

M/s HLL Infra Tech Services Ltd. (HITES)
(Subsidiary of HLL Lifecare Ltd, A Government of India Enterprise)
As Executing Agency of

All India Institute of Medical Sciences, Patna
(An Autonomous body under MoHFW, Govt. of India)

HITES/AIIMS-PATNA/2022-23

19.11.2022

Amendment -01

Name of the work: Design, Engineering, Procurement and Construction(EPC) of Academic Block & Residential Quarters at AIIMS, Patna

Ref: Tender No.- HITES/AIIMS-PATNA/2022

The Amendment-01 shall be treated as part of e-tender to be uploaded online duly signed and stamped along with e-tender:

Sl. No.	Ref. to tender	Existing Clause	Amended Clause
1.	Clause 7.1, Vol.-2A: Integrity Pact of Tender document	HITES has appointed Shri Radhakrishna Kini A, IPS (Retd.)as Independent External Monitor(s) (hereinafter referred to as IEM(s)) for this Pact in consultation with the Central Vigilance Commission. Contact details of IEM are as below: Shri Radhakrishna Kini A, IPS (Retd.) Office: HLL Infra Tech Services Ltd B-14-A, Sector 62, Noida, 201307, U.P Tel: 0120 4071500 ; Email: iem@hllhites.com	HITES has appointed Shri Radhakrishna Kini A, IPS (Retd.) and Shri Santanu Mukherjee as Independent External Monitor(s) (hereinafter referred to as IEM(s)) for this Pact in consultation with the Central Vigilance Commission. Contact details of IEM are as below: 1. Shri Radhakrishna Kini A, IPS (Retd.) 2. Shri Santanu Mukherjee Office: HLL Infra Tech Services Ltd B-14-A, Sector 62, Noida, 201307, U.P Tel: 0120 4071500 ; Email: iem@hllhites.com

Sl. No.	Ref. to tender	Existing Clause			Amended Clause		
2.	Clause 3.3, Bore well, under Chapter D, Design Basis Report- Plumbing, Vol-4, DBR of Tender document	The bore well, one number, shall be provided with suitable submersible pump in the Residential Complex up to adequate depth as per CPWD specifications.			The bore well, one number each , shall be provided with suitable submersible pump in the Academic and Residential Complex up to adequate depth as per CPWD specifications.....		
3.	Chapter –F, Technical Specifications – Electrical Works, Vol-5, TS of Tender Document	Technical Specifications – Electrical Works			Technical Specifications for Dry Type Transformers refer attached Annexure-2		
4.	Chapter- P, List of Approved Makes of Materials- Services & Related Works, Electrical Works, Vol-5, TS of Tender Document	S.No.	Details of equipment/ material	Make/Manufacturer	S.No.	Details of equipment/ material	Make/Manufacturer
		24	Distribution Boards (DB)	Hager/ Havells/ Legrand/ L&T/ABB/ Schneider / Siemens/ Eaton/ Panasonic/ Polycab	24	Distribution Boards (DB)	Hager/ Havells/ Legrand/ L&T/ABB/ Schneider / Siemens/ Eaton/ Panasonic/ Polycab / HPL
		53	MCBs / RCCB/Isolators / RCBO / Change over switch/ Time Switch	Hager/ Havells/ Legrand/ L&T/ Schneider/ ABB/ Siemens/ Eaton/ Panasonic/ Polycab	53	MCBs / RCCB/Isolators / RCBO / Change over switch/ Time Switch	Hager/ Havells/ Legrand/ L&T/ Schneider/ ABB/ Siemens/ Eaton/ Panasonic/ Polycab / HPL

Sl. No.	Ref. to tender	Existing Clause	Amended Clause
5.	Vol-6, Tender Drawings	Tender Drawings	Tender Drawings Revised Tender Drawings as per List given in Annexure-1 are attached.

Important Note:

1. The above Amendment shall form part of the Tender Document and is to be submitted duly signed by the applicants along with their Application.
2. All other terms & condition of Tender document remains unchanged.
3. For Corrigendum/amendments etc. please refer websites www.hllhites.com, e-Procurement System at NIC's (CPP Portal) <https://etenders.gov.in/e procure/app>. regularly , separate advertisement will not be made for the same.

The Vice President (ID)
M/s HLL Infra Tech Services Ltd. (HITES),
As Executing Agency
All India Institute of Medical Sciences, Patna
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END OF AMENDMENT -01

LIST OF DRAWINGS-REVISED**CONSTRUCTION OF ACADEMIC BLOCK & RESIDENTIAL QUARTERS AT AIIMS, PATNA, BIHAR**

S.NO.	NAME OF BUILDING/DRAWING TITLE	Drawing No.	Revision
B	ACADEMIC BLOCK		
7	FIRST FLOOR PLAN	102-AR-AC-003	R1
E	TYPICAL DETAILS		
31	ROAD SECTION STRUCTURE DETAIL	105-AR-TD-001	R1
32	ROAD SECTIONS	105-AR-TD-002	R1
34	TYPICAL PARAPET WALL, TERRACING & PLINTH PROTECTION DETAIL	105-AR-TD-004	R1
35	TYPICAL CORRIDOR SECTIONS	105-AR-TD-005	R1
40	TYPICAL RAILING	105-AR-TD-010	R1
44	LECTURE HALL ACOUSTIC WALL PANELING & SEATING DETAIL	105-AR-TD-014	R1
46	JOINERY DETAIL-A	105-AR-TD-016	R1
47	JOINERY DETAIL-B	105-AR-TD-016a	R1
49	TOILET DETAIL	105-AR-TD-018	R1
50	PANTRY , HANDICAP TOILET & ATTACHED TOILET DETAIL	105-AR-TD-019	R1
59	TOILET & WARDROBE DETAILS	105-AR-TD-027	R1
61	TYP.COVERED PARKING DETAIL RESIDENTIAL COMPLEX	105-AR-TD-029	R1

TECHNICAL SPECIFICATIONS FOR DRY TYPE TRANSFORMERS

1. 11/0.433 KV DRY TYPE TRANSFORMER (ON LOAD TAP CHANGER TYPE)

1.1. GENERAL

Power transformers shall be Cast Resin Dry Type for indoor use. The transformers shall be suitable for 11KV/ 433 Volts, 50 Hz and 3-phase. All the transformers shall be ON LOAD TAP CHANGER type with RTCC Panels.

The design manufacture and performance of transformer shall comply with all performance of equipment status, regulations and safety codes in the location where the transformers will be installed. Transformers shall conform to the latest applicable standards. Maximum transformer losses at 50% & 100% loads & impedance shall be as per ECBC Building norms conforming to Table 7.1 of ECBC-2017. Transformers' incoming feeders in the LT Panel would be equipped with metering class current transformers (CT's) & potential transformers (PT's) so that periodic loss monitoring can be carried out.

1.2. CODES AND STANDARD

Transformers shall comply with the latest edition of Indian Standards No. IS 2026 Part I to Part V (Power Transformer) and IS-11171 for Dry Type Transformer. In case the Provision of Indian Standards are not directly applicable to dry type Transformer, the provision of latest IEC-60726 and any other relevant IEC shall apply. Latest Standards as applicable shall be followed the Insulating materials, Bushing, Installation and Maintenance of the Transformer.

1.3. SERVICE CONDITION

Altitude	Less than 1000 meters.
Maximum Ambient Temperature	50 deg. C
Minimum Ambient Temperature	-5 deg C
Relative Humidity	100 %
Installation	Corrosive,dusty, humid and tropical.

1.4. RATING AND TYPE

The Transformer shall have core type construction, 3 phase and shall be suitable for indoor service under the climatic conditions prevailing at site. The Transformer shall be capable of withstanding thermal and mechanical effects of short circuit at terminals of any winding with full voltage maintained on other winding as per IS: 2026.

1.5. WINDING

The primary and secondary winding shall be of electrolyte copper conductors. The high and low voltage winding shall be totally encapsulated and should be cast under vacuum in moulds with fiber glass reinforce epoxy resin laminate. Both HV and LV winding of each phase shall be separately cast as a rigid tubular coil with no mechanical and electrical connection between their co-axial arrangement. The Transformer shall be free of partial discharges at least up to 1.1 times the rated voltage.

The winding shall not absorb moisture under the worst tropical conditions. The collection of moisture and dust over the winding shall not in any way affect the insulation strength of the winding.

1.6. CORE

The transformer core shall be build up with high non-aging low and high permeability CRGO Silicon steel lamination. CRGO sheet shall be coated with inorganic material or equivalent insulation to reduce eddy current to minimum. After shearing, the laminations shall be treated to remove all burrs and shall be annealed to remove all the residual stresses.

Core frame work and clamps shall be arranged and tightened to securely hold lamination in order to prevent any settling or displacement in case of heavy shocks during transport, handling or short circuits. All the Iron parts except the core shall be galvanized and treated with high temperature resistance paint. Core Fastening shall be insulated to reduce losses and avoid spots. Transformer shall be designed to withstand 10 % over fluxing corresponding to rated voltage.

Suitable lugs shall be provided for lifting the complete core and coil assembly of the transformer.

1.7. INSULATION

Interterm and inter coil insulation shall be designed such that dielectric stress is uniformly distributed throughout the winding under all operating conditions. The winding shall be provided with Class 'F' Insulation.

1.8. TEMPERATURE RISE

The temperature rise of the winding shall not exceed 90 deg C on continuous full load above maximum ambient temperature of 50 Deg C and in no case shall reach value that may damage the core itself or other adjacent part.

1.9. TAP CHANGING:

"ON LOAD" circuit tap changing with AVR arrangement on H.V side is to be provided. The tapping is to be provided for variation on high voltage side from + 5% to - 15% steps of 1.25% each. Automatically operated STEPLESS "ON LOAD Tap Changing Switch" having a position indicating lights & Locking device and complete with Automatic Voltage regulator and its Control panel shall be provided separately.

1.10. VECTOR GROUP:

Transformer shall have the vector group of Dyn 11.

1.11. IMPEDANCE

The desired impedance shall be as mentioned in the IS: 11171 and ECBC norms.

1.12. COOLING

The Transformer shall be designed for natural cooling (AN) or forced cooling as required for smooth continuous functioning at site.

1.13. ENCLOSURE

Transformer shall be provided with a sheet steel enclosure with adequate provision for ventilation. The degree of protection of enclosure shall be IP 21 for indoor installation and IP 44 for outdoor installations. The sheet steel thickness of enclosure shall be minimum 2mm.

1.14. CABLE TERMINATION

The low voltage side of the transformer shall be suitable to receive Sandwich Aluminium Bus Duct of suitable capacities from the top of the Transformer. A suitable size of flange to be provided for connecting the suitable size overhead sandwich busducts in the LT Box.

H.T. sides of the transformers shall have cable end boxes to receive 3 C X 300 sq.mm size of 11KV HT cables with bottom entry provision.

All cable end boxes shall have bore holes to match the opening for each cable specified and shown in the single line diagram.

1.15. EARTHING

Two main earthing terminals shall be connected to the terminals provided for transformer.

1.16. FITTINGS AND ACCESSORIES

- Rating and Terminal Marking Plate of the Transformer including the details of OFF circuit changing voltage of the links.
- Earthing terminal with Lugs.
- Transformer Neutral Earthing terminal.

- Marshal Box with wiring and terminal and temperature scanner.
- PT 100 type temperature scanner and its connection with marshal box.
- Neutral CT 2000/1 Amp. And its connection with marshal box for 2000 KVA Transformer only.
- Limit switch in all hinged door fix door and wiring till marshal box.
- HV cable end box at primary.
- LT bus Trunking box at secondary.
- Nos. Plan bi- directional rollers.
- Inspection windows shall be provided in the cover.
- Lifting lugs for both the transformer and core shall be provided.

1.17. RTCC PANEL

RTCC Panel shall be provided to operate OLTC from control room located in substation. RTCC shall be provided with main switch, a sequence selector switch. RTCC shall be provided with lower push button & raise push button, tap change in progress & complete. A.C supply ON/OFF lamp indicator & AVR relay operated operation indication. Cubical panel shall be totally enclose, floor mounting and fabricated with a framed structure with rolled/folded sheet steel channel section of minimum 2mm thickness.

All the sheet steel work forming the exterior of RTCC panel shall be smoothly finished and all steel work used in construction of RTCC panel shall undergone a rigorous metal treatment process consisting of effective cleaning by hot alkaline degreasing solution followed by the cold water rinsing, pickling in dilute sulphuric acid to remove scales and rust formation, a recognized phosphating process, passivating in deoxidize to retain & augment the effects of phosphating, drying with compressed air and dust free atmosphere, primer coating with two coats of highly corrosion resistant primer applied under strictly controlled conditions and finished coat of stoving. RTCC Panels shall be connected with respective transformers through suitable size multicore copper conductor armoured control cables.

1.18. INSTALLATION OF TRANSFORMER

Installation of transformer shall be carried out in accordance with manufacturer's instructions and/or as directed by purchaser.

All power/control connections and mechanical joints shall be completed, checked and adjusted to ensure safety and satisfactory operation of the transformer.

Transformer shall not be placed on bare ground during unloading but it shall be placed on wooden sleepers. After placing on foundation, alignment, leveling etc. shall be carried out in best workman like manner.

For the power/control cabled projecting above the ground, the termination to cable box shall be run in GI conduits of suitable cross section and the same shall be supported properly and pipe ends shall be sealed with bitumen compound.

The cable box of detachable type of the transformer shall be supported properly so as to facilitate taking out of the transformer for repair without disturbing the cables.

1.19. TEST CERTIFICATES.

Test certificate shall be furnished in required number of copies for approval. The routine, special and type test certificate of the transformer shall be furnished.

The routine and type test certificates of miscellaneous components shall be furnished or approval.

1.20. ROUTINE TESTS

During manufacture and on completion the transformer shall be subjected but not limited to the following Routine Tests as laid down in the latest revision of the IS 11171 IEC - 726

- i) Applied voltage test
- ii) Induced voltage test
- iii) No-load loss and excitation current tests
- iv) Impedance voltage and load loss tests
- v) Resistance measurement
- vi) Ratio tests
- vii) Polarity and phase relation tests
- viii) Insulation resistance tests
- ix) Insulation power factor tests

1.21. TYPE TESTS

The type test certificates for the following type tests carried out on similar capacity rating shall be submitted along with the routine test certificates.

- i) Heat run test
- ii) Impulse test

1.22. FIELD TEST

After installation a site, the transformer shall be subjected to the following field test:

- i) Construction inspection
- ii) Ratio tests
- iii) Polarity test
- iv) Tap change operation test.

1.23. ELECTRICAL & PERFORMANCE REQUIREMENT :

- a) Transformer shall operate without injurious heating at the rated KVA at any voltage within variation of +/- 10% of the rated voltage of that particular tap.
- b) Transformer shall be designed for 110% continuous over fluxing withstand capability.
- c) The neutral terminals of the winding with star connection shall be designed for the highest over current that can flow through the winding.
- d) Overloads shall be allowed within the conditions defined in the loading guide of the applicable standard. Under these conditions, no limitations by terminal bushings, tap changers or other auxiliary equipment shall apply.
- e) Temperature Rise for continuous full load application shall be guided by Maximum temperature rise clause of IS 2026. The temperature rise shall not exceed 45 degree C by thermometer in oil or 50 degree C for winding over an ambient of 45 degree C.

(Please note maximum ambient temperature shall be considered as 50 degree C).

1.24. DRAWINGS AND O&M MANUALS:

Four copies of manual of complete instructions for the installation, operation, maintenance and repairs circuit diagrams, foundation and trenching details shall be provided with the transformers. List of spare parts shall also be indicated.

- a) GA drawing showing dimension, net weight and shipping weight, quantity of insulating oil etc.
- b) Crane requirements for assembly and dismantling of the transformer.

c) Drawing indicating GA of cable box and its dimension for cable entry cut out requirements etc.

The drawings in (four sets) to be furnished by the supplier for approval after acceptance of his order shall include the following.

- a) GA showing front and side elevations and plan of transformer and all accessories and external features, detailed dimensions, crane lift for untanking, H.T./L.T. clearances etc.
- b) Drawings of Bus duct termination arrangement.
- c) HV cable box arrangement & disconnecting chamber GA drawings.
- d) Name plate and terminal making and connection diagram.
- e) Assembly of OLTC gear mechanism & details of mechanism parts, limits, contours of wearing parts, timing gear adjustments etc.
