Data Center Consultants for the upcoming IIT Bombay HPC+BYOH Data Center

IIT Bombay Computer Center invites Data Center Consultants to submit their bids for the contract for the design and project management for building a state-of-the-art High Performance Computing Data Center on the Ground Floor of the old CSE building in IIT Bombay campus. The data centre will be a Tier 3 data centre, with about 5000 sq ft of floor space for computing infrastructure, is expected to have computing facility of petaflops capacity, requiring up to 2 MW of power. The work involves renovation of an allotted area in an existing building, should start soon after the contract is awarded, and is expected to be completed within one year. The overall outlay of the project is expected to be Rs 10-12 crore (expense does not include computing hardware, design consultancy and project management costs).

The scope of work for the consultant will be as follows.

1. Meet with the representatives of various user groups, HPC Committee, and the Computer Centre staff and draw up the specifications for the Centre.
2. Identify the different stages from the defining of the centre to the final handoff of the completed Facility. Prepare a schedule of completion of these various stages.
3. Clearly specify the site preparation that IIT Bombay may be required to do before the vendors are selected.
4. Provide the Engineering Design for Interiors, Cabling, Electrical, Cooling Systems, BMS, fire detection and suppression, Utilities and any other facility that may be required at the Data Centre.
   a. The design should be adaptable for three possible type up of computing infrastructure: liquid cooled, on-board liquid cooled, air cooled
   b. Design of computing infrastructure will not be in the scope of work
   c. Consultant can propose multiple solutions. IIT Bombay will have the right to select most feasible one.
5. Provide tender specifications, and carry out the technical and commercial evaluation of contractors for various components of the data centre facility.
   a. The consultant cannot be the contractor or vendor for the project.
6. Deploy a supervisor to regularly monitor overall progress, construction processes and ensure that the specifications are met. This will include, but not limited to, the coordination among the vendors and various IITB stakeholders and ensure timely progress of the project.
7. Ensure that all the components of the facility are integrated correctly by suitably coordinating with the vendors and IITB stakeholders and ensuring that the Facility is commissioned on time.
8. Achieve project closure and prepare the final As-built specification/data sheet of the Facility, including the energy usage report of the facility.
The tendering for selection of the consultant will follow a standard two-step process of technical bid evaluation, resulting in scoring followed by commercial bid opening. The contract will be awarded to the bidder with the highest score based on a combination of the technical and commercial score.

Consultants should satisfy the following eligibility criteria for bidding. All claims should be supported by appropriate documents.

- They should have successfully completed at least two Data Center consultancy projects in the last five financial years, of which at least one should have had project cost of infrastructure (not including computing hardware or cost of real estate) of Rs 1 crore.
- Consultants should be willing to come to IIT Bombay and present the details of their technical bid to the Selection Committee.

As part of the technical bid, consultants should submit a document describing their expertise and experience in designing such Data Centers. This document should contain the following details at a minimum, and any other details that may be relevant (e.g. certifications from recognized bodies, etc). Wherever relevant, provide information separately for India vs abroad. All claims should be supported by appropriate documents.

- Year of establishment of the firm
- Year of commencing operation in India.
- Company size: Number of Data center design consultants, number of other technical employees, number of other employees. Categorize into in India vs abroad.
- Number of previous Datacenters projects completed in the last five years, categorized by the following sizes of computing facility floor space only. Categorize into in India vs abroad.
  - 100-999 sq ft
  - 1000-2000 sq ft
  - 2000 - 20,000 sq ft
  - > 20000 sq ft
- Details of recent completed consulting assignments (up to ten) for Data centers. Categorize into in India vs abroad.
  - Customer details, with completion certificate and preferably recommendation letters.
  - Primary consultant in charge.
  - Tier level
  - Square feet
  - Cooling
    - TR capacity
    - Design, technology chosen, redundancy design, efficiency design.
    - Green features
  - Power
    - MVA capacity
    - Electrical system design, cabling, redundancy design, captive power design, efficiency design
    - Green features
Eligible bidders will be invited for a presentation to the Selection Committee and other bidders. As part of the presentation, the consultants may review the information provided above, as well as present their initial ideas of designs, technologies, processes, etc that they will use for the present work. The presentations will also be evaluated and will contribute to the overall technical score.

Above attributes will be evaluated based on
- A detailed document addressing all the above points
- A presentation based on this document, to evaluation committee and vendors. After submission of the bid, eligible bidders will be required to come to IIT Bombay and make this presentation. The document and the presentation will result in a technical evaluation score out of 100. The committee may also use any other relevant information in arriving at the final technical score.

Let this score be \( T \).

The commercial bid should be a lump-sum Design and Project Management and consultancy charge for the whole project.

The commercial bid evaluation will also result in a score out of hundred for each bidder as follows:
- Maximum bid will be determined. Let this be \( B_{\text{max}} \). Let minimum bid be \( B_{\text{min}} \).
- Let a specific bid be \( B \). Then the commercial score for a bid \( B \) is calculated as:

\[
\left( \frac{B_{\text{max}} - B}{B_{\text{max}} - B_{\text{min}}} \right) \times 100
\]

Let this score be \( C \). The final score \( S \) will be

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0.7 \times T + 0.3 \times C
\]

The bidder with the maximum value of \( S \) will be awarded the contract.
IIT Bombay HPC-BYOH Data Center Design and Project Management Detailed Scope of Work

Design and Engineering

1. Conceptual Design Phase
   a. Preliminary evaluation and confirmation of the MEP (Mechanical, Electrical and Plumbing) portion of the Project Program and Construction Budget
   b. Updated Basis of Design document
   c. Written analysis of calculated load demands for both the new plumbing, electrical as well as cooling systems.
   d. Descriptive outline specifications indicating proposed MEP systems
   e. Schematic single lines of the MEP systems to identify site location and quantity of major mechanical and electrical equipment.
   f. Written description of the proposed computer room cooling system.
   g. Interior design such as elevated flooring, ramp access, fire rated doors with vision panel, lighting.
   h. Integration of all key components to a suitably designed building management system (BMS) including security system.

2. Design Development Phase
   a. Updated Basis of Design document
   b. Single line drawings (SLDs) of the MEP/FP (Fire Protection) systems
   c. Major equipment room layouts
   d. Major system routing
   e. Major equipment capacities/zoning
   f. Preliminary equipment schedules
   g. Major system diagrams indicating intent
   h. Estimated device locations and quantities, including not only the computing devices, and major electrical devices (DG Set, transformer etc)
   i. A complete set of drawings depicting the CRT (Custom Report Type) layout, outlet locations, pathways, telecom spaces layout and elevations
   j. Outline MEP specifications

3. Construction Document Phase
   a. Updated Basis of Design with 2 options
   b. Complete construction drawings and specifications for bidding, permit and construction
   c. Equipment sizes/layouts, distribution systems, and other elements of the MEP/FP design shall be updated.
   d. Completed MEP plans
e. Completed equipment schedules  
f. Completed MEP sections and details  
g. Specifications – completed MEP sections  
h. Final MEP calculations  
i. Final short circuit and coordination study  
j. Good For Construction Drawings

Project Management Consultancy

1. Construction Stage  
a. Overall Coordination of the Project  
b. Time management  
c. Cost Management  
d. Quality Management  
e. Change Management  
f. Risk Management  
g. Measurements and Billing  
h. Documents Control

2. Post Construction Stage  
a. Prepare, track & complete execution of punch lists for each package.  
b. Coordinate with client project team for final inspections, final punch lists and coordinate timely execution of the same.  
c. Certification of works completion for all packages.  
d. Co-ordinate delivery of all hand over documents from contractors & consultants.  
e. Follow ups for As-Build Drawings.  
f. Preparation of Handing over Documents and all reports.  
g. Collection of all warranty documents from contractor.  
h. To prepare the project completion report.  
i. Review status of outstanding variations to contracts and finalize the same through discussions with contractors and client.  
j. Detailed checking & reconciliation of Final bills / invoices of each contractor.

Payment Plan

1. Conceptual Design Phase (1 month) - 5% of payment  
2. Design Development Phase (2 months)- 5%  
3. Construction Document Phase (1 month) – 15%  
4. Complete prepared RFP/Tender document (0.5 month) – 10%  
5. Evaluation of the bidding document - (0.5 months) 10%  
6. Periodic update of project (6 months)- 50% (quarterly payment based on the project execution)  
7. Final commissioning of the project (1 months)-5%