

**Construction of MSME Technology Centre at Jaipur (Rajasthan) under the Scheme “Establishment of New Technology Centre/Extension Centre” on Engineering Design, Procurement and Construction (EPC) basis including Maintenance for 2 year during DLP Period**

(E-Tender No: IRCON/B1100009/MSME/e-Tender/EPC/TC JAIPUR/ET45)



**DESIGN BASIS REPORT (DBR)**

**(Section – VII)**

**IRCON INTERNATIONAL LIMITED**

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## INDEX

SECTION	DESCRIPTION	Page No.
1	ARCHITECTURE AND CIVIL FINISHES	
2	STRUCTURAL WORK	
3	FIRE FIGHTNING SYSTEM	
4	PLUMBING SERVICES	
5	ELECTRICAL & LOW VOLTAGE SERVICES	
6	HVAC	
7	MISCELLANEOUS ITEMS	

**“The Contractor shall, within 30 days of award of contract shall prepare and submit a Design Basis Report (DBR), including Conceptual Design, Detailed Design Drawings, Topographical Survey, Geotechnical investigation etc. with reference to the Employer’s Technical Specifications and the Detailed Project Report; the approved DBR shall form part of the contract documents without limiting the Contractor’s obligations”**

**“Detailed project report is attached herewith for reference only”**

## **Scope of Work, to be referred for preparation of DBR**

The Development Commissioner, Ministry of Micro Small and Medium Enterprises, New Delhi, Govt. of India propose to construct new MSME Technology Centre at Jaipur (Rajasthan) under the Scheme “Establishment of New Technology Centre/Extension Centre” including the following facilities etc. are to be accommodated as per plinth area described below in Table-A. Floor wise distributions of various facilities are only indicative. The plinth area, amenities and tentative/ Indicative quantities details included in scope of works are being enclosed as Annexure I.

### **A. Buildings: -**

1. The work is to be executed on Detailed Design, Engineering, Procurement and Construction (on EPC Contract) basis. The EPC Contractor shall prepare the detail Design & construction drawings before taking up the execution part. The EPC Contractor shall also submit complete blocks design for necessary checking by Ircon International Limited.
2. To conduct confirmatory Survey.
3. To carry out detailed Geo-Technical Investigation.
4. Preparation of Architectural & Structural Designs, Detailed Designs of Internal and External Services, External Development, Roads and Pavements, Landscaping, Horticulture, Signage's etc. complete as per requirements in line with the Concept Designs. It shall also include modifications, if any, required in the Concept Plans to meet the conformance to the Local Bye Laws and the same shall be done with the approval of Ircon International Limited/MSME.
5. Preparation of working drawings for construction and all MEP services.
6. Vetting of Detailed Design and Drawing from any reputed IIT/NIT.
7. Obtaining mandatory approvals from Local Bodies/ State & Central Authorities/ Municipal Corporation etc. is in the scope of the EPC Contractor. Approvals as per latest Building Byelaws with up-to-date corrections slips, necessary Environmental Clearance from the Appropriate Authority, Approval from authorities required for commencing the work, execution of work & services and handing over the assets after making them habitable in all aspects.
8. Construction of all Civil Works and Commissioning of all the Buildings along with all required services i.e. Electrical (Internal & External), Fire Fighting System, Fire Alarm System, HVAC, DG Set, Lift, Sanitary & Plumbing, Water Supply, ETP, STP, MGPS, other allied works like Road, Landscaping Work and Horticulture work etc as required and handing over the assets after making them habitable in all aspects. This shall include supply of all required materials, Construction, Installation, Testing and Commissioning for operationalization of all buildings and services in phases. This shall also include Cleaning, Levelling, grading and shifting of all existing trees, services and utilities including removal of debris and foundations of the existing building /structures, if any.
9. After completion of Building & Services, Periodical Maintenance for HVAC, Fire Fighting System, Fire Alarm System & Substation, STP, ETP, Lifts Electrical works for 02 (Two) year i.e. up to Defect Liability Period are included in the Scope of Work. The cost of labour, material, tools and plants and machinery required for execution of the whole Project as per Layout Plan & Detailed Design and Drawings to be approved, specifications etc. including Maintenance is within the Scope of this Work.

10. The EPC contractor shall prepare details, specifications and required furniture layouts and get approval towards the dimensions of the furniture. Furniture Manufacturer shall have ISO 9001 :2008 or latest certificate, ISO 14001:2004, or latest certificate, BIFMA/Green guard/IAQ certificate from valid certifier, OHSAS18001:2007 or ISO 45001: 2018, certified and copy of the certificate to be submitted. Certifying agencies of ISO should be listed with "NABCB" ("National Accreditation Board for Certifying Bodies"). Color scheme shall be as approved by IRCON/Client. Tolerance up to 10% in the furniture dimensions shall be permitted. Bidders shall be liable for furniture demonstration (if required).
11. Work in general shall be carried out as per CPWD specifications, all volumes for Civil Work (updated with correction slips issued up to last date of submission of Tender), CPWD specifications for electrical works, HVAC, DG Set, Lift etc updated with correction slips issued up to last date of submission of Tender unless otherwise specified in the nomenclature of the individual item or in the particular specifications of concerned items of works, relevant IS codes, National Building Code 2016, GRIHA – 4 Star Rating for Green Building Norms & Energy Savings Devices . For items not covered under CPWD specification and in particular specification or nomenclature of the individual item as above, the work shall be done as per latest relevant IS Code of practice.
12. Prepare "As-Built" Drawings and submit within one month after completion of Construction Work.

The scope of work includes Survey, Soil Investigation, preparation of Architectural Design, Structural Design, Design, Supply, Installation and commissioning of all required services i.e. Internal Electrical Installation, Lightening Arrestor, Earthing, Compound, Architectural and Landscape Lighting, HVAC, Fire Fighting including Sprinkler Systems and Zoning, addressable Fire Alarm System, PA and Evacuation System, Mechanical Ventilation System in Basement (if applicable), Toilets and Non AC area, Fire Curtains, Plumbing & Water Supply, Data & EPABX, ETP & STP, Access Control System, Electrical Substation consisting of HT Panel, Transformers, TTA MV Panel, APFC Panel, Rising Mains and bus trunking, DG Sets, Lifts, UPS, Solar Water Heating System, Solar PV Generation System, Bunker, Provision for LT panels / feeder pillars, cabling work, occupancy sensors, emergency lighting, signages, water supply pumping system, centralized cooling and RO, conference rooms, Hard and Soft Furniture etc. complete as required for modern Technology Centre Building as per guidelines. Thereafter complete construction and commissioning of building(s) alongwith all mentioned services is in the scope of the work.

The successful bidder shall appoint an architectural consultant who in association with the other specialized consultants shall prepare the architectural drawings afresh considering the requirement of MSME Technology Centre with state of art technology as per IRCON/ Client's Guidelines. Consultation with IRCON and client department shall also be done before submitting the same for local body approval. Architectural Consultant shall incorporate all the suggestions and modification as directed. Necessary detail survey and soil investigation has to be carried out by the successful bidder for co-relations data and results as indicated in the survey site plan, drawings & soil investigation report as attached with bidding document. No claim about the change in site condition or soil strata/bearing capacity shall be entertained in future.

## **B. Electrical Works:**

Brief description of E&M works: This includes Design, supply, installation, testing and commissioning of following E&M services:

### **Internal & External Electrifications: -**

Supply, Installation, Testing and Commissioning (SITC) of Wiring for internal electric installation i.e. light & fan point, light & power plug with modular switch, socket and accessories, Fittings, Exhaust/Fresh air fan, Ceiling fan, switch board, SDBs, floor panel, main panel, LAN & EPABX wiring, wiring for TV, CCTV, rising main for UPS, Essential & Non- essential supply, Earthing, lightning conductor, Area, compound, lighting with LED & decorative poles etc. Fire survival cable as per the approved drawing shall be provided for automatic fire alarm system. Dimmable and tuneable light fittings with smart control shall be provided in conference halls, meeting rooms with lighting control and keypads. Type and models of the light fittings for different areas is given in the specifications.

### **Fire Fighting System with Wet riser & sprinklers: -**

Supply, Installation, Testing and Commissioning (SITC) of Fire Fighting system with Wet riser & sprinklers, Fire Curtains, Fire rated doors, Fire seals and gas suppression system for the buildings and equipment's as per the requirement of NBC 2016 with amendments, updated BIS codes, Fire bye-laws of Govt. of Rajasthan and CPWD specifications and as per enclosed specifications and makes. This will also include peripheral header, electric & diesel fire pump, internal & external fire hydrants, Portable fire extinguishers etc.

### **HVAC: -**

Supply, Installation, Testing and Commissioning (SITC) of Capacity of HVAC system shall be based on heat load calculation of the buildings but minimum working capacity shall be 200 Hp VRV system fully digital with high CFM capacity indoor units for cooling & Heating. one additional installed module of the same capacity shall be provided as stand by.

### **Electrical Sign Board and Exit Signages: -**

Electrical sign board and exit signs shall be provided for the various services, at various floors and building as per requirement. Apart from this architectural and Braille signages and all requirement of access able building should be met.

### **Addressable Automatic Fire Alarm System: -**

Supply, Installation, Testing and Commissioning (SITC) of addressable automatic fire alarm system complete with detectors, addressable fire alarm panel etc as required This includes installation of digital PA and evacuation system. The interconnection/ wiring for the detectors will be done with copper armored fire survival cable.

**Lifts: -**

Supply, Installation, Testing and Commissioning (SITC) of 2 Nos lifts 8/13/16 Passenger Lifts as per requirement. The design parameters of lifts are as per NBC-2016 and CPWD Specifications.

**Sub-station Work: -**

Supply, Installation, Testing and Commissioning (SITC) of substation of minimum capacity 1600 KVA for complete Campus comprising of Receiving Power Supply from the nearest Sub Station Feeder, H.T. Panel, Transformers, HT Cable, Bus trunking from Transformer to LT Panel, TTA MV main Panels receiving supplies from transformers and DG sets, Automatic power factor corrector panel, Essential Panel i/c Earthing, inter connecting power cables in substation, safety equipments. Planning and design comprising of calculation of electrical load after getting EI & equipment loads of the building and electrical load of HVAC system, total working capacity of the transformers considering diversity factor of the system, planning & making SLD drawings for the distribution system, sizes of cables as per loads etc. are in the scope of work. The consultant will prepare the drawing of Distribution system, SLD and layout of the equipments. During the approval of design and drawing the consultant will submit the data sheet and catalogue of the various

equipment in support of their design. Substation can be of 11/0.433 Kv or 33/0.433 Kv depending upon the norms of the Distribution Licensee, Preparation of inventory, SLD, BOQ is also in the scope of this work. The transformers shall not run on maximum 75% of their loading capacity.

**DG Set Work: -**

Supply, Installation, Testing and Commissioning (SITC) of minimum 520 KVA D.G. set(s) for all buildings silent type D.G. Set complete with Automatic load transfer facility with, Bus Trunking/ cables from DG Set to essential panel, control cable, Earthing of DG Set and, exhaust piping as per CPCB norms i/c supporting structure/arrangement is in the scope of this work. Planning and design comprising of making SLD for the distribution system, Calculation of essential load, sizes of cables/bus trunking, layout of the equipments and sizes of the rooms as per site condition, submission of data sheet and catalogue of the various equipment in support of their design, Preparation of SLD and BOQ, is also in the scope of this work.

**UPS Work: -**

Supply, Installation, Testing and Commissioning (SITC) of minimum 50 KVA UPS set with 30 min. battery backup for all Buildings are in the scope of this work. Planning and design comprising of preparation of BOQ, distribution system for UPS, Preparation of SLD, submission of data sheet and catalogue of the various equipment in support of their design etc are also in the scope of this work.

**Solar PV Generation Work: -**

Supply, Installation, Testing and Commissioning (SITC) of minimum 200 KWp. Grid interactive solar PV generation system is in the scope of this work. Planning and design comprising of preparation of BOQ, distribution system for solar PV generation system, Preparation of SLD, submission of data sheet and catalogue of the various equipment in support of their design etc are also in the scope of this work.

**Solar Hot water system: -**

Supply, Installation, Testing and Commissioning (SITC) of solar hot water system with minimum 1000 LPD cumulative capacity for all residential buildings & Canteen with back up by heat pump and make up tank etc complete as required are in the scope of work. Planning and design comprising of preparation of BOQ, Preparation of SLD, submission of data sheet and catalogue of the various equipment in support of their design etc is also in the scope of this work.

**Emergency Lighting: -**

Supply, Installation, Testing and Commissioning (SITC) of Minimum required emergency lighting system for all buildings shall be through UPS system with battery backup system for minimum 30 minutes. Preparation of SLD, submission of data sheet and catalogue of the various equipment in support of their design etc is also in the scope of this work.

**RO and Centralized Cooling:-**

Supply, Installation, Testing and Commissioning (SITC) of Centralized cooling and RO of the required capacity as per occupancy shall be included in the scope of the EPC contractor for all Buildings. Preparation of SLD, submission of data sheet and catalogue of the various equipment in support of their design etc is also in the scope of this work.

**CCTV: -**

Supplying installation testing and commissioning of IP based CCTV system for building security comprising of PTZ, Fixed camera, cabling, recording, display system and hardware and software support. Preparation of SLD, submission of data sheet and catalogue of the various equipment in support of their design etc is also in the scope of this work.

**Access Control System: -**

Supplying installation testing and commissioning of Access control system for building security comprising of Controller, E&M locks, Reader, Smart cards, cabling, recording, display system and hardware and software support. Preparation of SLD, submission of data sheet and catalogue of the various equipment in support of their design etc is also in the scope of this work.

**Other Services: -**

Supplying installation testing and commissioning of STP and ETP, WTP, Tube well, Rainwater harvesting system etc. as per relevant code. Preparation of SLD, submission of data sheet and catalogue of the various equipment in support of their design etc is also in the scope of this work.

**Cables: -**

Supplying installation testing and commissioning of Power cabling work shall be with XLPE insulated PVC sheathed armored cable as per IS 7098 only. Preparation of SLD, submission of data sheet and catalogue of the various equipment in support of their design etc is also in the scope of this work.

**C. Site Development Works (including survey, investigation, design and construction): -****Roads: -**

The road shall be constructed as per the requirement of the campus and the drawing submitted by agency and approved by IRCON/ MSME. The minimum width of road shall be as under: -

- A. Main road 6.0 m wide carriage way along with footpath on both sides as per the architectural design by the consultant appointed by the contractor subject to the availability of space.
- B. Peripheral road 6.0 m wide in along with footpath on both sides as per the architectural design by the consultant appointed by the contractor subject to the availability of space.
- C. Entry and Exit Gate along with existing Boundary Wall. Entry & exit gate along with existing boundary wall of suitable design as approved by Ircon & client department.
- D. External/Street Lighting system shall be installed as per Relevant IS Code/ ECBC 2017 with latest correction slip.

**Storm water drains and sewer line: -**

Survey, investigation, design & construction of water supply system, deep tube well, underground sump, overhead tank, storm water drains, sewer line & rainwater harvesting pits in the external area around the buildings in the campus including surrounding land and space for car parking. This will also include connection to the trunk sewer line/STP/rainwater harvesting pits/nearest drain.

**Landscape and Horticulture: -**

Survey, investigation, design & construction of Landscape works (both hard & soft) in and around the buildings & roads & services in whole campus is in the scope of this tender including free maintenance of same for two years after the completion of work and during DLP.

**External Signages: -**

- 1. Procurement and installation of all external signage's.
- 2. 5 other Items which are not mentioned above but are essential considering functional requirements and according to modern concept.

**Notes: -**

- 1. All works has to be executed as per specifications provided in the bid document, CPWD Specifications Vol - I & Vol – II and National Building Codes 2016 (in case of difference if any, stringent / higher specification of the two) shall be followed. In absence of CPWD Specification, IS Codes, MoRTH Specifications, National Building Code 2016, Specifications, PWD Govt. of Rajasthan Specifications or sound engineering practices and other standard specifications suitable for modern buildings and latest technology shall bse adopted as per order of precedence defined in the contract.
- 2. The scope of works & specification is given in general but they are not exhaustive i.e. does not mention all the incidental works required to be carried out for complete execution of the work. The work shall be carried out, all in accordance with true intent and meaning of the specifications and the drawings taken together, regardless of whether the same may or may not be particularly shown on the drawings and/ or

described in the specifications, provided that the same can be reasonably inferred there from. There may be several incidental works, which are not mentioned in the contract document/ specifications but will be necessary to complete the item in all respect.

3. In case, some of descriptions are missing in the scope of work or specifications in the bidding documents shall be executed as given in the CPWD Specifications, NBC-2016, Relevant IS Codes or according to sound engineering practices so as to make the building including related services fully functional.

**Brief Description of Activities: -**

**Planning: -**

1. Survey, investigation (including soil investigation) and other related works & services.
2. Architectural planning of buildings & services in the campus and obtaining all statutory / local body approvals. The agency shall also take permission from forest/Fire department/Environment/ Pollution control board etc required to start construction work as per plinth area given above. This also includes Environmental Impact Assessment & clearance and compliance, Traffic Impact assessment and design of merging/demerging of traffic etc.
3. The structural design of earthquake resistant RCC framed structure buildings & design of services in the campus and getting approval from IRCON/ MSME and vetting of drawings by any approved institute such as NIT/IIT.
4. Design and construction of buildings, services, fittings etc. as per 4 STAR GRIHA including dual plumbing system, energy saving LED lights etc.
5. Building shall be designed for differently-able persons as per the latest norms of the Central Govt.
6. The guidelines & regulation issued by the National Disaster Management Authority for management of buildings should also be incorporated in the design of Technology Centre Building.

**List of Mandatory Approvals required for the project: -**

1. GRIHA Registration from Concerned Authority min 4 Star Rating.
2. Approval from Local body.
3. Environmental Clearance from SEAC & SEIAA including six monthly compliances. Also, EPC contractor will obtain necessary NOCs from Water Department, Electricity Department, Forest Department, AAI, Irrigation department etc required to obtain environmental clearance.
4. Permission for excavation from Mining Department.
5. Approvals from Fire department, Pre and post Construction
6. Labour license and BOCW
7. Vetting of all Design of structural and MEP drawings from IIT/NIT.

8. Consent to Establish from PCB
9. Consent to operate: -

The contractor must obtain all the permissions and approvals if not mentioned above for the completion of the project. The vetting Charges for design and drawings of the project shall be borne by contractor. Nothing Extra on account of this shall be payable by IRCON/ MSME. The Statuary fee will be reimbursed by IRCON/ MSME on submission of documentary evidences/ Challans/ Invoice etc. but excluding design vetting.

**Execution of Work: -**

1. After approval from IRCON/ MSME and getting approval from local bodies including necessary modifications as per the requirements execution of works as per the scope of buildings & services defined in the contract document, CPWD Specifications, NBC-2016, IS Codes, MoRTH Specifications and Sound Engineering Practices and handing over the assets.
2. Submission of completion plan of the building & services including getting approval/clearance from local bodies. Submission of building & services plan & drawings and other related documents both in hard copy and the soft copy (in Auto CAD and other software used for the purpose) after completion (i.e. 'As-Built').
3. Clearance of site before Handing over of the facilities after fulfilling all the obligations under the contract.
4. Obtaining necessary clearances/ licenses from different local bodies/ statutory authorities required to make the campus fully operational during/after completion of work.

**Defect Liability period of 2 years:-**

1. Free defect liability period for buildings, horticulture works and services for two years after completion of complete project (not from the date of actual commissioning of installation).
2. Free maintenance of all horticulture related works under the scope of works.

**Annexure - 5**  
**Details of Indicative Infrastructure Facilities**

Details of Indicative Infrastructure Facilities for Preparation of DBR														
Annexure IA														Development Quantities
Sr. No.	Description of Block	Block (Nos.)	Area in Sqmt.	Floor Description	Floor to Floor Height in Meter	HVAC VRV	Lifts	Lighting Automation	Structure Type	CCTV	Signages	BAMS	Access Control	
1	Production Block	1	4,500	Ground	4.50	VRV	-	Yes	Composite Steel Structure	Yes	Yes	Yes	Yes	Revised Tentative/ Indicative as Per Site
2	Training Centre	1	5,159	G + 2	4.50	VRV	Yes	Yes	RCC	Yes	Yes	Yes	Yes	
3	Admin Block	1	700	Ground	4.50	VRV	-	Yes	RCC	Yes	Yes	Yes	Yes	
4	Dining Block	1	1,000	G + 1	4.50	VRV	Yes	Yes	RCC	Yes	Yes	Yes	Yes	
5	Staff Residences	1	1,071	G + 2	3.30	-	Yes	Yes	RCC	Yes	Yes	Yes	Yes	
6	Executive Hostel	1	600	Ground	3.30	VRV	-	Yes	RCC	Yes	Yes	Yes	Yes	
7	Boy's Hostel	1	1,200	G + 2	3.30	-	-	Yes	RCC	Yes	Yes	Yes	Yes	
8	Girl's Hostel	1	1,200	G + 2	3.30	-	Yes	Yes	RCC	Yes	Yes	Yes	Yes	
9	Guard Room	2	179	Ground	3.30	-	-	Yes	RCC	Yes	Yes	Yes	Yes	
10	Utility Block	1	373	Ground	4.50	-	-	Yes	RCC	Yes	Yes	Yes	Yes	
11	Convocation Hall	1	300	Ground	4.50	-	-	Yes	RCC	Yes	Yes	Yes	Yes	
12	Site Development	1	48,511			-	-	-	-	Yes	Yes	Yes	Yes	
Development of Site													Unit	
Levelling													Lot	1
Boundary Wall													RM	0
Security Cabin/ Gate													LS	2
Motorized Gate													Each	2
Internal Roads													Sqmt.	4,350
Parking Area													Sqmt.	1,500

	<b>Footpath</b>	Sqmt.	2,000
	<b>Horticulture/ Landscape</b>	Sqmt.	12,701
	<b>Sub Station</b>	KVA	630
	<b>DG Set</b>	KVA	520
	<b>UPS</b>	KVA	50
	<b>Solar Photovoltaic Energy</b>	Kwp	200
	<b>External Lighting</b>	Sqmt.	8,333
	<b>HVAC Tonnage</b>	Hp	200
	<b>CCTV Internal</b>	Sqmt.	16,282
	<b>CCTV External</b>	Sqmt.	8,333
	<b>Door Frame Metal Detector</b>	Each	2
	<b>Boom Barrier</b>	Each	4
	<b>Motorized Gate</b>	Each	2
	<b>Passenger Lifts</b>	KLD	2
	<b>Integrated Building Management</b>	Sqmt.	5159
	<b>Access control System</b>	sqmt	5000
	<b>Lighting automation and occupancy sensor</b>	Nos	16282
	<b>STP</b>	Per 1000 ltr	25
	<b>Tele-communication and IT System</b>	LS	1
	<b>Storm Water Drain</b>	RM	800
	<b>External Sewerage</b>	RM	800
	<b>Filtered Water Supply</b>	RM	800
	<b>Unfiltered Water Supply</b>	RM	750
	<b>Manholes</b>	Each	40
	<b>Bore Wells</b>	Each	240
	<b>Trenches</b>	RM	250
	<b>Rain Water Harvesting (As per CPHEO Guidelines)</b>	RM	250
	<b>Fire Fighting Equipments</b>	LS	1
	<b>Underground Sump including Pump Room</b>	Litre	3,55,000
	<b>Overhead Tank With Staging</b>	Litre	50,000