

Tender Updates, i.e., Revisions, Amendments, Corrections, Corrigenda

Tender Reference No. NITRR/CCC/HEFAPROJ/DC/2020/150 dated 11/06/2020

Project Name: Design, Supply, Installation. Testing, Commissioning and Maintenance of Data Center Physical Infrastructure

Last date and time for submission of bids	Up to 06:00 P.M. on 29/07/2020
Date & Time of opening of Techno-commercial Bid Part-A	At 04:00 P.M. on 04/08/2020

Important Note: Bidder has to sign and seal on each page of the tender document and update and upload the same with the technical bid which will imply that the bidder has completely read and understood the terms and conditions mentioned in these documents and agrees to comply with them.

The pre-bid site survey and pre-bid meeting were held on 26/06/2020. Pre-bid queries have also been received on e-mail.

Following clarifications and changes should be noted by the bidders:

It is clarified that the PBG is 5% of the work order value. The deliveries in the project should be completed within 180 days from the date of award of work. Time to complete the project is 250 days from the award of work. The erroneous details mentioned in Form-2 must be corrected by the bidders while submitting the same.

Micro and Small Enterprises as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME) are also eligible for EMD exemption.

In case of any discrepancy between the forms and the chapters or updates, the details given in chapters and updates will prevail and should be considered.

On Page No. 2 of the tender document, the list under “Enclosed” is not applicable.

On Page No. 6 of the tender document, point no. 34 may be read as follows:

Bidder has to submit a neatly indexed **technical proposal** for the data center which shall contain the details of the solution proposed by him in line with the requirements and scope of work mentioned in the tender document to be read along with this update. The technical proposal reflects the bidder’s understanding of the requirements. Technical proposal must be sufficiently detailed and include preliminary design, design basis and calculations, layouts containing tentative locations, approximate dimensions of different equipment, piping, power and network cabling routes – trenches / cable trays, location of sensors, cylinders, panels, nozzles, cameras, and must include single line diagrams etc. Details of the cooling controller, central information management platform and data center infrastructure management must also be included. If the proposal fails to fulfill the requirements as envisaged, or is not optimal, or does not contain proper details and description of the items, the bid can be rejected.

A **detailed bill of quantities** as per the bidder’s solution including ratings and quantities with proposed make and model must also be submitted along with the technical bid. The bill of quantities should not include any price related information. Mentioned quantities should be supported, where possible, by appropriate diagrams, layouts and measurements for ease of understanding. If for technical / site related reasons during the implementation phase or because the bidder could not foresee the requirement of some essential item or due to improper measurements etc., an additional requirement arises over and above these quantities, the bidder shall be required to supply and install the same at no additional cost to the institute.

On Page No. 8 of the tender document, points no. 47 a. and 48 have to be read as follows:

Point No. 47. The following should be part of a single folder within the technical bid folder “Techno-commercial Bid: Part-A”.

- (i) Technical compliance - Bidders need to fill the deviation form only.
- (ii) Technical literature including datasheets of all major items
- (iii) Technical Proposal
- (iv) Detailed Bill of Quantities without mentioning any explicit or implicit price related information

Bidders need to fill the deviation form carefully. If a discrepancy is discovered in the deviation form during the technical evaluation stage, the bid shall be rejected at that point.

Point No. 48. The following should be part of a single folder within the technical bid folder “Techno-commercial Bid: Part-B”.

- (i) Proof of Bid security (EMD) or attested true copy of current DGS&D / NSIC registration

- (iii) All documents related to bidder's eligibility as mentioned in table on page no. 11 of the tender document
- (iv) Copy of tender and update(s) with sign of authorized signatory and company stamp on all pages
- (vi) Following forms:
 - (a) Form for bidder's self information
 - (b) Form for submission of bids
 - (c) Form for manufacturers' authorization given to bidder
 - (d) Form for information on after sales service centers
 - (e) Form for warranty
 - (f) Form for statement of deviations from tender conditions
 - (g) Form for submission of similar works executed by bidder as proof of eligibility

On Page No. 9 of the tender document, point no. 66 is not applicable.

On Page No. 9 of the tender document, point no. 68 is to be read as follows:

Following shall be the steps followed for evaluation of the tenders:

- (i) Techno-commercial bid shall be opened first and the bidder's eligibility will be checked. If the bidder is found eligible as per the bidder's eligibility criteria, the technical compliances shall be verified against the technical literature submitted by the bidder.
- (ii) If bidder is found eligible in (i), then his price bid shall be opened and contract will be awarded to the bidder with the overall lowest quoted grand total price for complete end-to-end solution including all supplies and services.

On page no. 16, the point no. 8, under Bid Opening, the word "sealed" is dropped. The following line is appended, "Bidders do not need to be present at the venue as they can see the details on e-tendering portal i.e. www.tenderwizard.com/NITR."

In Chapter III: Schedule of Requirements (including scope of work)

under Scope of Work, in para 6 on page 33, the word "modular" is dropped.

under Scope of Work, para 9 on page 33 and paras 10 on page 34 are to be read as:

Para 9: There shall be 16 server racks, of minimum size 42U 600mm x 1000 mm and 4 network racks, of minimum size 42U 800mm x 1000mm The placement of racks should allow enough free space in the room to add an identical set of 16 racks with accessories in future. Appropriate containment may be proposed by the bidder.

Para 10: Cooling system should be designed in N+1 or N+N topology for a design load of 5 kW per rack for total 20 racks including network racks and maintain indoor environment as per the latest ASHRAE guidelines for Class 1 data centers and mission critical facilities.

under Scope of Work paras 11 and 12 on page 34 are not applicable.

under Scope of Work, para 15 on page 34, the word "wire mesh" is dropped.

The schedule of requirements has been revised. The revised schedule of requirements is given in this document.

In Chapter IV: Specifications and Allied Technical Details,

the technical specifications of the data center server modules, data center network modules, the high energy efficiency cooling system (on pages 35-45), data center infrastructure management (on page 45), 20 kVA UPS (on pages 45-48) Access Control System (on page 58-59) and CCTV (on pages 62-63) are no longer applicable.

the heading of the table containing the technical specifications of the Fire Suppression System (page 58) should be read as In-Panel Tube based fire suppression system.

Under Allied Technical Details,

para 2 on page 64 starting with the statement "Data center modules and artificial intelligence based hybrid air-conditioning..." is no longer applicable.

the descriptions of the data center modules (pages 64-65) and hybrid air-conditioning (page 65) are no longer applicable.

on page 65 the section on Trench for cables and pipes refers to outdoor trenches. Indoor trenches can be made as per site requirement.

on page 66 the section on Painting and POP, punning thickness can be from 2-8mm maintaining the finishing level as per site requirement. Horizontal internal surfaces may be considered only if there is no false ceiling.

on page 66 the section on Partition Walls, AAC blocks and 2-4" drywalls / are also permissible.

on page 66-67 the section on Rack placement is not applicable. It is possible to place nearly 32 server racks of the proposed size comfortably inside the server room. 16 server racks have been planned in the server room in this phase. Accordingly, 50% of the server room area should therefore be left for future expansion.

on page 67 the section on Electrical Works para 2 it is clarified that the total power drawn by the equipment installed in the data center in this phase shall not exceed 300 kVA. The bidder's scope of work is limited to the data center premises and its immediate vicinity. Institute shall provide raw power from the transformers to the main panel. However, the bidder shall provision for necessary switchgears in the main panels.

following may be appended to the description of the Power distribution units (page 69) – Alternately, the power distribution to individual racks shall be through power raceways running cables from the UPS output DBs.

following may be appended to the description of the Cable Trays (page 70) – Alternately, the cable may be taken through trenches or raceways in true floor or channels below false floor or surface mount raceways.

following changes to be noted in the description of the UPS (page 71)

The main UPS system shall cater to server and network rack power loads. UPS of appropriate rating of N+1 / N+N topology may be proposed. Battery backup shall be 10 minutes through SMF batteries of appropriate voltage and AH rating.

following clarification to be noted in the description of the DG Sets (page 71) – DG Sets Rating is 200 kVA.

the descriptions of data center cooling and cooling of auxiliary spaces (on page 72) are no longer applicable.

the descriptions of Fire Detection and Alarm (on pages 72-73) following clarification to be noted in the description – Presently, there are no integrated racks. Mode of operation of fire detection, alarm and suppression system described will be similar. However, there is no requirement of separate fire / smoke sensor and suppression nozzles inside the racks. The revised requirement is for server and network areas and other spaces to be appropriately covered with fire and / or smoke sensors and suppression nozzles. Under the Fire Suppression System, the PESO approval or test report may be submitted at the time of implementation.

the descriptions of Integrated Server Racks (on page 74) are no longer applicable.

In the descriptions of Access Control (on page 74) following clarifications may be noted. Level 2 access control for module / biometric access control for server module and point no. 2 under scope is no longer applicable.

Bidders may completely ignore all references, descriptions and specifications of data center server module, data center network module, high energy efficiency cooling system, data center infrastructure management, 20 kVA UPS, access control system, and closed circuit television as mentioned in the tender document. This also applies to related terms like integrated racks, modular and container in the data center context.

Revised design shall be based on the following considerations:

Racks:

16 server (min dimensions: 42U, 600mm x 1000mm) and 4 network (min dimensions: 42U, 800mm x 1000mm) racks to be considered for server and network rooms respectively. Sufficient space should be left for placing an equal number of identical server racks in the server room in future. A total load of 10kW per server rack including N+N should be considered. A load of 7kW per server rack including N+N should be considered.

Server and Network Racks (16 server + 4 network racks):

S. No	Specification	Compliance	Remarks
1.	Rack: Min 42U, 600x1000mm (Width x Depth) for Server Racks and Min. 42U 800mm x 1200mm (Width x Depth) for Network Racks standard build		
2.	Depth Adjustable mounting slots		
3.	Top and bottom panel with ventilation and cable panel		

4.	Powder coated finish with seven tank pre-treatment process meeting all industry standard		
5.	Grounding and Bonding point to be provided		
6.	Construction: CKD (Knockdown)		
7.	Front Door: Lockable perforated construction		
8.	Rear Door: Lockable solid		
9.	Basic Frame: Steel		
10.	Equipment mounting: DIN standard 10mmsq slots/Direct M6 Tap		
11.	Mounting Angle: 19" Mounting angle made of formed steel		
12.	Standard Finish: Powder Coated		
13.	Top and Bottom Cover: Welded/Bolted to frame, vented and cable entry/exit cut-outs from top and bottom		
14.	Standard Mounting: Height adjustable levellers or plinth, suit to site conditions.		
15.	Standard colour: Custom		
16.	Static load: upto 1250 kgs with plinth		
17.	Filler Panels or Sheets should be provided.		
18.	<u>Access Control:</u> Front door: Electronic access control. Identity and time must be logged in DCIM. Rear door: Standard lock and key arrangement.		
19.	2 nos. 1Ph, 230V, 32A, Zero U standard rack mount power distribution unit with 20 X C13 & 4 X C 19, Inlet Plug (IEC30932A 2P+E, with matching industrial socket, if required), 16A MCB X 2 Circuits - PDU Rating 7.3KVA, Top or Bottom feed-3Mt, Color as per design. 1 nos. of 5 Amp Indian socket PDU with power cord, plug and socket.		
20.	Racks shall have suitable arrangement for cable management and filler panels.		
21.	Racks shall have suitable provision for fixing the portable sensor kit attachments		

Rack Sensor Kit:

S. No.	Specification	Compliance	Remarks
1.	The kit shall comprise of temperature, humidity and differential pressure and / or air speed sensors for monitoring the rack microclimate		
2.	The kit shall be used for monitoring rack level intake and outtake temperatures as per ASHRAE guidelines		
3.	The kit attachment should be portable and easily fixed to the rack		
4.	The kit must have suitable DCIM interface		
5.	It should be possible to compute volume flow rate and heat transfer across a rack in the DCIM using the data available from this kit.		

Cooling System:

Primary cooling load of the data center is ~ 100 kW. Cooling should be based on sensible evaporative, direct exchange and free cooling units or sub-units working together and controlled through the common data center cooling controller. Minimum N+1 redundancy should be maintained. Redundancy at the component levels is accepted.

Data Center Cooling Controller (1 working + 1 standby):

S. No.	Specifications	Compliance (Yes/No)	Remarks
1.	The controller shall assess the environment through sensors.		
2.	The controller shall make use of real-time environment data for feedback.		

3.	The controller shall interface with the DCIM sensor database available on the CIMP platform for the environment data input.		
4.	The controller objective shall be to maintain the environment within ASHRAE limits for class 1 mission critical facilities while optimizing energy usage and in defined ranges in other rooms.		
5.	The controller shall work in high availability mode.		
6.	The controller shall support neural network and / or fuzzy logic based control.		
7.	The controller shall have a manual override option.		

Either the hot or the cold or both the aisles may be contained.

Containment:

S. No	Specifications	Compliance (Yes/ No)	Remarks
1.	Shall constitute a sealed physical barrier between the aisle and the room and contribute to a uniform and predictable air temperature at the intake		
2.	Shall consist of aisle end doors and a roof system		
3.	Shall consist of a roof which shall preferably be equal to the rack top height		
4.	Containment shall contribute to environmental conditions recommended by the new ASHRAE guidelines.		
5.	Shall ensure uniform and predictable airflow that eliminates hot spots, ensuring optimal operating efficiencies.		
6.	Containment shall have frame made of powder coated metal / steel / GI/ aluminum		
7.	Containment door shall be double leaf type opening into the server room		
8.	The panel inserts can be made of rigid polymer - polycarbonate / polypropylene / ABS / Aluminium Composite / Acrylic / Tempered Glass / Metal sheet		
9.	The doors shall be transparent / top half transparent and bottom half opaque		
10.	Any air gaps shall be properly sealed with a suitable sealant like rubber strips, sealants etc.		

Aux Cooling: Same design as above. Cooling requirement may be as taken as 35 kW.

Primary UPS: 120 kVA total power requirement without redundancy with 10 minutes backup to be provisioned using suitably sized online monolithic or modular blocks in minimum N+1 up to N+N

S. No.	Parameters	Specifications	Compliance (Yes/ No)	Remarks
1	Capacity	As proposed by bidder		
2	Input			
(a)	Phase	3P&N		
(b)	Voltage	415AC +/-15%		
(c)	Frequency	Suitable range around 50 Hz		
3	Output			
(a)	Voltage	415V for 3P		
(b)	Voltage Regulation	+/-2%		
(c)	Power Factor	Minimum 0.8		
(d)	Crest Factor	3:1		
(e)	Overload Capability	100% continuous; 125% for 1 minute		
4	System			
(a)	System Efficiency	> 90%		
(b)	Display	Charger On / Inverter On / Battery Low / Overload / UV / OV		
(c)	IP Class	IP20		
(d)	Interface	Suitable for Remote Management		
(e)	Operation Temperature	0~40 deg C		
(f)	Relative Humidity	0~95% (non-condensing)		

(g)	Noise	72dB @ 100% load, 68dB @ 45% load(1 meter away)		
(h)	Isolation Transformer	Inbuilt		
5	Physical			
(a)	Protection class	IP20		
(b)	Colour	As per manufacturer		

Auxiliary UPS: 2 x 10 kVA online UPS systems (pre-existing, one needs repairs). Power backup of 10 minutes needs to be provisioned.

Backup Power: 2 x 200 kVA DG sets with AMF panels

250 kVA Voltage Stabilizer

S. No.	Technical Specification	Compliance (Yes /No)	Remarks
	Capacity		
1.	250 Kva 3ph – Oil Cooled		
2.	Input Voltage: 340v – 460v 3ph		
3.	Output Voltage: 380v / 400v / 415v 3ph		
4.	Output Voltage Regulation: + 1% At No-Load To Full-Load.		
5.	Operating Frequency: 47 Hz – 53 Hz		
6.	System Operation: Un-Balanced 4 Wires		
7.	Speed Of Correction: : 35v/Sec – Phase To Neutral		
8.	Wave Form Distortion : Nil		
9.	Output Wave Form: True Reproduction Of Input		
10.	Insulation: Class – B, F & H		
11.	Operating Temperature: 0° C - 45° C Ambient		
12.	Construction: Is-9815		
13.	Over Load Capacity : 120% For 10 Min		
14.	Short Ckt Period & Percentage: 300% For 250 mSec		
	Protection		
15.	Low Voltage Protection.		
16.	High Voltage Protection.		
17.	Short Circuit Protection.		
18.	Over Load Protection.		
19.	Single Phase Preventer.		
	Indications		
20.	Input – On.		
21.	Output – On.		
	Panel Control		
22.	Input / Output Selector Through Soft Key.		
23.	Auto / Manual Selector Switch.		
24.	Voltage Increase / Decrease Through Soft Key.		

Electric Distribution Panels and Boards:

S. No.	Description
1.	Splitter Panel with Transformer Isolation Switch
2.	Automatic Power Factor Correction Panel
3.	Main LT Panel (MLTP1 and MLTP2)
4.	Primary Cooling System Input Panel – for Racks
5.	Raw Power Panel
6.	Aux UPS Input Panel
7.	Primary UPS Input Panel – for Racks

8.	Aux Cooling Panel
9.	Primary Cooling System DB
10.	Lighting DB
11.	Emergency Lighting DB
12.	Raw Power DB
13.	Aux UPS Output Panel
14.	Aux UPS DB for Monitoring Room
15.	Aux UPS DB for Fire / Security / Building Door Access Control
16.	Primary UPS Output Panel – for Racks
17.	Primary UPS Output DB – for Racks
18.	Aux Cooling DB

Concurrent maintainability of critical power panels in accordance with TIA 942 Tier III requirements should be possible. The feeder power should be measured, monitored and recorded. Appropriate surge suppressors to be considered for the critical panels as appropriate.

Earthing: Equipment body, power system and telecommunications pipe or plate earthing shall be carried out, in accordance with relevant standards, as appropriate. Suitable provision should be made for earthing failure. Earthing system should provision for protective gear like ELCBs.

Data Center Infrastructure Monitoring

Alarm and Alerting System:

S. No	Specifications	Compliance (Yes/ No)	Remarks
1.	Audio visual alarm and alerting system shall be provisioned for monitoring.		
2.	Events pertaining to critical equipment operation like DG, UPS, Cooling, Critical Panels, Earthing, Battery Bank, etc. or environmental conditions which require immediate operator attention must trigger suitable alarms.		
3.	Some of the examples are: (i) power quality issues with the feeder line or power break to a DB, (ii) earthing continuity breaks (iii) containment environment not within ASHRAE defined limits (iv) fuel level in DG tank is low (v) containment door is open (vi) water level in tank for sensible evaporative cooling is low (vii) pump not working and several others.		
4.	The alarm and alerting system will not replicate the function of fire alarm and control or gas fire suppression panels which will function independently.		

Monitoring and Display System

S. No	Specifications	Compliance (Yes/ No)	Remarks
1.	Rack Power Display: Power to each rack should be metered and displayed in the monitoring room		
2.	Environment Parameter Display: The temperature and humidity of each room, the ambient and from a total of five locations inside the contained spaces of the data center should be metered and displayed on seven segment display or equivalent.		
3.	Liquid level display in storage tanks.		
4.	Water leak detection.		
5.	Containment door open / close		
6.	Zone wise display of fire sensor status from the containment.		
7.	Appropriate mimic panels and icons may be provided.		

Monitoring Software

S. No	Specifications	Compliance	Remarks
1.	Software shall perform the following functions (a) Rack power monitoring (b) Main LT panel status (c) DG monitoring (d) UPS monitoring (e) Cooling system monitoring (f) Environment monitoring in ambient, rooms and rack areas (g) Level sensors in liquid storage tanks		
2.	DCIM software shall compute volume flow rate and heat transfer across a rack using the data available from the rack sensor kit.		
3.	DCIM databases shall store data for 3 years.		
4.	DCIM software shall be based on open standards		
5.	Data stored / viewed in DCIM shall be in easily readable format		
6.	The DCIM software along with different sensor databases will run on the CIMP		
7.	Data sampling has to be done every 15 minutes from regular sensors and every five minutes from critical devices and sensors		

Fire Safety System

Fire Detection and Alarm System: This system shall cover all equipment rooms and rack areas. Specifications are as mentioned in the tender document. The system shall comprise of photoelectric smoke detectors, heat detectors, high sensitivity laser beam detectors for server rack area, manual call points, monitoring and control modules. The space shall be divided into zones. Panels should be microprocessor controlled. Information must be sent over GSM network.

Automatic Gas based Fire Suppression System: This system comprising of the fire suppression panel, nozzles, gas cylinders and pipes shall interface with the fire detection system for activation. The system shall cover all equipment rooms and rack areas. A suitable system shall be proposed.

Public Address System: The system shall cover all equipment rooms and rack areas. It shall interface with the fire detection and alarm system and make suitable and timely evacuation announcements prior to discharge of gas.

In-Panel Fire Suppression System: This system shall be considered for the main LT panels. Specifications are as mentioned in the tender document.

Other Fire Suppression Products: This shall include fire suppression pouches and cords for smaller panels, fire extinguishing balls, wall mount cylinders for all rooms, portable fire extinguishers, sand buckets with stand etc.

Miscellaneous for Fire Safety: Minimum two sets of emergency first aid kits, escape smoke hoods, self contained breathing apparatus with fire suits, charts in Hindi and English displaying first aid treatment for fire.

Training: In-house staff must be trained on the use of Fire Safety System.

All the products and their subunits supplied under the Fire Safety System must follow relevant Indian and International standards.

Rodent Repellant System: The rodent repellant system shall cover all internal areas where rodents can create problems. It shall comprise of the master controller and satellites. Satellites shall generate ultrasonic frequencies irritating to rodents.

Water Leak Detection System: The water leak detection system shall cover all internal areas where there is potential of water leaks, e.g., water leak. System can be based on sensors or cables. The water leak detection logs should be available in the DCIM.

CCTV System and VMS:

S. No	Specifications	Compliance	Remarks
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1.	The cameras shall cover the entire data center premises – internal and external – in an optimal manner without leaving blind spots.		
2.	Cameras shall have night vision capability.		
3.	Minimum 2 MP cameras shall be provisioned.		
4.	Indoor and outdoor cameras of dome and bullet type should be provisioned.		
5.	Cameras will interface with the video management application.		
6.	CCTV footage shall be stored for 3 months.		
7.	Cameras should be positioned at a height inconvenient for easy access		
8.	The display will be there in the monitoring room.		
9.	The video management system with storage shall run on the CIMP		

Access Control System: E-locks for doors of equipment rooms and front doors of racks shall be provisioned. The e-locks shall interface with the access control application which shall run and store the access logs on the CIMP.

IP-PBX system:

S. No.	Specifications	Compliance	Remarks
1.	The IP-PBX shall be used in the data center for internal communication only		
2.	A total of 10 basic IP phones shall be provisioned initially		
3.	IP-PBX system should be able to support up to 32 users		
4.	IP-PBX shall work on VoIP and SIP		
5.	The IP-PBX application shall run on the CIMP.		

Central Information Management Platform (CIMP):

S. No.	Specifications	Compliance	Remarks
1.	Hardware: Cluster of nodes – no. of nodes as per bidder's solution, each node with Intel / AMD chipset, 8-core processor, RAM as per requirement, managed high speed interconnection switch and storage as per requirement.		
2.	Virtualization Support: Linux and Windows, 32- and 64-bit OS, Support for latest Intel and AMD chip sets, performance comparable to bare-metal for real-world enterprise loads, management layer should contain all the capabilities to manage and monitor a software-defined architecture.		
3.	Web-based Management: Integrated - no need to install a separate management tool or any additional management node, Fast and easy creation of VMs and containers, Seamless integration and easy management of a whole cluster with support for up to 8 cluster nodes from day 1, Secure HTML5 console supporting SSL.		
4.	Software-Defined Storage: Shared storage such as FC, iSCSI or NFS, Support for 8 cluster wide storage definitions from day 1.		
5.	Live Migration: Moving VMs from one physical host to another with virtually zero downtime		
6.	Backup and Restore: Full backups of VMs and containers, Live snapshot backups, Multiple schedules and backup storage, All jobs from all nodes can be monitored via the GUI		
7.	Virtualized Networking: Bridged networking model, TCP/IP configuration, IPv4 and IPv6 support, VLANs		
8.	VM Templates and Clones: Deploying VMs from templates should be fast and comfortable, and if linked clones are used it should be possible to optimize the storage by using base images and thin-provisioning.		
9.	High-Availability Cluster: No single point of failure (no SPOF), Multi-master cluster, Manage the HA settings for VMs and Containers via GUI.		
10.	Role-Based Administration: User and permission management for all objects (VMs,		

	storage systems, nodes, etc.)		
11.	Data Center Applications and Databases: DCIM, Sensor and Event Databases, VMS Application and CCTV Storage, IP-PBX with Logs, Water leak detection, Access Control with Logs.		

OTHER IMPORTANT DESCRIPTIONS

Cement concrete flooring should be of 5" thickness suited for light industrial buildings as per IS: 2571-1970

Metal doors with frame and glass vision panel (except external doors) as per site requirement complete with all other necessary hardwares like ball bearing butt hinges, lock, lever with heavy duty door closer, all complete. Handles, locking device with duplicate keys etc. complete. The joints between main door frame and partition shall be filled and sealed with silicone sealant.

Fire Rated Double Shutter Doors

(equal double shutter) fire rated (120 min) metal door with frame, fire rated glass vision panels, ball bearing butt hinges, lock, SS lever with heavy duty door closer, all complete. Only emergency doors (02 Nos) to be fitted with press-bar.

Wall Putty / Primer Work

Finishing of visible internal walls, columns and ceiling, including application of putty/primer as per site requirement. Wall Putty/Primer over cement plaster. To be done in perfect line and level including finishing off machine cut grooves and chases, edge banding, scaffolding pockets etc. complete as per site requirement.

Basic repair, reinforcement, painting and automation of the retractable bridge connecting data center and computer center buildings as per site requirement

Main LT Panel cubicle type, made of 16 SWG CRCA sheet steel, totally enclosed, IP-42, free standing, floor mounting, indoor, compartmentalised, powder coated painting suitable for operation on 3-phase and neutral 415V, 50 Hz AC system with bus bars extendable on both sides, interconnections including supply and installation of following items and as per design. Breakers shall be suitable as per load.

Intelligent multi function digital meter to read V,A, KVA KW, KVAR, PE, Hz etc with communication facility (RS 485 port) and LED display with 3 Nos CTs, 15 VA, class 1.0 and control circuit wiring with HRC control fuses. Indication Lamps, LED type, R.Y.B and breaker 'ON', 'OFF', 'TRIP' lamps. One no of current transformer Class 0.5 VA for APFC Relay. Suitable surge protectors should be included.

Cables shall be 1100 volt grade, PVC insulated and armoured, copper or aluminium conductor cables. Aluminium conductor cables to be proposed only where cross-section > 120 sq mm. Rate to include for all necessary hardware cable clamps, M.S. supports and hangers etc. for cables.

Design details of cabling with calculations to be submitted. Details must include material, cores and cross-section details, connectivity details with proposed route, length and technical literature.

Joining the ends of the sizes as mentioned above sizes of PVC insulated and armoured cables including supply of brass cable glands, cable sockets and all jointing materials.

Bus trunking details shall include feeder, suspension brackets, end cover, end feed unit, and tap off units.

Design details of bus trunking or cabling with calculations to be submitted prior to start of work. Details of equivalent cabling may be given in place of busbar.

Cable Trays: 2mm thickness wire mesh or perforated GI cable trays. Rate includes all necessary supporting brackets, clamps, saddles, fixing hardware etc. Design details of cable trays to be submitted prior to start of work. Details must include tray width and height, proposed route, length and technical literature.

Earthing:

Pipe earthing, 3.0 metre long earth pipe set with back fill compound, bus for termination, metallic bolts, nuts, and washers etc.
Plate earthing, 600 X 600 X 3 mm metal plate with accessories

Earthing Installation

Installation & commissioning of the above earthing systems including excavation, refilling & complete as required, including heavy duty cast iron cover and all associated civil works like construction of chamber and plastering etc.

Lighting and Power Wiring: Wiring to the light points, PVC insulated copper conductor wires drawn in heavy gauge PVC conduit pipes installed on the ceiling or run over the false ceiling with drops to the distribution boards and switch boxes recessed in the walls/partitions. Points to be controlled in groups or individually by means of 6 amps, single pole, flush type modular switches housed in flush mounted G.I. boxes.

Point wiring for utility & console operator workstations: Wiring with 2 Nos. 6A, 5 Pin Socket and 2 Nos. 6A switch, housed in 6-way modular faceplates of approved color and design mounted either with or without G.I. back-boxes, as per site requirement.

Point wiring for 16 amps socket-outlets: Wiring with PVC insulated copper conductor wires drawn through PVC conduit or raceway & each point to be complete with 1 No. 16A Switch + 1 No. 16A Socket outlet, housed 4-way modular faceplates of approved color and design mounted with G.I. back-box.

Switches, points and circuit breakers of critical loads should not be grouped. Group between 4-6 are allowed for non-critical loads in the same loop.

Diesel Generator Sets: Supply of 200 KVA Diesel Generating set (with AMF) with acoustic enclosure, radiator, fuel tank, heavy duty silencer and exhaust piping and control panel, as per specifications.

Exhaust System Supply and fixing of exhaust piping B class 150mm dia., 2mm thick MS pipe with all support structures, flanges, filer flay gasket, hardware, etc complete. The exhaust piping shall be insulated with mineral wool with chicken mesh bonded and aluminium sheet cladding. All labour, materials, lead, lift, tools, plants etc. complete.

MS tower structure

Statutory clearance charges from Pollution Control Board and others, is required.

Transportation, Loading & Unloading Charge of DG Sets

Installation, testing and commissioning of the above DG Sets including transportation to NITRR campus mounting in the specified location including all materials, labour, tools & plants, all lead, lifts, tackles for unloading/ handling of equipments and materials at site, their assembly, sundry items etc. The work should include all labour, aligning the D.G set, fuel tank erection, filling of fuel, oil etc, installing battery assembling, connecting earth connections, testing and commissioning.

Power backup for existing 10kVA Hi-Performance DSP Controlled, IGBT based Rectifier & Inverter based On Line UPS system and configurable in N+1 redundancy. Buyback price of existing dead batteries should be deducted from the pricing of new batteries. Accessories like battery connectors and racks to be included.

Desktop - 9th Gen Intel Core i3-9100 (4-Core, 6MB Cache, up to 4.2GHz), Windows 10 Pro (64bit), Intel UHD Graphics 630 with shared graphics memory or equivalent AMD system, 8GB 1x8GB DDR4 2400MHz, 3.5" 1TB 7200RPM SATA Hard Drive, GDDR5 4GB graphics card, 23.8" HD IPS LED Monitor with Headphone

Portable Monitoring Stations - Intel Core i3, 10th Gen, 14" display, 4GB RAM, 1 TB HDD

Cooling System Accessories - water storage tanks, pumps, valves, pipes, plumbing accessories, insulation, low side works, air ducts, etc.

Contactless overhead scanner for documents, magazines, newspapers and books

Ducting: Factory fabricated GSS sheet metal rectangular ducting or PVC round or other appropriate shape ducts as per site requirement complete with neoprene rubber gasket elbows, splitter dampers, vanes, hangers, supports, etc

Fire Detection and Alarm: Addressable microprocessor based fire detection and alarm system for the data center including the following components: intelligent addressable microprocessor based fire alarm panel, addressable photo electric type smoke detector with blinking led, high sensitivity laser beam sensor, addressable heat detectors, response indicator with LED, addressable control modules, addressable monitoring modules, isolator module complete with junction box and mounting accessories, manual pull station, electronic strobe cum hooter, 1.5 sq.mm copper FRLS cable

Fire Suppression System: Clean agent based fire suppression system for the data center including the following components: gaseous fire suppression system panel, cylinders containing clean agent fire extinguisher, and nozzles for the release of the clean agent where smoke / temperature rise is detected.

Public address system for emergency announcements in the data center comprising of microphones, speakers and amplifier

The fire alarm / suppression panel should interface with DCIM for storing and communicating events.

In-panel tube based suppression system for main LT panels shall comprise of the following components: suitable weight of fire extinguisher with kit. clean agent with zero ozone depletion potential. container along with valve assembly, pressure switch to monitor pressure in the tube, switch point 11 bars, heat sensor tube for automatic fire suppression system made by special modified polyamide (PA), color black, high grade hr quality, UV stabilized, inner diameter 4mm, outer diameter 6 mm, end of line adapter for pressure gauge fitting for automatic fire suppression tube used for fitting at the end of the tube for pressurizing and re pressurizing the tube, end of line plug for automatic fire suppression tube used for fitting at the tube end to terminate the point, T connection for pressurized tubes, nickel plated material with elastomeric sealings, 2 Core x 1.5 sq. mm flexible cable with conduit as per site requirement, alarm kit

Bidder shall take care to ensure that all sensitive locations are covered for fire hazard suitably in their design.

CCTV shall comprise of the following components: 2 MP IR fixed dome camera, 2 MP IR bullet camera, 43" wall mount LED display, PoE switch, CAT 6 UTP cable, CAT 6 1mtr patch cord, CAT 6 information outlet, I/O back Box, fully loaded 24-port jack panel, 9U wall mount rack with fan, power supply

Rodent repellent system: Rodent repellent system comprising of the following components: rodent repellent system master console capable of connecting to 12 satellites complete with all accessories, satellite units, connecting cables, bracket stand, 25mm PVC conduit

Passive Items: UTP Cat 6 patch chord (3 mtrs), OM3 optic fiber cable, UTP Cat 6 Patch cord (2 Mtr), Cat 6 Information Outlet I/O back Box, 2-port faceplate, 9U Wall Mount Rack with Fan, Power supply CAT 6 UTP Cable, 24-port unloaded modular straight jack panel, 1U with rear cable manager

TABLE-I: SCHEDULE OF REQUIREMENTS

Bidder is required to prepare his detailed bill of quantities of different items after carefully going through and understanding the schedule of requirements table mentioned in this update, allied technical details and scope of work and the technical specifications and descriptions provided in the tender document as well as this update.

It should be mentioned here that the requirements, scope and specifications mentioned in the tender document to be read along with this update and the site survey and measurements should be treated as guideposts by the bidder while preparing the design. The BoQ of the bidder is expected to contain details fulfilling the requirements as envisaged. The BoQ should not merely be a copy of the schedule of requirements. Instead it should contain sufficient details of the supplies and services. Some of the examples include but are not limited to:

- (a) Central Information Management Platform Details
- (b) Type and number of cameras – Indoor, outdoor, dome, bullet etc.

- (c) Type, size and number of gas cylinders for fire suppression
- (d) Type and number of monitor, control modules and manual call points in fire alarm system
- (e) Type, rating and number of speakers in public address system
- (f) Cable material, number of cores, cross-sectional area, length – i.e., the cable schedule
- (g) Details of switchgear like the type and rating of circuit breakers etc.
- (h) Rating and number of UPS; parallel connection, if any
- (i) Panel / board details
- (j) Pipe schedule
- (k) etc. etc.

The template of the BoQ is given in Table-II. The bidder will submit his price bid containing the different items in the same order as mentioned by him in his BoQ. The template of the Price Bid is given in Table-III.

Table-I: SCHEDULE OF REQUIREMENTS

S. No.	Description of Supplies / Services
1.	Clean up of site prior to start of work
2.	Construction of level cement base floor or cement concrete floor in the DC building including the outdoor room
3.	False floor in the DC building as per requirements
4.	Heavy duty tiling for areas except false floor and unpartitioned / unsegregated areas for future expansion
5.	Anti-skid cement flooring or anti-skid tiling for existing ramps and steps in the DC building
6.	Construction of partition walls for un-partitioned areas like UPS room, network room, etc. and partitions for future expansion areas, where required
7.	Construction of outdoor platforms and / or metal structures for mounting outdoor units
8.	Water tanks of suitable material and capacity as per requirements - SITC
9.	Construction of anti-skid ramp for the data center outdoor room
10.	Blocking of door areas for fixing door frames and doors
11.	Wall chasing for concealed cable paths, boring holes in walls, sealing with fireproof sealants and finishing
12.	Underground trenching for laying of cables including trench covering, finishing, etc.
13.	20 liter metal body plain and cold water cooler with RO and UV filters; Qty = 1 No. – SITC
14.	Prefab or Precast or Constructed Units of Suitable Material for Toilet, Urinal, Bath and Security Guard Cabin in DC with all necessary accessories including Septic Tank; Qty = 1 – SITC
15.	Single and double shutter metal doors, where required – SITC
16.	Fire rated single and double shutter metal doors, where required - SITC
17.	Rolling shutter or metal door for data center building outdoor room; Qty =1 No. - SITC
18.	Main entrance sliding gate; Qty = 1 Nos. - SITC
19.	Roof shed for existing and proposed gensets in DC building - SITC
20.	FRP / Profile sheet projection over external doors and windows of DC, where required – SITC
21.	Repair of sliding windows in the DC
22.	Primer and paint for the MS structures of DC
23.	Wall putty / primer work in all visible areas of DC
24.	Primer and acrylic paint for internal painting in the visible areas of DC
25.	Primer and Sun reflective coating for external walls and rooftop of DC
26.	Primer and exterior paint for compound walls of DC
27.	Service charges for all putty, primer and painting work
28.	Control room console including monitoring and display panels, alarm and alerting system, surface for placement of desktops and chairs for seating of personnel

29.	Reception area background wall panel, signage and spot lighting – SITC
30.	Institute data center building signage - SITC
31.	False ceiling: 600mm x 600mm boards in true horizontal level suspended on locking grid system. All areas to be covered except for the battery room and any partitioned future expansion space - SITC
32.	Signage, displays and instruction display charts
33.	Door mats, of minimum size 1500 x 800 mm
34.	Miscellaneous brick and plaster works
35.	Outdoor ground leveling work within data center premises
36.	Repair, and up-gradation of existing retractable bridge including fixing of limit switches
37.	Uninstalling, shifting and re-installing existing split ACs from locations in institute to data center; Max Qty = 5
38.	Electric Panels including Main LT panel, Incomers, Busbars, Outgoing Feeders, Other Distribution Panels and Boards – SITC
39.	All Power Cabling in DC including bus trunking or cabling through raceways for the server racks - SITC
40.	Cable trays or raceways as per site requirement – SITC
41.	Equipment Body, Power and Telecom Earthing as per proposed solution – SITC
42.	All switch and point wiring - SITC
43.	Indoor LED lighting as per relevant standards – SITC
44.	Outdoor lighting of the compound – SITC
45.	Electric Warning Signages, rubber mats and first aid box
46.	Exhaust fans – SITC
47.	Diesel Generator Sets with all accessories including AMF panel, Exhaust, MS tower, Statutory Pollution Control Board Clearance, Transport, Loading, Unloading – Qty: 2 Nos. – SITC
48.	Main UPS of appropriate rating and topology / architecture with minimum 10 minutes backup – SITC. Load is 120 kVA
49.	Repair of existing 1 x 10 kVA Online UPS
50.	10 minutes backup power on full load for existing 2 x 10 KVA UPS – SITC
51.	2 x 10 kVA existing UPS with new backup – ITC
52.	2 x 250 kVA Servo Controlled Voltage Stabilizer - SITC
53.	Evaporative sensible air cooling stage – SITC
54.	Direct exchange air cooling stage – SITC
55.	Free air cooling stage – SITC
56.	Neural network and / or fuzzy logic based data center cooling controllers; Qty = 2 – SITC
57.	Water filtration and softening plant; Qty = 1 – SITC
58.	Cooling System Accessories (water storage tanks, pumps, valves, pipes, plumbing accessories, insulation, low side works, air ducts, etc.) – SITC
59.	Outdoor air mist cooling system with all accessories – SITC
60.	Fire Safety System – SITC
61.	CCTV System with VMS, Storage and all accessories – SITC
62.	Rodent Repellent System with all accessories – SITC
63.	Water Leak Detection System with all accessories – SITC
64.	Server Racks with all accessories – SITC
65.	Rack Sensor Kit – SITC Qty = 5 Nos.
66.	Network Racks with all accessories – SITC
67.	Supply of Desktops; Qty = 2 Nos.
68.	Passive Network Items – SITC

69.	43" LED display, wall mount – Qty = 1 Nos.
70.	Supply of networked, auto-duplex laser printer – Qty = 1 No.
71.	Supply of contactless overhead scanner – Qty = 1 No.
72.	Supply of portable monitoring stations – Qty = 2 Nos.
73.	Two shelf table trolley with wheels – Qty = 1 No.
74.	Alarm and Alerting System – SITC
75.	Monitoring and Display System – SITC
76.	Central Information Management Platform – SITC
77.	DCIM Monitoring Software – SITC
78.	Video management server – SITC
79.	Video Storage – SITC
80.	Access Control server – SITC
81.	Data logging servers – SITC
82.	IP-PBX – SITC
83.	SMS gateway with Modem – SITC
84.	SMTP gateway – SITC
85.	Basic IP phones – SITC
86.	One Resident technician charge for three years
87.	Project management charges
88.	Documentation charges
89.	Operations training charges
90.	Warranty: 1 year comprehensive warranty on all equipment supplied
91.	Any other item bidder may like to include for completion of works

Bidder has to submit a detailed bill of quantities (BoQ) of the supplies and services required for executing the project in accordance with the requirements set out in the tender and the update. Template of the bill of quantities is mentioned in Table II. The BoQ is part of the technical bid and should not contain any explicit or implicit price related information.

TABLE-II: BILL OF QUANTITIES TEMPLATE

S. No.	Description of Item / Service	Unit of Measurement	Quantity	Make and Model
SUPPLIES				
1.				
2.				
3.				
N.				
SERVICES				
1				
2				
3				
P				

The price bid to be submitted by the bidder shall be based on the detailed BoQ. Template of the price bid is mentioned in Table III.

TABLE-III: PRICE BID TEMPLATE

S. No.	Description of Item / Service	Make and Model	Unit of Measurement	Unit Price in INR	Quantity	Total Price in INR	HSN Code	GST (%)	Tax in INR	Total Price including GST in INR
SUPPLIES										
1										
2										
3										
N										
SERVICES										
1										
2										
3										
P										
Grand Total Price including GST in INR										
*Grand Total Price including GST in INR (in words):										

*The L1 will be decided among technically qualified bidders based on the Grand Total Price including GST (in words) above

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