facilities,
- Cable TV/dish antenna system
- Lightning protection and Earthing system.
- External Lighting
- UPS back up, if required.
- Building / Energy Management system controlling all essential services.
- Lifts, Escalators.
- Solar Water & Lighting System, if required.
- Any other services required but not specifically indicated.
- Proper coordination with civil engineering / mechanical engineering features / services.
- Air conditioning
- D. G. Set
- C.C.TV & Entrance Security System and equipment

Note: -

All the Civil, Electrical and mechanical services, as mentioned above shall be done by the consultant. No extra payment shall be made, if any modifications are required as per client requirement in above.

## 5.2 Services

Carry out basic and detailed designs of comprehensive electrical power distribution scheme, indoor and outdoor lighting, lightning protection and

- 5.2.1 Earthing systems of all the buildings in accordance with the relevant Indian regulations and Standards. The work shall include, but not limited to the following services:
  - 5.2.2 Design and draw up preliminary schemes on the electrical requirements. Design the distribution systems and prepare single line diagrams with details
  - 5.2.3 of accessories and equipment.
  - 5.2.4 Specify the details and capacities of HT panels, Transformers, L T panels, Standby diesel generators and fuel intake, and to specify the type of supply arrangement for incoming power supply, interlocking arrangement between HT panel, transformer, LT panel & DG sets.
  - 5.2.5 Design the Sub-station comprising of the HT panel room, transformer room, LT panels room, generator room and to specify the necessary switchgear and control Changeover panels, capacitor banks, bus duct, essential and non-essential panels as necessary with the appropriate load shedding
  - 5.2.6 Make detailed specifications of all electrical items, essential and non - essential panels, power control centers, capacitor panels and the corresponding bill of quantities for the various items.
  - 5.2.7 Design and prepare detailed layout drawings for the individual power. Indoor and outdoor lighting, lighting protection and Earthing system as required.
  - 5.2.8 **Telephone, Intercom & Communication System**
    - Telephone layout and telephone equipment including conduit and accessories layout for the telephone system and any protective devices battery back-up required.
    - Design the EPABX room. Prepare conduit layout of cables and terminals inclusive of a fiber optic or other special data transmission cables for system required.
    - Intercom layout and intercom equipment including conduit and accessories layout for the intercom system and any protective devices required.
    - Prepare the specifications and bills of quantities.
    - Check and approve detailed drawings of the suppliers and manufacturers
    - Check and approve the suppliers / manufacturers' drawings/documents.
  - 5.2.9 **Cable TV/Dish Antenna System, if required.**



- Prepare working drawings indicating the locations of TV points, Central panel/racks of dish antenna.
- Fixing details of dish antennae
- Prepare specifications and bills of quantities.
- Check and approve the suppliers'/ manufacturers drawings/ documents.

#### 5.2.10 **Lightning Protection and Earthing System**

Lightning protection system shall be an advanced integrated lightning protection system. The work shall include, but not limited to, the following

- Prepare plans showing internal/external earth grid, earth electrodes and lightning protection with size of conductors and details of each electrical and lightning arrestors along-with details of Earthing pits.
- Earth system shall be as per relevant Indian Standards and Indian Electricity rules.

#### 5.2.11 **External Lighting**

- Assess the external lighting requirement for parking, buildings etc.
- Prepare plans indicating the road lighting with circuit details, typical pole detail with type of fixture, cabling, earthing etc.
- Prepare the specifications and bills of quantities;
- Check and approve detailed drawings of the suppliers and manufacturers;

#### 5.2.12 **UPS back-ups**

- Prepare the plan indicating the locations of UPS rooms in the buildings, UPS room layout, Single line diagram/Power flow diagram.
- Prepare specifications and bills of quantities;
- Check and approve detailed drawings of the suppliers/ manufacturers;

#### 5.2.13 **Solar Heating and R.O. System**

- Planning and installation of Solar Heating System and R.O. System for this building.
- Prepare specification and bill of quantities.
- Check and approve detailed drawings of the suppliers/manufacturers.

#### 5.2.14. **Planning & Designing C.C.TV & Entrance Security System & Equipment, D.G. Set & Air Conditioning**

### 6.0 **MECHANICAL ENGINEERING SERVICES**

#### 6.1 **General**

The services to be provided by Consultant shall include.

6.1.1 Fire detection and alarm system and Firefighting.

6.1.2 Lifts, escalators, water pumps etc.

6.1.3 Proper coordination with civil / electrical engineering features / services.

## 6.2 Services

To carry out basic and detailed design of the required Heating, Ventilation & Air conditioning system. This shall include amongst others the following services:

### 6.2.1 Fire Detection & Alarm System

- Design the FDA Control Room layout.
- Prepare working drawings (Floor wise) indicating the zones, location of the fire alarm sensors, Response Indicator, Manual call points, Hooters, their conduits and wiring and location/details of FDA control panels.

### 6.2.2 Lifts, Escalators

- Specify the capacity and type of lifts/escalators to be provided and prepare layout for the necessary machine areas.
- Finalize the design for lifts and escalators installation as per the Statutory/local regulations.
- Prepare specifications and bills of quantities.
- Check and approve the suppliers'/ manufacturers drawings/ documents.

### 6.2.3 Water Pumps

- Specify the type and capacity of pumps for water supply & d-watering purpose.
- Prepare specifications and bills of quantities.
- Check and approve the suppliers'/ manufacturers drawings/ documents.

### 6.2.4 Ventilators system (as required)

- Design and estimation of proper ventilation system from fire safety point of view.
- Vetting of soft drawings etc. for the system.

### 6.2.5 Fire Fighting & Fire Suppression System

- Design and prepare working drawings for internal and external fire protection and suppression system including hydrant, sprinkler system, CO2 flooding system, pressurization system, fire extinguishers, UG tanks, fire pump rooms etc. in line with the statutory requirements.
- Size all equipment required and prepare detailed specifications and bill of quantities.
- Obtain necessary license/permissions from the statutory/local fire authority /bodies etc. as required.
- Check and approve detailed drawings and data sheet of suppliers/ manufacturers.

## 7.0 PUBLIC HEALTH ENGINEERING

7.1 All the design and drawings should be well coordinated with Architecture, structure and other services drawings.

7.2 All designs shall be as per the latest Indian Standards, Local bye-laws and statutory norms/regulation.

7.3 Design of Public Health & Engineering services taking into account various topographical, meteorological, Hydrological etc. reports, identify the source and quality of water, conduct survey of existing water supply system, Sewerage system, Drainage system, Fire-fighting system, other site development works etc. for planning of services. These existing systems are to be augmented with proposed (Required) system.

7.4 The services shall include following major components:

- Water Supply System
- Sewerage System
- Drainage System
- Fire Fighting & Fire Suppression System

## **8.0 Services**

### **8.1 Water Supply System**

- Calculation of water requirements for domestic, non-domestic and other services.
- Design and prepare working drawings of internal and external water supply system including Underground tank, Overhead tank, Water treatment plant, Pumping stations, rising mains, distribution system and internal plumbing, recycling of treated waste water etc.
- Prepare specifications and bill of quantities.
- Check and approve detailed drawings and data sheets of suppliers/ manufacturers.

### **8.2 Internal Sanitary Installations**

- Design and prepare working drawings of internal sanitary installations.
- Identify, design and prepare working drawings of handicapped friendly toilets and sanitary installations, if required.
- Prepare specifications and bill of quantities.
- Check and approve detailed drawings and data sheets of supplies / manufacturers.

### **8.3 Sewerage System**

- Calculation for quantity of waste water generated from different sources and design waste water treatment plant.
- Design and prepare working drawings for internal and external soil/waste disposal systems including sewage treatment plant and treated water usages, etc.
- Obtain approval from statutory and local bodies for waste disposal if any.
- Prepare specifications and bill of quantities.
- Check and approve detailed drawings and data sheets of suppliers/ manufacturers.

### **8.4 Drainage**

- Design and prepare working drawings for storm water drainage including roof drainage, service area drainage and surface drainage.
- Design and prepare working drawings for rain water harvesting system.
- Obtain approval from statutory and local bodies for drainage connections and rainwater harvesting scheme etc.
- Prepare specifications and bill of quantities.
- Check and approve detailed drawings and data sheets of suppliers/ manufacturers.

**8.5**

**HVAC**

Design and prepare working drawings

Prepare specifications and bill of quantities.

Check and approve detailed drawings and data sheets of suppliers/ manufacturers.

**9.0**

**Site development Works**

Design and prepare working drawings (longitudinal & cross section) for roads/ footpaths/ parking areas etc.

Design and prepare working drawings of irrigation system for horticulture.

Prepare specifications and bill of quantities.

Check and approve detailed drawings of suppliers/ manufacturers.

**10.0**

**Other Services**

**10.1**

Provide any other services not explicitly mentioned but reasonably required for project development.

Some of the other aspects which need be planned are -

- Hydro pneumatic water supply and STP
- Integrated BMS
- State of Art backbone Infrastructure for Data with HMIS
- Pneumatic tube systems
- Dual Feeder with 100% DG Back Up.

