



# BHARAT HEAVY ELECTRICALS LIMITED

## TRANSMISSION BUSINESS ENGINEERING MANAGEMENT

DOCUMENT No.	TB-369-510-010A	Rev 00	Prepared	Checked	Approved
TYPE OF DOC.	TECHNICAL SPECIFICATION	NAME	RD	VK	AG
TITLE  MARSHALLING KIOSK & JUNCTION BOX		SIGN			
		DATE			
		GROUP	TBEM	W.O. No	
CUSTOMER	NTPC LIMITED				
CONSULTANT	----				
PROJECT	400/220kV Switch Yard for Nort Karanpura Super Thermal Power Project (3 X 660 MW)				

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Rev No.	Date	Altered	Checked	Approved	REVISION DETAILS			
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## SECTION 1

### SCOPE, SPECIFIC TECHNICAL REQUIREMENTS AND QUANTITIES

#### 1.0 SCOPE

This technical specification covers the requirements of design, manufacture, testing at works, packing and dispatch of Marshalling Kiosk and Junction Box complete with accessories as listed under this specification.

This section covers the specific technical requirements of MK and JB. This constitutes minimum technical parameters for the above item as specified by the customer (NTPC). The offered equipment shall also comply with the General Technical Requirements for the project as detailed under section-3 of this specification.

The specification comprise of following sections:

- Section-1: Scope, Specific Technical Requirements & Bill of Quantities
- Section-2: Equipment Specification
- Section-3: Project Details and General Technical Requirements
- Section-4: Checklist

In case of any conflict between various sections, **order of precedence** shall be in the same order as listed above.

#### THE EQUIPMENT IS REQUIRED FOR THE FOLLOWING PROJECT

Name of customer : **NTPC Limited**

Name of consultant : -----

Name of Project : **400/220 kV Switchyard Package at North Karanpura Super Thermal Power Project (3 X 660 MW)**

Refer Section - 3 for Project Details and General Specifications.

#### SPECIFIC TECHNICAL REQUIREMENTS

As per attached Annexure-I (*NTPC specification, 6 pages*).

## QUANTITIES

### MAIN QUANTITY

1.	Marshalling Kiosk MK-180R	3 Nos
2.*	CT Junction Box JB-D130	2 Nos
3.	CT Junction Box JB-N130	1 Nos
4.#	VT Junction Box JB-N75	3 Nos

1. The above quantities are subject to change by  $\pm 20\%$  at contract stage.
2. \_\_\_\_\_ for mounting MK and JB's are deemed to be included in the equipment price.
3. \_\_\_\_\_ shall be equipped with 1 Strip, i.e., 26 Nos. of Disconnecting TBs & rest all Strips with Non-Disconnecting TBs.
4. \_\_\_\_\_ shall be equipped with Fuse, as per Table-3.

## TYPE TESTS

Bidder shall submit valid type test reports (as per relevant IEC/IS standard) for the tests carried out within last ten years from the date of techno-commercial bid opening. The reports should have been conducted on identical or similar equipment/components to those offered. In case type test reports are more than ten years old from the date of techno-commercial bid opening or the reports of type tests are found to be technically unacceptable, the type tests shall be conducted by the vendor without cost and delivery implication to BHEL.

## INSPECTION & TESTING

Before being fitted on the equipment, all components shall be subjected to routine tests at the Contractors factory, as per the relevant IEC/IS standards. A detailed test report proving the successful passing of such tests shall be provided.

Prior to dispatch, the routine & acceptance tests shall be carried out on each MK and JB in accordance with the applicable IEC /IS and the material shall be offered for final inspection to BHEL and NTPC in accordance with agreed quality plan with 3 weeks advance information.

Type test reports on identical rating shall be submitted for approval. In the event of non-acceptability of submitted test reports on technical grounds at the contract stage, the type tests shall be conducted at no additional cost.

## QUALITY PLAN

The contractor shall carry out contract works in accordance with sound quality management principles which shall include such as controls which are necessary to ensure full compliance to all requirements of the specification & applicable international standards. These quality management requirement shall apply to all activities during design, procurement, manufacturing, inspection, testing, packaging, shipping, inland transportation, storage, site erection & commissioning. Contractor shall submit detailed Quality Plan for BHEL / NTPC's approval.

**Technical Specification: Marshalling Kiosk & Junction Box**

**1.7 TECHNICAL PRE QUALIFYING REQUIREMENTS**

MK & JB's being offered should be from manufacturer who have manufactured and supplied at least ten (10) nos. of MK/ JB/ Distribution Boards for Substation/ Switchyard of 220kV or above class.

**DOCUMENTS REQUIRED WITH OFFER**

- a) "No Technical Deviation" Certificate
- b) Un-priced schedule
- c) Filled up Checklist

**DRAWINGS / DOCUMENTS REQUIRED FOR ENGINEERING MANUFACTURING CLEARANCE**

The minimum drawings/ documents, as follows shall be required for providing engineering manufacturing clearance of the equipment (MK & JB) and furthermore, it shall be used for delay analysis, if any, on account of the bidder. The schedule for submission and resubmission shall be in line with details provided in section-3.

1	OGA, BOM/ Component List with Guaranteed Technical Particulars, Wiring Diagrams
2	Type Test Reports
3	Quality Assurance Plan & Inspection Test Schedule


**PACKING AND DISPATCH**


The equipment shall be properly packed for selected mode of transportation i.e. sea, rail and road in such a manner that it is protected against the climatic conditions and for any damage during transportation, transit and storage. The equipments shall be wrapped in polyethylene sheets before being placed in wooden crates/cases to prevent damage to the finish. Crates/cases shall have skid bottoms for handling. Special notations such as 'Fragile', 'This side up', 'Weight', 'Owner's particulars' 'PO nos.' etc., shall be clearly marked on the package together with other details as per purchase order.


The equipment may be stored outdoors for long periods before installation. The packing should also be suitable for outdoor storage areas with heavy rains/ high ambient temperature unless otherwise agreed and hence, packing shall be suitable for long duration storage (minimum 1 year).


# ANNEXURE - I

CLAUSE NO.	<b>TECHNICAL REQUIREMENTS</b>		
<del>8.09.10</del>	<del>In accordance with the requirements stipulated under Chapter-G0, bushings, hollow column insulators and support insulators shall conform to type tests and shall be subjected to routine tests and acceptance test/ sample test in accordance with relevant standards.</del>		
<del>8.09.11</del>	<del>The parameters of bushings/ Hollow column insulators/ support insulators are given in section E0. Insulator shall also meet requirement of IEC - 815 as applicable, having alternate long &amp; short sheds.</del>		
8.10.00	<b>CABINETS, BOXES, KIOSKS, PANELS, ETC.</b>		
8.10.01	All types of control cabinets, junction boxes, marshaling boxes, lighting panels, terminal boxes, operating mechanism boxes, Kiosks etc. shall generally conform to IS:5039, IS:8623 and IEC:60439 as applicable. They shall meet all other requirements specified elsewhere in the specification.		
8.11.00	<b>BAY MARSHALLING BOX</b>		
8.11.01	Each bay of the switchyard shall be provided with a Bay Marshaling Box located at a convenient location to receive and distribute cables within the bay. It shall meet all the requirements as specified for cabinets/boxes above.		
8.11.02	It shall have three separate distinct compartments for following purposes: - To receive two incoming 415V, three phase, AC supplies controlled by 100A four pole MCBs with auto changeover provision, and to distribute five (5) three phase ac supplies controlled by 32A four pole MCBs. It shall also be provided with 63A, 3 phase 4 pin industrial grade receptacle with rotary switch. - To receive three phase incoming from first compartment and to distribute ten (10) single phase ac supplies controlled by 16A two pole MCBs. - 150 nos. terminal blocks in vertical formation for interlocking facility.		
<del>8.11.03</del>	<b>AUXILIARY SWITCH</b>  The auxiliary switch shall conform of following type tests: a) Electrical endurance test - A minimum of 1000 operations for 2A. D.C. with a time constant greater than or equal to 20 milliseconds with a subsequent examination of mV drop/ visual defects/ temperature rise test. b) Mechanical endurance test - A minimum of 5000 operations with a subsequent checking of contact pressure test/ visual examination c) Heat run test on contacts d) IR/HV test, etc.		
<del>8.12.00</del>	<b>Type tests</b>  All equipment with their terminal connectors, control cabinets, main protective relays, etc. as well as insulators, insulator strings with hardware, clamps and connectors, marshaling boxes, etc., shall conform to type tests and shall be subjected to routine and acceptance tests in accordance with the requirements stipulated under respective equipment sections.		
NORTH KARANPURA STPP (3 X 660 MW) EPC PACKAGE	TECHNICAL SPECIFICATIONS SECTION VI, PART-B BID DOC. NO.:CS-4410-001-2	SUB SECTION B-14 SWITCHYARD	Page 47 of 102

CLAUSE NO.	<p style="text-align: center;"><b>TECHNICAL REQUIREMENTS</b></p> 		
3.02.03	<p>The size of structural steel members or thickness of sheet steel of main support channel and cantilever arms and other accessories as indicated above or in the enclosed drawings are indicative only. Nevertheless, the support system shall be designed by the bidder to fully meet the requirements of type tests as specified. In case the system fails in the tests, the components design modification shall be done by the Bidder without any additional cost to the Employer. The bidder shall submit the detailed drawings of the system offered by him alongwith the bid.</p>		
3.03.04	<p>FOR COAL HANDLING PLANT THE FOLLOWING SHALL ALSO BE APPLICABLE :</p> <ol style="list-style-type: none"> <li>a) All overhead cable routes shall be along the route of the conveyor gallery on a separate supporting structures and cables shall be laid in vertical trays. The bottom of the steel shall be such that the existing facilities, movement of trucks/human beings etc. does not get affected. The cable trestle shall have a minimum 600mm clear walk way and shall have maintenance platforms as required. The bottom of the steel supporting structure shall be generally at 3.0M above the grade level except for rail/road crossings where it shall be at 8.0M above grade level. Tap offs from the overhead cable trestle can be through shallow trenches with prior approval of the Employer. Directly buried cable, if essential, shall not have concentration of more than 4 cables on one route.</li> <li>b) Cable trenches shall be provided only in Switchgear/MCC rooms.</li> <li>c) Cables shall not be routed through the conveyor galleries except for the equipment located in the conveyor galleries for a particular conveyor i.e. protection switches, receptacles etc.</li> <li>d) Cables for PCS and BSS shall be routed along the conveyors through GI conduits.</li> </ol>		
3.04.00	<p><b>Pipes, Fittings &amp; Accessories</b></p>		
3.03.01	<p>Pipes offered shall be complete with fittings and accessories (like tees, elbows, bends, check nuts, bushings, reducers, enlargers, coupling caps, nipples etc.) The size of the pipe shall be selected on the basis of maximum 40% fill criteria</p>		
3.03.02	<p>GI Pipes shall be of medium duty as per IS:1239</p>		
3.03.03	<p>Duct banks shall be High Density PE pipes encased in PCC (10% spare of each size, subject to minimum one) with suitable water-proof manholes.</p>		
3.03.04	<p>Hume pipes shall be NP3 type as per IS 458.</p>		
3.04.00	<p><b>Junction Boxes</b></p>		
3.04.01	<p>Junction Boxes with IP:55 degree of protection, shall comprise of a case with hinged door constructed from cold rolled sheet steel of thickness 2mm. Top of the boxes shall be arranged to slope towards rear of the box. Gland plate shall be 3mm thick sheet steel with neoprene/synthetic rubber gaskets. All junction boxes shall be of adequate strength and rigidity, hot dip galvanised as per relevant IS, and suitable for mounting on wall, columns, structures etc. The boxes shall include brackets, bolts, nuts, screws M8 earthing stud etc. required for installation.</p>		
3.04.02	<p>Terminal blocks shall be 1100V grade, 10Amps rated, made up of unbreakable polyamide 6.6 grade. The terminals shall be screw type or screw-less (spring loaded) / cage clamp type with lugs. Marking on terminal strips shall correspond to the terminal numbering in wiring diagrams. All metal parts shall be of non-ferrous material. In case of screw type</p>		
<p style="text-align: center;"><b>NORTH KARANPURA STPP (3 X 660 MW) EPC PACKAGE</b></p>	<p style="text-align: center;"><b>TECHNICAL SPECIFICATIONS SECTION VI, PART-B BID DOC. NO.:CS-4410-001-2</b></p>	<p style="text-align: center;"><b>SUB SECTION B-09 CABLING, EARTHING &amp; LIGHTNING PROTECTION</b></p>	<p style="text-align: center;">Page 5 of 20</p>

CLAUSE NO.	<b>TECHNICAL REQUIREMENTS</b> 		
	<p>terminals the screw shall be captive, preferably with screw locking design. All terminal blocks shall be suitable for terminating on each side two (2) nos. stranded copper conductors of size upto 2.5 sq mm each. All internal wiring shall be of minimum 1.5 sq. mm cu. Conductor PVC wire.</p>		
3.05.00	<p><b>Terminations &amp; Straight Through Joints</b></p>		
3.05.01	<p>Termination and jointing kits for 33kV, 11kV, 6.6 kV and 3.3 kV grade XLPE insulated cables shall be of proven design and make which have already been extensively used and type tested. Termination kits and jointing kits shall be pre-moulded type, taped type or heat shrinkable type. 33kV, 11kV, 6.6 kV &amp; 3.3kV grade joints and terminations shall be type tested as per IS:13573. Critical components used in cable accessories shall be of tested and proven quality as per relevant product specification/ESI specification. Kit contents shall be supplied from the same source as were used for type testing. The kit shall be complete with the tinned copper solderless crimping type cable lugs &amp; ferrule as per DIN standard suitable for aluminium compacted conductor cables.</p>		
3.05.02	<p>Straight through joint and termination shall be capable of withstanding the fault level for the system.</p>		
3.05.03	<p>1.1 KV grade Straight Through Joint shall be of proven design.</p>		
3.06.00	<p><b>Cable glands</b></p>		
3.06.01	<p>Cable shall be terminated using double compression type cable glands. Testing requirements of Cable glands shall conform to BS:6121 and gland shall be of robust construction capable of clamping cable and cable armour (for armoured cables) firmly without injury to insulation. Cable glands shall be made of heavy duty brass machine finished and nickel chrome plated. Thickness of plating shall not be less than 10 micron. All washers and hardware shall also be made of brass with nickel chrome plating Rubber components shall be of neoprene or better synthetic material and of tested quality. Cable glands shall be suitable for the sizes of cable supplied/erected.</p>		
3.07.00	<p><b>Cable lugs/ferrules</b></p>		
3.07.01	<p>Cable lugs/ferrules for power cables shall be tinned copper solderless crimping type suitable for aluminium compacted conductor cables. Cable lugs and ferrules for control cables shall be tinned copper type. The cable lugs for control cables shall be provided with insulating sleeve and shall suit the type of terminals provided on the equipments. Cable lugs and ferrule shall conform to relevant standard</p>		
3.08.00	<p><b>Trefoil clamps</b></p>		
3.08.01	<p>Trefoil clamps for single core cables shall be pressure die cast aluminum or fibre glass or nylon and shall include necessary fixing accessories like G.I. nuts, bolts, washers, etc. Trefoil clamps shall have adequate mechanical strength to withstand the forces generated by the peak value of maximum system short circuit current.</p>		
3.09.00	<p><b>Cable Clamps &amp; Ties</b></p>		
3.09.01	<p>The cable clamps/ties required to clamp multicore cables shall be of SS-316 material, 12mm wide, polyester coated ladder lock type. The clamps/ties shall have self locking arrangement &amp; shall have sufficient strength. The cable clamps/ties shall be supplied in finished individual pieces of suitable length to meet the site requirements.</p>		
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CLAUSE NO.	<b>TECHNICAL REQUIREMENTS</b> 		
3.10.00	<b>Receptacles</b>		
3.10.01	Receptacles boxes shall be fabricated out of MS sheet of 2mm thickness and hot dipped gavanised or of die-cast aluminium alloy of thickness not less than 2.5 mm. The boxes shall be provided with two nos. earthing terminals, gasket to achieve IP55 degree of protection, terminal blocks for loop-in loop-out for cable of specified sizes, mounting brackets suitable for surface mounting on wall/column/structure, gland plate etc. The ON-OFF switch shall be rotary type heavy duty, double break, AC23 category, suitable for AC supply. Plug and Socket shall be shrouded Die-cast aluminium. Socket shall be provided with lid safety cover. Robust mechanical interlock shall be provided such that the switch can be put ON only when the plug is fully engaged and plug can be withdrawn only when the switch is in OFF position. Also cover can be opened only when the switch is in OFF position. Wiring shall be carried out with 1100 V grade PVC insulated stranded aluminium/copper wire of adequate size. The Terminal blocks shall be of 1100 V grade. The Terminal blocks shall be of 1100 V grade made up of unbreakable polymide 6.6 grade with adequate current rating and size. The welding receptacles shall be provided with inbuilt ELCB rated for suitable mA sensitivity.		
3.12.00	<b>Cable Drum Lifting Jack</b>		
	The jack for cable drum lifting shall be of screw type with 10 ton capacity. The cable drum jacks shall be manufactured from fabricated steel. The spindles supplied with the cable drum jack shall be manufactured using BSEN-24 grade steel bar with locking collars. Jack nests shall be of SG cast steel. Cable drum jack supplied shall have undergone load testing and reports for the same shall be submitted. At least Two Nos. of jacks shall be supplied for NTPC use. Contractor has to make arrangements for his own jacks for cable reeling/unreeling under his scope of installation.		
3.13.00	<b>Galvanising</b>		
3.13.01	Galvanising of steel components and accessories shall conform to IS:2629 , IS4759 & IS:2633. Additionally galvanising shall be uniform, clean smooth, continuous and free from acid spots.		
3.13.02	The amount of zinc deposit over threaded portion of bolts, nuts, screws and washers shall be as per IS:1367 . The removal of extra zinc on threaded portion of components shall be carefully done to ensure that the threads shall have the required zinc coating on them as specified		
3.14.00	<b>Welding</b>		
3.14.01	The welding shall be carried out in accordance with IS:9595. All welding procedures and welders qualification shall also be followed strictly in line with IS:9595		
4.00.00	<b>INSTALLATION</b>		
4.01.00	<b>Cable tray and Support System Installation</b>		
4.01.01	Cables shall run in cable trays mounted horizontally or vertically on cable tray support system which in turn shall be supported from floor, ceiling, overhead structures, trestles, pipe racks, trenches or other building structures.		
4.01.02	Horizontally running cable trays shall be clamped by bolting to cantilever arms and vertically running cable trays shall be bolted to main support channel by suitable bracket/clamps on both top and bottom side rails at an interval of 2000 mm in general . For vertical cable risers/shafts cable trays shall be supported at an interval of 1000mm in general . Fixing of cable trays to cantilever arms or main support channel by welding shall not be accepted. Cable tray installation shall generally be carried out as per the approved guidelines/		
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CLAUSE NO.	<p style="text-align: center;"><b>TECHNICAL REQUIREMENTS</b></p> 		
	<p>recommendations for such analysis, i.e. frequency of test, norms of acceptance, quantity of oil to be withdrawn, and treatment of CT.</p>		
4.03.17	<p>The CT shall have provision for measurement of capacitance and tan delta as erected at site.</p>		
4.04.00	<p><b>VOLTAGE TRANSFORMERS (CVTs)</b></p>		
4.04.01	<p>Voltage transformers shall be of capacitor voltage divider type with electromagnetic unit.</p>		
4.04.02	<p>The CVTs shall be thermally and dielectrically safe when the secondary terminals are loaded with guaranteed thermal burdens.</p>		
4.04.03	<p>The electro-magnetic unit (EMU) shall comprise of compensating reactor, intermediate transformer, and protective and damping devices. The oil level indicator of EMU with danger level marking shall be clearly visible to maintenance personnel standing on ground.</p>		
4.04.04	<p>The secondaries shall be protected by HRC cartridge type fuses for all windings. In addition fuses shall also be provided for protection and metering windings for connection to fuse monitoring scheme. The secondary terminals shall be terminated on stud type non-disconnecting terminal blocks via the fuse inside the terminal box of degree of protection IP: 55. The access to secondary terminals shall be without the danger of access to high voltage circuit.</p>		
4.04.05	<p>The damping device shall be permanently connected to one of the secondary winding and shall be capable of suppressing ferro-resonance oscillations.</p>		
4.04.06	<p>CVTs shall be suitable for high frequency (HF) coupling for power line carrier communication. Carrier signals must be prevented from flowing into potential transformer (EMU) metering circuit by means of RF choke/reactor suitable for effective blocking the carrier signals over the entire frequency range of 40 to 500 kHz. HF terminal shall be brought out through a suitable bushing and shall be easily accessible for connection to the coupling filters of the carrier communication equipment. The HF terminal shall be provided with earthing link with fastener.</p>		
4.04.07	<p>A protective surge arrester/spark gap shall preferably be provided to prevent break down of insulation by incoming surges and to limit abnormal rise of terminal voltage of shunt capacitor, tuning reactor, RF choke, etc. due to short circuit in transformer secondary. The details of this arrangement (or alternative arrangement) shall be furnished by Contractor for Employer's review.</p>		
4.04.08	<p>The protection cores shall not saturate at about 1.5 times the rated voltage for a min. duration of 30 secs.</p>		
4.04.09	<p>The accuracy of metering core shall be maintained through the entire burden range upto 75VA for 400kV &amp; 220kV respectively, on all three windings without any adjustments during operations.</p>		
4.05.00	<p><b>MARSHALLING BOX</b></p>		
4.05.01	<p>Marshaling box shall conform to all requirements as given elsewhere in the specification. The wiring diagram for the interconnection of three phase instrument transformer shall be pasted inside the box in such a manner so that it is visible and it does not deteriorate with time. Terminal blocks in the marshaling box shall have facility for star/delta formation, short</p>		
<p style="text-align: center;"><b>NORTH KARANPURA STPP (3 X 660 MW) EPC PACKAGE</b></p>	<p style="text-align: center;"><b>TECHNICAL SPECIFICATIONS SECTION VI, PART-B BID DOC. NO.:CS-4410-001-2</b></p>	<p style="text-align: center;"><b>SUB SECTION B-14 SWITCHYARD</b></p>	<p style="text-align: center;"><b>Page 25 of 102</b></p>

CLAUSE NO.

**TECHNICAL REQUIREMENTS**



circuiting and grounding of secondary terminals. The box shall have enough terminals to wire all control circuits plus 20 spare terminals.

**4.06.00 PARAMETERS FOR CURRENT TRANSFORMERS**

**4.06.01 General Parameters**

- a) One minute power frequency withstand voltage between secondary terminal and earth 5 kV
- b) Partial discharge level 10 pico Coulombs max.
- c) Temperature rise As per IEC 60044
- d) Type of insulation Class A
- e) Number of cores Five (5): Details are given in table below.
- f) Rated frequency 50 Hz
- g) System neutral earthing Effectively earthed
- h) Installation Outdoor (up right)
- i) Seismic acceleration 0.3 g horizontal
- j) Number of terminals in marshalling box All terminals of control circuits wired upto marshalling box plus 20 terminals spare.

**4.06.02 400 kV Current Transformers (oil filled type)**

- a) Rated short time thermal current 50 kA for 1 sec.
- b) Rated dynamic current 125 kA (peak)
- c) Rated system voltage (Um) 420 kV (rms)
- d) Corona extinction voltage (min) 320 kV (rms)
- e) Radio Interference Voltage at 266 kV at frequency range 0.5 to 2 MHz (rms) 1000/micro volts
- f) Rated insulation levels
  - i. 1.2/50 micro-sec. impulse 1425 kVp
  - ii. 250/2500 micro-sec. switching surge withstand voltage (dry & wet) 1050 kVp
  - iii. One minute power frequency withstand voltage 630 kV rms

## SECTION-2

### EQUIPMENT SPECIFICATION

#### I. MARSHALLING KIOSK

#### **2.0 SCOPE**

This technical specification covers the requirements of design, manufacture, testing at works, packing and despatch of MARSHALLING KIOSKS. No deviation from the requirements specified in various clauses of this specification shall be allowed.

#### **2.1 SPECIFIC TECHNICAL REQUIREMENTS**

##### **Technical Parameters for Marshalling Kiosk**

- |                                   |   |  |
|-----------------------------------|---|--|
| a) Installation                   | : | Outdoor  |
| b) Design Ambient air temperature | : | 50°C   |
| c) Thickness of sheet steel       | : | At least 2mm Cold rolled/<br>2.5 mm Hot Rolled   |
| d) Degree of protection           | : | IP 55 as per IS 13947  |
| e) Paint Shade                    | : | Ext--Shade as per purchaser<br>Int-- Shade as per purchaser<br>(To be furnished at contract stage) |
| f) Control Wiring                 |   |  |
| Size of conductor                 | : | 2.5mm <sup>2</sup>   |
| Conductor                         | : | Stranded copper  |
| g) Space Heater Rating            | : | 240 V, At least 40 W   |
| h) No. of AC incoming feeders     |   |  |
| 3-phase, 4-wire                   | : | 2  |
| Changeover between incomers       | : | Automatic  |
| i) No. of AC outgoing feeders     |   |  |
| 3-phase, 4-wire                   | : | 32A - 6 Nos  |
| 1-phase, 2-wire                   | : | 16A - 10 Nos   |
| j) Terminal Block                 |   |  |
| Make                              | : | Elmex or approved Eqv.   |
| Earthlinks                        | : | As required  |

**Marshalling kiosk shall have distinct compartments for the following purposes as applicable:**

1) **Auxiliary Power Circuits:** The incoming and outgoing supplies shall be marshalled through cables terminated on Stud type terminal blocks. This compartment shall receive two incoming 415V, 3 phase, 63A/ 100 A AC supplies through 2 Nos TPN/ Four Pole MCB units with auto-changeover including timers and distribute 16A/ 32A, three phase outgoing supplies controlled by TP/ Four Pole MCBs. Also it shall distribute 240V, 10A/ 16A, single phase supplies to be controlled by SP/ DP MCBs to be drawn from above three-phase incomers. The terminal blocks used for above mentioned aux power incomer circuits shall be CBT110 of Elmex/ Eq for making loop-in loop-out connection of 3.5x35 sq mm connected cable (i.e., 16 Nos. CBT110 TBs + 20% spare are required for terminating incomer and loop cables) and for outgoing aux power circuits, terminal blocks shall be CBTM5 of Elmex/ Eq. 20% spare TBs of each type are also required to be mounted.

2) **Interlocking Circuits:** Non-disconnecting stud type terminal blocks CATM4 of Elmex/ Eq shall be provided in vertical formation for interlocking facilities.

**For 180 TBs -- Refer Table-1.**

3) Auxiliary circuit (Heater, Lamp and Socket) shall be provided.

4) **Receptacle:** Each MK shall be provided with 63A, 3-phase, 4 pin industrial grade receptacle with rotary switch.

5) **The Marshalling kiosk shall be supplied with fixing hardware/ foundation bolts.**

**2.2** Bidder must quote addition /deletion price for each and every type of the fitments viz., MCB, Contactors, Timer, Fuse, Switches, Terminal Blocks etc.

### **2.3 APPLICABLE STANDARDS**

STANDARD	TITLE
IS 13947(Part 1) IS 5039	Low voltage switchgear and control gear: General rules Distribution feeder pillars for voltages not exceeding 1000V ac / 1200V dc.
IS 8623	Specification for Low voltage Switchgear and Control gear Assemblies
IEC 60439	Factory built assemblies of low voltage switchgear and control gear
IS 13703 (All Parts):	Specification for Low-Voltage Fuses for Voltages not exceeding 1000 V AC and 1500 V DC - General Requirements

The equipment shall conform to the latest applicable Indian standard and their amendments. The equipment complying with any authorised international standard will also be considered if it ensures performance equivalent to or superior to Indian standards. In the event of supply of equipment conforming to any internationally recognised standard other than the Indian standards, the salient features of comparison shall be brought out.

### **2.4 SPECIFIC DESIGN & MANUFACTURING REQUIREMENTS**

Marshalling Kiosks shall generally conform to IS-5039, IS-8623 or IEC-60439, and/ or its latest amendments/ issues as applicable.

Marshalling Kiosk (MK) shall be of sheet steel and shall be dust, water and vermin proof. The thickness of sheet steel shall be 2 mm cold rolled or 2.5 mm hot rolled. The box shall be properly braced to prevent

wobbling. There shall be sufficient reinforcement to provide level surfaces, resistance to vibrations and rigidity during transportation and installation. Top of the boxes shall be sloped towards rear.

Marshalling kiosk may be front as well as rear opening type. The Marshalling Kiosks shall be **free standing or pedestal-mounting type**. The enclosures shall be provided with double hinged doors and /or removable covers with padlocking arrangements. The distance between two hinges shall be adequate to ensure uniform sealing pressure against atmosphere. All doors, removable covers and plates shall be gasketed all round with suitable profiled EPDM/Neoprene gaskets. The gasket shall be tested in presence of purchaser as per approved quality plan. All gasketed surfaces shall be smooth, straight and reinforced if necessary to minimize distortion and to make a tight seal. The quality of gaskets shall be such that it does not get damaged/ cracked during ten years of operation of the equipment or its major overhaul whichever is earlier. Ventilating louvers, if provided, shall be with screens and filters. The screen shall be fine wire mesh made of brass.

All housings shall be designed for the entry of cables from the bottom by means of weatherproof and dust-proof connections. MK shall be designed with generous clearance to avoid interference between the wiring entering from below and any terminal blocks or accessories mounted within the housing. A suitably gasketed undrilled cable gland plate projecting at least 150mm above the base of the housing shall be provided for this purpose. The gland shall project at least 25 mm above the gland plate to prevent entry of moisture in the cable crutch. **The gland plate meant for each section shall be split in to two parts. The minimum cut-out depth available shall be 200mm for control cable entry.**

Each MK shall be provided with a 15A, 240 V AC, 2 -pole, 3-pin industrial grade receptacle with switch. For incoming supply, SPN MCB of suitable rating shall be provided. Illumination of each compartment of each MK shall be with suitable number of door-operated 20W fluorescent tube or 15 watts CFL. Suitable 240 V, single phase, 50 Hz AC heaters with thermostats controlled by switch and fuse shall be provided to maintain inside temperature 10 deg. above the ambient. The fittings shall be complete with switchfuse unit and switching of the fittings shall be controlled by the respective panel door switch. All control switches shall be of rotary switch type and Toggle/ Piano switches shall not be accepted.

Each MK shall be provided with two Earthing pads to receive 75 mm x12 mm ~~or 50mm x 6mm~~ GS flat. The connection shall be bolted type with 2 bolts per pad. The hinged door shall be provided with danger plate, and internal wiring diagram pasted on inside of the door. The front label shall be on a 3 mm thick plastic plate white letters engraved on black background.

## 2.5 TERMINAL BLOCKS AND WIRING

Terminal blocks shall be 1100V grade and have continuous rating to carry the maximum expected current on the terminals. These shall be moulded, complete with insulating barriers, **stud type** terminals, complete with washers, nuts and lock nuts.

The terminal shall be such that maximum contact area is achieved when a cable is terminated. The terminal shall have a locking characteristic to prevent cable from escaping from terminal clamp unless it is done intentionally. The conducting part in contact with the cable shall preferably be tinned or silver-plated. However, nickel-plated copper or zinc-plated steel shall also be acceptable.

The terminal blocks shall be of extensible design. The terminal blocks shall have locking arrangement to prevent its escape from the mounting rails. Terminal block design shall include a white-fiber marking strip. Markings on terminal strips shall correspond to numbers on wiring diagrams. The terminal blocks shall be fully enclosed with removable covers of transparent, non-deteriorating type plastic material. Insulating barriers shall be provided between the terminal blocks. These barriers shall not hinder the operator from carrying out the wiring without removing barriers. The arrangement shall be such that it is possible to safely connect or disconnect terminals on the live circuits and replace fuse links when the cabinet is live. Unless otherwise specified, terminal blocks shall be suitable for connecting minimum of two of 2.5 sq. mm copper flexible conductors on each side.

- a) All circuits except CT/CVT circuits      Minimum of two of 2.5 sq. mm copper

flexible on each side.

- b) All CT/CVT circuits Minimum of four of 2.5-sq. mm copper flexible on each side.

Space shall be provided for mounting 20% spare terminal blocks on each marshalling box. There shall be a minimum clearance of 250 mm between the first/ bottom row of terminal blocks and the associated cable gland plate. Also the clearance between two adjacent rows of terminal blocks shall be a minimum of 150 mm.

All internal wiring shall be carried out with single core, stranded copper conductor wires with PVC insulation and shall be flame, vermin and rodent proof.

The minimum size of stranded copper conductor used for internal wiring shall be 2.5 sq. mm .

All internal wiring shall be securely supported, neatly arranged, readily accessible and connected to equipment terminals and terminal blocks. Wiring gutters /troughs shall be provided for this purpose and for interlocking TBs as well.

Wire termination shall be made with solder less crimping type of tinned copper lugs, which firmly grip the conductor and insulation. Insulated sleeves shall be provided at all the wire terminations.

Engraved/ painted core identification plastic ferrules marked to correspond with panel wiring diagram numbering shall be fitted at both ends of each wire. Ferrules shall fit tightly on wires and shall not fall off when the wire is disconnected from the terminal blocks.

## **2.6 TESTING**

### **TYPE TESTS**

The Marshalling Kiosks shall have been subjected to type test for the IP 55 degree of protection of enclosure as per IS 13947. The bidder shall furnish the type test report at contract stage. In case the Test reports are more than five years old on the date of bid opening, fresh testing has to conducted and report shall be submitted. The type test for degree of protection of enclosure shall be preceded and followed by following tests:

- a) 2.5 kV withstand for one minute
- b) Insulation Resistance
- c) Functional tests

### **ROUTINE TESTS**

The Marshalling Kiosks shall be subjected to following routine tests, as per IS 5039:

- a) 2.5 kV rms. for one minute test
- b) Check for wiring
- c) Visual and dimensional check
- d) Checking for paint.

## II. CT AND VT JUNCTION BOX

### 2.0 SCOPE

This technical specification covers the requirements of design, manufacture, testing at works, packing and despatch of CT and VT JUNCTION BOX. No deviation from the requirements specified in various clauses of this specification shall be allowed.

### 2.1 SPECIFIC TECHNICAL REQUIREMENTS

#### Technical Parameters for Junction Box

- k) Installation : Outdoor
- l) Design Ambient air temperature : 50°C
- m) Thickness of sheet steel : At least 2.0 mm Cold Rolled/  
2.5mm Hot rolled
- n) Degree of protection : IP 55 as per IS 13947
- o) Paint Shade : Ext--Shade as per purchaser  
Int-- Shade as per purchaser  
(To be furnished at contract stage)
- p) Control Wiring  
Size of conductor : 2.5mm<sup>2</sup>  
Conductor : Stranded copper
- q) Space Heater Rating : 240 V, At least 40 W
- r) Terminal Block  
Make : Elmex or approved Eqv.  
Earthlinks : As required
- s) **16A HRC fuse in VTJB-N75** : **27 Nos. in each VT JB duly wired to TBs as shown in Table-3.**

### 2.2 Following different type of Junction Boxes are proposed

TABLE - I

S. No.	Type	No of TBs	Type of TBs
1	JB-N130	130	Stud Type, Non Disconnecting, CATM4/ Eq
2	JB-N90	90	Stud Type, Non Disconnecting CATM4/ Eq
3	JB-N75	75	Stud Type, Non Disconnecting CATM4/ Eq

S. No.	Type	No of TBs	Type of TBs
4	JB-N45	45	Stud Type, Non Disconnecting CATM4/ Eq
5	JB-N30	30	Stud Type, Non Disconnecting CATM4/ Eq
6	JB-D130	130	Stud Type, Disconnecting CATDM4/ Eq 26 Nos. & Non-Disconnecting CATM4/ Eq 104 Nos.
7	JB-D90	90	Stud Type, Disconnecting CATDM4/ Eq
8	JB-D75	75	Stud Type, Disconnecting CATDM4/ Eq
9	JB-D45	45	Stud Type, Disconnecting CATDM4/ Eq
10	JB-D30	30	Stud Type, Disconnecting CATDM4/ Eq

Junction Box shall have terminals strips in vertical formation exclusively used for shorting the CT & VT secondary circuits. The type and number of TBs shall be as per selection *Table-I* above. Refer *TB chart (Table – 2A, 2B, 3) for numbering methodology and dispositioning of TBs.*

Auxiliary circuit (Heater, Lamp and Socket) shall be provided.

**The Junctions Boxes shall be supplied alongwith fixing hardware/ bolts etc.**

- 2.3 Bidder must quote addition /deletion price for each and every type of the fitments viz., Fuse, Switches, Terminal Blocks etc.

#### 2.4 APPLICABLE STANDARDS

STANDARD	TITLE
IS 13947(Part 1) IS 5039	Low voltage switchgear and control gear: General rules Distribution feeder pillars for voltages not exceeding 1000V ac / 1200V dc.
IS 8623 IEC 60439	Specification for Low voltage Switchgear and Control gear Assemblies Factory built assemblies of low voltage switchgear and control gear
IS 13703 (All Parts):	Specification for Low-Voltage Fuses for Voltages not exceeding 1000 V AC and 1500 V DC - General Requirements

The equipment shall conform to the latest applicable Indian standard and their amendments. The equipment complying with any authorised international standard will also be considered if it ensures performance equivalent to or superior to Indian standards. In the event of supply of equipment conforming to any internationally recognised standard other than the Indian standards, the salient features of comparison shall be brought out.

## 2.5 SPECIFIC DESIGN & MANUFACTURING REQUIREMENTS

Junction Box shall generally conform to IS-5039, IS-8623 or IEC-60439, and/ or its latest amendments/ issues as applicable.

Junction Box (JB) shall be of sheet steel and shall be dust, water and vermin proof. The thickness of sheet steel shall be 2 mm cold rolled/ 2.5mm Hot Rolled. The box shall be properly braced to prevent wobbling. There shall be sufficient reinforcement to provide level surfaces, resistance to vibrations and rigidity during transportation and installation.

The JB shall be ~~structure~~/ pedestal-mounted type. They shall have hinged doors with padlocking arrangement. All doors, removable covers and plates shall be gasketed all round with suitable profiled EPDM/Neoprene gaskets. The gasket shall be tested in presence of purchaser as per approved quality plan. All gasketed surfaces shall be smooth, straight and reinforced if necessary to minimize distortion and to make a tight seal. The quality of gaskets shall be such that it does not get damaged/ cracked during ten years of operation of the equipment or its major overhaul whichever is earlier. Ventilating louvers, if provided, shall be with screens and filters. The screen shall be fine wire mesh made of brass.

The enclosures shall be provided with hinged doors and /or removable covers with padlocking arrangements. The distance between two hinges shall be adequate to ensure uniform sealing pressure against atmosphere.

All housings shall be designed for the entry of cables from the bottom by means of weatherproof and dust-proof connections. JB shall be designed with generous clearance to avoid interference between the wiring entering from below and any terminal blocks or accessories mounted within the housing. A suitable undrilled cable gland plate projecting at least 150mm above the base of the housing shall be provided for this purpose. The gland shall project at least 25 mm above the gland plate to prevent entry of moisture in the cable crutch.

Each JB shall be provided with a 15A, 240 V AC, 2 -pole, 3-pin industrial grade receptacle with switch. For incoming supply, SPN MCB of suitable rating shall be provided. Illumination of each compartment of each JB shall be with door-operated 20W fluorescent tube or 15 watts CFL. Suitable 240 V, single phase, 50 Hz ac heaters with thermostats controlled by switch and fuse shall be provided to maintain inside temperature 10 deg. above the ambient. The fittings shall be complete with switch fuse unit and switching of the fittings shall be controlled by the respective panel door switch. All control switches shall be of rotary switch type and Toggle/ Piano switches shall not be accepted.

Each JB shall be provided with two earthing pads to receive 75 mm x12 mm or 50mm x 6mm GS flat. The connection shall be bolted type with 2 bolts per pad. The hinged door shall be provided with danger plate, and internal wiring diagram pasted on inside of the door. The front label shall be on a 3 mm thick plastic plate white letters engraved on black background.

## 2.6 TERMINAL BLOCKS AND WIRING

Terminal blocks shall be 1100V grade and have continuous rating to carry the maximum expected current on the terminals. These shall be moulded, complete with insulating barriers, **stud type** terminals, complete with washers, nuts and lock nuts.

The terminal shall be such that maximum contact area is achieved when a cable is terminated. The terminal shall have a locking characteristic to prevent cable from escaping from terminal clamp unless it is done intentionally. The conducting part in contact with the cable shall preferably be tinned or silver-plated. However, nickel-plated copper or zinc-plated steel shall also be acceptable.

The terminal blocks shall be of extensible design. The terminal blocks shall have locking arrangement to prevent its escape from the mounting rails. Terminal block design shall include a white-fiber marking strip.

Markings on terminal strips shall correspond to numbers on wiring diagrams. The terminal blocks shall be fully enclosed with removable covers of transparent, non-deteriorating type plastic material. Insulating barriers shall be provided between the terminal blocks. These barriers shall not hinder the operator from carrying out the wiring without removing barriers. The arrangement shall be such that it is possible to safely connect or disconnect terminals on the live circuits and replace fuse links when the cabinet is live.

Terminal blocks for cables going to a common destination shall as far as possible be grouped to each other. All input and output terminals of each control cubicle shall be tested for surge withstand capability in accordance with the relevant IEC publications, in both longitudinal as well as transverse modes. The Supplier shall also provide all necessary filtering, surge protection, interface relays and any other measures necessary to achieve an impulse withstand level at the cable interfaces of the equipment.

Space shall be provided for mounting 20% spare terminal blocks on each junction box. There shall be a minimum clearance of 250 mm between the first/ bottom row of terminal blocks and the associated cable gland plate. Also the clearance between two adjacent rows of terminal blocks shall be a minimum of 150 mm (end to end).

All internal wiring shall be carried out with single core, stranded copper conductor wires with PVC insulation and shall be flame, vermin and rodent proof.

The minimum size of stranded copper conductor used for internal wiring shall be 2.5-sq. mm

All internal wiring shall be securely supported, neatly arranged, readily accessible and connected to equipment terminals and terminal blocks. Wiring gutters /troughs shall be provided for this purpose and for CT/ VT circuits as well.

Wire termination shall be made with solder less crimping type of tinned copper lugs, which firmly grip the conductor and insulation. Insulated sleeves shall be provided at all the wire terminations.

Engraved/ painted core identification plastic ferrules marked to correspond with panel wiring diagram numbering shall be fitted at both ends of each wire. Ferrules shall fit tightly on wires and shall not fall off when the wire is disconnected from the terminal blocks.

## **2.7 TESTING**

### **TYPE TESTS**

The Junction Boxes shall have been subjected to type test for the IP 55 degree of protection of enclosure as per IS 13947. The bidder shall furnish the type test report at contract stage. In case the Test reports are more than five years old on the date of bid opening, fresh testing has to be conducted and report shall be submitted. The type test for degree of protection of enclosure shall be preceded and followed by following tests:

- d) 2.5 kV withstand for one minute
- e) Insulation Resistance
- f) Functional tests

### **ROUTINE TESTS**

The Junction Box shall be subjected to following routine tests, as per IS 5039:

- e) 2.5 kV rms. for one minute test
- f) Check for wiring
- g) Visual and dimensional check
- h) Checking for paint.

**TABLE-1**  
**TB CHART FOR MK-180R**

<b>TB1-</b>	<b>TB2-</b>	<b>TB3-</b>	<b>TB4-</b>	<b>TB5-</b>
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9
10	10	10	10	10
11	11	11	11	11
12	12	12	12	12
13	13	13	13	13
14	14	14	14	14
15	15	15	15	15
16	16	16	16	16
17	17	17	17	17
18	18	18	18	18
19	19	19	19	19
20	20	20	20	20
21	21	21	21	
22	22	22	22	
23	23	23	23	
24	24	24	24	
25	25	25	25	
26	26	26	26	
27	27	27	27	
28	28	28	28	
29	29	29	29	
30	30	30	30	
31	31	31	31	
32	32	32	32	
33	33	33	33	
34	34	34	34	
35	35	35	35	
36	36	36	36	
37	37	37	37	
38	38	38	38	
39	39	39	39	
40	40	40	40	

	1S1R		2S1R		3S1R		4S1R		5S1R
	1S2R		2S2R		3S2R		4S2R		5S2R
	1S3R		2S3R		3S3R		4S3R		5S3R
	1S4R		2S4R		3S4R		4S4R		5S4R
					3S5R		4S5R		5S5R
	1S1Y		2S1Y		3S1Y		4S1Y		5S1Y
	1S2Y		2S2Y		3S2Y		4S2Y		5S2Y
	1S3Y		2S3Y		3S3Y		4S3Y		5S3Y
	1S4Y		2S4Y		3S4Y		4S4Y		5S4Y
					3S5Y		4S5Y		5S5Y
	1S1B		2S1B		3S1B		4S1B		5S1B
	1S2B		2S2B		3S2B		4S2B		5S2B
	1S3B		2S3B		3S3B		4S3B		5S3B
	1S4B		2S4B		3S4B		4S4B		5S4B
					3S5B		4S5B		5S5B
					AS1R				
					AS2R				
					AS1Y				
					AS2Y				
					AS1B				
					AS2B				

Note: The disposition of Dis-connecting type TBs shown here is tentative only. It may change during the detailed engineering stage.

	1S1R		2S1R		3S1R		4S1R		5S1R
	1S2R		2S2R		3S2R		4S2R		5S2R
	1S3R		2S3R		3S3R		4S3R		5S3R
	1S4R		2S4R		3S4R		4S4R		5S4R
	1S1Y		2S1Y		3S1Y		4S1Y		5S1Y
	1S2Y		2S2Y		3S2Y		4S2Y		5S2Y
	1S3Y		2S3Y		3S3Y		4S3Y		5S3Y
	1S4Y		2S4Y		3S4Y		4S4Y		5S4Y
	1S1B		2S1B		3S1B		4S1B		5S1B
	1S2B		2S2B		3S2B		4S2B		5S2B
	1S3B		2S3B		3S3B		4S3B		5S3B
	1S4B		2S4B		3S4B		4S4B		5S4B
					AS1R				
					AS2R				
					AS1Y				
					AS2Y				
					AS1B				
					AS2B				

**TABLE-3**  
**TB CHART FOR JB-N75**

TB-X1				TB-X4		
1AR	N	1	FUZE	N	1	
1BR	N	2		N	2	
1NR	N	3	FUZE	N	3	
	N	4		N	4	
1AY	N	5	FUZE	N	5	
1BY	N	6		N	6	
1NY	N	7	FUZE	N	7	
	N	8		N	8	
1AB	N	9	FUZE	N	9	
1BB	N	10		N	10	
1NB	N	11	FUZE	N	11	
	N	12		N	12	
	N	13				

TB-X2				TB-X5		
2AR	N	1	FUZE	N	1	
2BR	N	2		N	2	
2NR	N	3	FUZE	N	3	
	N	4		N	4	
2AY	N	5	FUZE	N	5	
2BY	N	6		N	6	
2NY	N	7	FUZE	N	7	
	N	8		N	8	
2AB	N	9	FUZE	N	9	
2BB	N	10		N	10	
2NB	N	11	FUZE	N	11	
	N	12		N	12	
	N	13				

TB-X3				TB-X6		
3AR	N	1	FUZE	N	1	
3BR	N	2		N	2	
3NR	N	3	FUZE	N	3	
	N	4		N	4	
3AY	N	5	FUZE	N	5	
3BY	N	6		N	6	
3NY	N	7	FUZE	N	7	
	N	8		N	8	
3AB	N	9	FUZE	N	9	
3BB	N	10		N	10	
3NB	N	11	FUZE	N	11	
	N	12		N	12	
	N	13				

<b>PROJECT: 400/220kV Switchyard for North Karanpura Super TPP (3x660MW)</b>
<b>CUSTOMER: NTPC LTD.</b>
<b>Section-3: Project Details and General Specification</b>
<b>REV.00</b>

## SECTION- 3

### PROJECT DETAILS AND GENERAL SPECIFICATIONS

#### 3.0 GENERAL

This section stipulates the General Technical Requirements under the Contract and will form an integral part of the Technical Specification.

The provisions under this section are intended to supplement general requirements for the materials, equipment and services covered under other sections of tender documents and are not exclusive. However in case of conflict between the requirements specified in this section and requirements specified under other sections, the requirements specified under respective sections shall prevail.

#### 3.1 PROJECT DETAILS

S. No.	Particular	Details
a)	Customer	NTPC Ltd.
b)	Engineer/Consultant/ Inspector	NTPC Ltd.
c)	Project Title	North Karanpura Super Thermal Power Project (3x660 MW) : 400/220kV Switchyard at NKSTPP end & 220kV Sub-station at Mine end
d)	Project Location	Place: Near Tandwa town District: Hazaribagh & Chatra State: Jharkhand
e)	Latitude & Longitude	<b>400/220kV S/s at NKSTPP:</b> North: 23°50' to 23°52' and East: 84°59' to 85°2'  <b>220kV S/s at Chatti Bariatu &amp; Kerandari-A mine:</b> North: 23°52'35" and East: 85°05'25"
f)	Nearest Railway Station	Khalari Railway Station Ranchi-Garhwa section of Eastern Railways
g)	Distance of project location from the Railway station	40 Km (approx.)
h)	Nearest Major Town	Hazaribagh city
i)	Distance of the town from the project site	50 Km.
j)	Nearest commercial airport	Ranchi
k)	Distance of airport from the project site	150 Km
<b><u>SITE CONDITIONS</u></b> (for design purposes)		
a)	Design ambient temperature	50°C
b)	Maximum Relative humidity	95 %
c)	Height above mean sea level	Less than 1000 meters
d)	Pollution Severity	Heavily polluted (With Coal dust & Fly ash) and Highly Corrosive environment.
e)	Criteria for Wind Resistant design of structures and equipment	Standard Applicable - IS 875 (Part 3) 1987
f)	Basic Wind speed "Vb" at ten	39 m/ sec

<b>PROJECT: 400/220kV Switchyard for North Karanpura Super TPP (3x660MW)</b>	
<b>CUSTOMER: NTPC LTD.</b>	
<b>Section-3: Project Details and General Specification</b>	<b>REV.00</b>

	meters above the mean ground level.	
<b>g)</b>	Category of terrain	Cat -2
<b>h)</b>	Risk Coefficient "K1"	1.06

**3.1.1 SYSTEM PARAMETERS:**

S. No.	Parameters	400 kV	220 kV
1	Highest system voltage	420 kV rms	245 kVrms
2	Lightning Impulse voltage	±1425kVp	± 1050kVp
3	Switching impulse voltage	±1050kVp	-
4	Power frequency withstand for 1 min (rms)	630 kV(rms)	460 kV(rms)
5	Max. fault level (1 sec.)	50 kA	40kA
6	Minimum creepage distance	10500 mm	6125mm

**3.1.2 AUXILIARY POWER:**

S. No.	Nominal Connection Voltage	Variations in Voltage	Frequency	Phase	Neutral
1	415V	±10%	50 (+3% -5%)	3Phase , 4 Wire	Solidly Earthed
2	240V	±10%	50 (+3% -5%)	1 phase	Solidly Earthed

Combined variation of voltage and frequency shall be + 10%. Design fault level of 415V system shall be restricted to 50kA rms for 1 second.

The operational limits for variation of DC voltage are (+) 10% to (-) 15%.

**3.1.3 The various minimum heights of the switchyard shall be as given below from plinth level:**

Voltage	Equipment /1st Level	2nd Level	3rd Level	Peak
220kV	6000mm	12000mm	17000mm	8500mm
400kV	8000mm	16000mm	23000mm	8500mm

The minimum vertical distance from the bottom of the lowest porcelain part of the bushing, porcelain enclosures or support insulators to the bottom of the equipment structure, where it rests on the foundation pad shall be 2550mm.

The minimum height of intermediate gantry tower for 400kV wherever required shall be 25 m and the peak (s) shall be of 8.5 m.

**3.1.4 The minimum clearances for 400kV & 220 kV switchyards shall be as given below:**

	<b>400kV</b>	<b>220kV</b>
Phase to earth clearance	3500 mm	2100mm
Phase to phase clearance	4000 mm	2100mm
Section clearance	6500 mm	5000mm

**3.2 INSTRUCTION TO BIDDERS:**

The bidders shall submit the technical requirements, data and information as per the technical data sheets, provided in Section-4.

The bidders shall furnish catalogues, engineering data, technical information, design documents, drawings etc fully in conformity with the technical specification.

It is recognized that the bidders may have standardized on the use of certain components, materials, processes or procedures different than those specified herein. Alternate proposals offering similar

equipment based on the manufacturer's standard practice will also be considered provided such proposals meet the specified designs, standard and performance requirements and are acceptable to the Purchaser. Unless brought out clearly, the Bidder shall be deemed to conform to this specification scrupulously. All deviations from the specification shall be clearly brought out in the respective schedule of deviations. Any discrepancy between the specification and the catalogues or the bid, if not clearly brought out in the schedule, will not be considered as valid deviation.

Except for lighting fixtures, wherever a material or article is specified or defined by the name of a particular brand, Manufacturer or Vendor, the specific name mentioned shall be understood as establishing type, function and quality and not as limiting competition. For lighting fixtures, makes shall be as defined in Section-Lighting System.

Equipment furnished shall be complete in every respect with all mountings, fittings, fixtures and standard accessories normally provided with such equipment and/ or needed for erection, completion and safe operation of the equipment as required by applicable codes, though they may not have been specifically detailed in the Technical Specifications unless included in the list of exclusions. Materials and components not specifically stated in the specification but which are necessary for commissioning and satisfactory operation of the switchyard unless specifically excluded shall be deemed to be included in the scope of the specification and shall be supplied without any extra cost. All similar standard components/parts of similar standard equipment under supply shall be inter-changeable with one another.

The bidder shall supply type tested (including special tests as per tech. specification) equipment and materials. The test reports shall be furnished by the bidder along with equipment/ material drawings. In the event of any discrepancy in the test reports, (i.e., if any test report is not acceptable due to any design/ manufacturing changes or due to non-compliance with the Technical Specification and/ or applicable standard), the tests shall be carried out without any additional cost implication to the BHEL. BHEL reserves the right to get any or all type/tests conducted/repeated.

### **3.3 CODES AND STANDARDS**

The supplier is required to follow local statutory regulations stipulated in the latest amended Electricity Supply Act 1948 and Indian Electricity Rules 1956 (latest), and other local rules and regulations.

The equipment to be furnished under this specification shall conform to latest issue with all amendments of standards and/ or codes specified under respective section heads. The standards mentioned in the specification are not mutually exclusive or complete in them, but intended to complement each other. The supplier shall also note that list of standards presented in this specification is not complete. Whenever necessary the list standards shall be considered in conjunction with specific IS/IEC. When the specified requirements stipulated in the specifications exceed or differ than those required by the applicable standards, the stipulation of the specification shall take precedence.

Other internationally accepted standards which ensure equivalent or better performance than specified in the standards referred under section shall also be acceptable.

In case governing standards for the equivalent for the equipment is different from IS/ IEC, the salient points of difference shall be clearly brought out in additional information schedule along with English language version of standard of relevant extract of the same. The equipment conforming to standards other than IS/ IEC shall be subject to Purchaser's approval.

The full names of the codes and standards mentioned in abbreviations under various equipment heads are as follows:

BS                      British Standards  
IEC/ CISPR          International Electro-technical Commission

IS	Bureau of Indian Standards
ISO	International Organization for Standards
NEMA	National Electric Manufacturers Association

### **3.4 SERVICES TO BE PERFORMED BY THE EQUIPMENT BEING FURNISHED**

The 400 kV system is being designed to limit the power frequency over voltage of 1.5 p.u. and the switching surge over voltage to 2.5 p.u. In 400 kV system the initial value of temporary over voltage could be 2.0 p.u. for 1-2 cycles. All the equipment/materials covered in this specification shall perform all its function satisfactorily without undue strain, restrike etc. under such over voltage conditions. All equipment shall also perform satisfactorily under various other electrical, electromechanical and meteorological conditions of the site of installation. All equipment shall be able to withstand all external and internal mechanical, thermal and electromechanical forces due to various factors like wind load, temperature variation, ice & snow, (not applicable for this project) short circuit etc for the equipment .

The equipment shall also comply with the following:

- a) All equipments shall be suitable for hot line washing.
- b) To facilitate erection of equipment, all items to be assembled at site shall be "match marked".
- c) Piping, if any, between equipment control cabinet or operating mechanism to marshalling box of the equipment shall bear proper identification to facilitate the connection at site.
- d) All equipment shall be supplied with necessary inter-pole cabling, and its cost shall be included in the cost of equipment.

### **3.5 ENGINEERING DATA**

#### **3.5.1 Drawings**

All drawings submitted by the supplier including those submitted at the time of bid shall be in sufficient detail to indicate the type, size, arrangement, material description, Bill of Materials, weight of each component, break-up for packing and shipment, the external connections, fixing arrangement required. The dimensions required for installation and interconnections with other equipment and materials, clearances and spaces required for installation and interconnections between various portions of equipment and any other information specifically requested in the specifications.

Each drawing submitted by the Contractor (including those of sub-vendors) shall bear a title block at the right hand bottom corner with clear mention of the name of the Employer, the system designation, the specifications title, the specification number, the name of the Project, drawing number and revisions. If standard catalogue pages are submitted, the applicable items shall be indicated therein. All titles, noting, markings and writings on the drawing shall be in English. All the dimensions should be in metric units.

After the approval of the drawings, further work by the Contractor shall be in strict accordance with these drawings and no deviation shall be permitted without the written approval of the Purchaser, if so required.

The review of these data by the purchaser will cover only general conformance of the data to the specification and documents, interfaces with the equipment provided under specification, external connections and of the dimensions which might affect plan layout. This review by the purchaser may not indicate a thorough review of the dimensions, quantities and details of the equipment, material, any devices or items indicated or the accuracy of the information submitted. This review and/or approval by the purchaser shall not be considered by the contractor, as limiting any of his responsibilities and liabilities for mistakes and deviations from the requirements, specified under these specifications and documents.

All manufacturing and fabrication work in connection with the equipment prior to the approval of the drawings shall be at the Contractor's risk. The Contractor may make any changes in the design which are necessary to make the equipment conform to the provisions and intent of the Contract and such changes will again be subject to approval by the Purchaser. Approval of Contractor's drawing or work by the Purchaser shall not relieve the contractor of any of his responsibilities and liabilities under the Contract.

All engineering data submitted by the contractor after final process including review and approval by the purchaser shall form part of the contract document and the entire work performed under these specifications shall be performed in strict conformity, unless otherwise expressly requested by the purchaser in writing.

### **3.5.2 Approval Procedure**

The following procedure for submission and review/approval of the drawings, data, reports, information, etc. shall be followed by Contractor:

- a. All data/information furnished by Vendor in the form of drawings, documents, Catalogues or in any other form for NTPC's information/interface and/or review and approval are referred by the general term "drawings".
- b. The 'Master drawings list' indicating titles, Drawing Number, Date of submission and approval etc. shall be finalised mutually between Contractor and Employer before the award of contract. This list shall be updated if required at suitable interval during detailed engineering.
- c. All drawings (including those of subvendor's) shall bear at the right hand bottom corner the 'title plate' with all relevant information duly filled in. The Contractor shall furnish this format to his subvendor along with his purchase order for subvendor's compliance.
- d. Contractor shall submit all the drawings in five (5) copies for review of Employer. Employer shall forward their comments within four (4) weeks of receipt of drawings.
- e. Upon review of each drawings, depending on the correctness and completeness of the drawings, the same will be categorised and approval accorded in one of the following categories:

CATEGORY I	Approved
CATEGORY II	Approved subject to incorporation of comments/modification as noted. Resubmit revised drawing incorporating the comments
CATEGORY III	Not approved. Resubmit revised drawings for Approval after incorporating comments/modifications as noted
CATEGORY IV	For information and records

- f. Contractor shall resubmit the drawings approved under Category II, III within one (1) week of receipt of comments on the drawings, incorporating all comments. Every revision of the drawing shall bear a revision index wherein such revisions shall be highlighted in the form of description or marked up in the drawing identifying the same with relevant revision number enclosed in a triangle (e.g 1.2.3. etc.).
- g. In case Contractor does not agree with any specific comment, he shall furnish the explanation for the same to Employer consideration. In all such cases Contractor shall necessarily enclose explanations along with the revised drawing (taking care of balance comments) to avoid any delay and/or duplication in review work.
- h. It is the responsibility of the Contractor to get all the drawings approved in the Category I or IV (as the case may be) and complete engineering activities within the agreed schedule. Any delay

arising out of submission and modification of drawings shall not alter the contract completion schedule.

- i. Contractor shall not make any changes in the portion of the drawing other than those commented. If changes are required to be made in the portions already approved, the Contractor shall resubmit the drawings identifying the changes (along with reasons for changes) for Employer's review and approval. **Drawings resubmitted shall show clearly the portions where the same are revised marking the relevant revision numbers and Employer shall review only such revised portion of documents.**
- j. Approval of drawings will not in any way relieve the Contractor of his obligations of furnishing the equipment in accordance with the specification and shall not prevent subsequent rejection if such equipment is later found to be defective.

### **3.5.3 Erection Drawings.**

- a. Contractor shall furnish erection drawings for the guidance or commencement of erection or the first shipment, whichever is earlier. These shall generally comprise of fabrication/assembly drawings, various component/part details drawing, assembly, clearance data requirements, etc. The drawings shall contain details of components/ equipment with identification number, match marks, bill of materials, assembly procedures etc.
- b. For all major equipment apart from above details, assembly sequence and instructions with check-lists shall be furnished in the form of erection manuals.

### **3.5.4 Instruction Manual**

- a. The Contractor shall submit to the Employer preliminary instruction manuals for all the equipments for review. The final instructions manuals incorporating Employer's comments and complete in all respect shall be submitted at least sixty (60) days before the first shipment of the equipment. The instruction manuals shall contain full details and drawings of all the equipments, the transportation, storage, installation, testing, operation and maintenance procedures, etc. separately for each component/equipment along with log record format. These instruction manuals shall be submitted in five (5) copies for approval.
- b. If after commissioning and initial operation of the plant, the instruction manuals require any modifications/additions/changes, the same shall be incorporated and the updated final instruction manuals shall be submitted.
- c. The operating and maintenance instructions together with drawings (other than shop drawings) of the equipment, as completed, shall have sufficient details to enable the Employer to maintain, dismantle, reassemble and adjust all parts of the equipment. They shall give a step by step procedure for all operations likely to be carried out during the life of the plant/equipment, including erection, testing, commissioning, operation, maintenance dismantling and repair. Each manual shall also include a complete set of approved drawings together with performance/rating curves of the equipment and test certificates, wherever applicable. The contract shall not be considered completed for purpose of taking over until such instructions and drawings have been supplied to the Employer.
- d. A separate section of the manual shall be for each size/type of equipment and shall contain a detailed description of construction and operation, together with all relevant pamphlets.
- e. The manuals shall include the following
  - a) List of spare parts along with their drawing and catalogues and procedure for ordering spares.
  - b) Lubrication Schedule including charts showing lubrication checking, testing and replacement procedure to be carried daily, weekly, monthly & at longer intervals to ensure trouble free operation.

- f. Where applicable, fault location charts shall be included to facilitate finding the cause of mal-operation or break down.
- g. A collection of the manufacturer's standard leaflets will not accepted to be taken as a compliance of this clause. The manual shall be specifically compiled for the concerned project.

**3.5.5 Final Submission of drawings and documents:**

The Contractor shall furnish the following after approval of all drawings /documents and test reports:

- a. List of drawings bearing the Employer's and Contractor's drawing number.
- b. Two (2) bound sets alongwith 4 CD-ROMs of all drawing.
- c. All documents/designs in two (2) copies as noted above.
- d. Contractor shall also furnish six (6) bound sets of all as-built drawings including the list of all as-built drawings bearing drawing numbers. The Contractor shall also furnish two (2) sets of CD-ROMs/ DVD/Portable hard disk of all as-built drawings as decided by the Employer.
- e. The Contractor shall also furnish four (4) copies of instruction/ operations & maintenance manuals (after approval) for all the equipments.

**3.5.6 TEST REPORTS**

Two (2) copies of all test reports shall be supplied for approval before shipment of Equipment. The report shall indicate clearly the standard value specified for each test to facilitate checking of the reports. After final approval six (6) bound copies of all type and routine test reports shall be submitted to Employer.

**3.6 MATERIAL /WORKMANSHIP**

Where the specification does not contain references to workmanship, equipment, materials and components of the covered equipment, it is essential that the same must be new, of highest grade of the best quality of their kind, conforming to best engineering practice and suitable for the purpose for which they are intended and shall ensure satisfactory performance throughout the service life.

In case where the equipment, materials or components are indicated in the specification as "similar" to any special standard the purchaser shall decide upon the question of similarity. When required by the specification or when required by the purchaser the contractor shall submit, for approval, all the information concerning the materials or components to be used in manufacture. Machinery, equipment, materials and components supplied, installed or used without such approval shall run the risk of subsequent rejection, it being understood that the cost as well as the time delay associated with the rejection shall be borne by the Contractor.

The design of the Works shall be such that installation, future expansions, replacements and general maintenance may be undertaken with a minimum of time and expenses. Each component shall be designed to be consistent with its duty and suitable factors of safety subject to mutual agreements. All joints and fastenings shall be devised, constructed and documented so that the component parts shall be accurately positioned and restrained to fulfill their required function. In general, screw threads shall be standard metric threads. The use of other thread forms will only be permitted when prior approval has been obtained from the Purchaser.

Whenever possible, all similar part of the works shall be made to gauge and shall also be made interchangeable with similar parts. All spare parts shall also be interchangeable and shall be made of the same materials and workmanship as the corresponding parts of the equipment supplied under the specification. Where feasible, common component units shall be employed in different pieces of equipment in order to minimize spare parts stocking requirements. All equipment of the same type and rating shall be physically and electrically interchangeable.

The equipment offered in the bid only shall be accepted for supply, with the minimum modifications as agreed/accepted.

### **3.7 PROVISIONS FOR EXPOSURE TO HOT AND HUMID CLIMATE**

Outdoor equipment supplied under the specification shall be suitable for service and storage under tropical conditions of high temperature, high humidity, heavy rainfall and environment favorable to the growth of fungi and mildew. The indoor equipment located in non-air-conditioned areas shall also be of same type.

#### **SPACE HEATERS**

The heaters shall be suitable for continuous operation at 230 V as supply voltage. On –off switch and fuse shall be provided.

One or more adequately rated thermostatically connected heaters shall be supplied to prevent condensation in any compartment. The heaters shall be installed in the compartment and electrical connections shall be made sufficiently away from below the heaters to minimize deterioration of supply wire insulation. The heaters shall be suitable to maintain the compartment temperature to prevent condensation.

The heaters shall be suitably designed to prevent any contact between the heater wire and the air and shall consist of coiled resistance wire centered in a metal sheath and completely encased in a highly compacted powder of magnesium oxide or other material having equal heat conducting and electrical insulation properties or they shall consist of resistance wire wound on a ceramic and completely covered with a ceramic material to prevent any contact between the wire and the air. Alternatively, they shall consist of a resistance wire mounted into a tubular ceramic body built into an envelope of stainless steel or the resistance wire is wound on a tubular ceramic body and embedded in vitreous glaze. The surface temperature of the heaters shall be restricted to a value which will not shorten the life of the heater sheaths or that of insulated wire or other component in the compartments.

#### **FUNGI STATIC VARNISH**

Besides the space heaters, special moisture and fungus resistance varnish shall be applied on parts which may be subjected or predisposed to the formation of fungi due to the presence or deposit of nutrient substances. The varnish shall not be applied to any surface of part where the treatment will interfere with the operation or performance of the equipment. Such surfaces or parts shall be protected against the application of the varnish.

#### **Ventilation opening**

In order to ensure adequate ventilation, compartments shall have ventilation openings provided with fine wire mesh of brass to prevent the entry of insects and to reduce to a minimum the entry of dirt and dust. Outdoor compartment openings shall be provided with shutter type blinds.

#### **Degree of Protection**

The enclosure of the Control Cabinets, Junction boxes and Marshalling Boxes, panels etc. to be installed shall provide degree of protection as detailed here under:

- a. Installed outdoor: IP- 55
- b. Installed indoor in air conditioned area: IP-31
- c. Installed in covered area: IP-52
- d. Installed indoor in non air-conditioned area where possibility of entry of water is limited: IP-41.
- e. For LT Switchgear (AC & DC distribution Boards) : IP-52

The degree of protection shall be in accordance with IS: 13947 (Part –I) / IEC-947 (Part-I) / IS 12063/IEC 529. Type test report for degree of protection test, on each type of the box shall be submitted for approval.

### **PRESERVATIVE SHOP COATING**

All exposed metallic surfaces subject to corrosion shall be protected by shop application of suitable coatings. All surfaces which will not be easily accessible after the shop assembly, shall be treated beforehand and protected for the life of the equipment. All surfaces shall be thoroughly cleaned of all mill scales, oxides and other coatings and prepared in the shop. The surfaces that are to be finish-painted after installation or require corrosion protection until installation, shall be shop painted as per the requirements covered in the relevant part of the Technical Specification.

Transformers and other electrical equipments, if included shall be shop finished with one or more coats of primer and two coats of high grade resistance enamel. The finished colors shall be as per manufacturer's standards, to be selected and specified by the Employer at a later date.

Shop primer for all steel surfaces which will be exposed to operating temperature below 95 degrees Celsius shall be selected by the Contractor after obtaining specific approval of the Employer regarding the quality of primer proposed to be applied. Special high temperature primer shall be used on surfaces exposed to temperature higher than 95 degrees Celsius and such primer shall also be subject to the approval of the Employer.

#### **3.8 RATING PLATES, NAME PLATES AND LABELS**

- 3.8.1 Each equipment shall have permanently attached to it in a conspicuous position, a rating plate of non-corrosive material upon which shall be engraved manufacturer's name, equipment, type or serial number together with details of the ratings, service conditions under which the item of plant in question has been designed to operate, and such diagram plates as may be required by the Employer.
- 3.8.2 Such nameplates or labels shall be of white nonhygroscopic material with engraved black lettering or alternately, in the case of indoor circuit breakers, starters, etc. of transparent plastic material with suitably coloured lettering engraved on the back.
- 3.8.3 The rated current, extended current rating and rated thermal current shall be clearly indicated in the name plate in case of current transformer.
- 3.8.4 Rated voltage, voltage factor and intermediate voltage shall be clearly indicated on the nameplate in case of capacitor voltage transformer.
- 3.8.5 Each switch shall have a clear inscription identifying its function. Switches shall also have a clear inscription of each position indication.
- 3.8.6 All segregated phases of conductors or bus ducts, indoor or outdoor, shall be provided with coloured phase plates to clearly identify the phase of the system.
- 3.8.7 All such plates, instruction plates, etc. shall be bilingual with Hindi inscription first, followed by English. Alternatively, two separate plates one with Hindi and the other with English inscriptions may be provided.

#### **3.9 GALVANISING:**

- 3.9.1 The galvanised surface shall consist of a continuous film adhering to the steel. The finished surface shall be clean and smooth, and shall be free from defects like dissolved patches, base, spot, unevenness of coating, spelter which is loosely attached to the steel globules, spiky deposits, blistered surfaces, flaking or peeling off, etc. The presence of any of these defects shall render the material liable to rejection.

3.9.2 All exposed ferrous parts shall be hot dip galvanised as per IS:2629 & IS:2633, Galvanising shall be uniform, smooth continuous and free from acid spots. Should the galvanising of the sample be found defective, the entire batch of steel shall have to be re-galvanised at Contractor's cost. The amount of zinc deposit shall be not less than 610 gms. per sq.m. of surface area and in addition, the thickness of zinc at any spot shall not be less than 85 microns. The Employer reserves the right to measure the thickness of zinc deposit by Elkometer or any other instrument acceptable to Employer and reject any component which shows thickness of zinc at any location less than 85 microns. The testing on the galvanised materials shall be carried out as per IS:2633.

3.9.3 The amount of zinc deposit over threaded portion of the bolts, nuts and screws shall not be less than 300 gms. per sq. meter of surface area. The amount of zinc deposit on washers shall not be less than 340 gms. per sq. meter of surface area. The threads having extra deposit of zinc shall be removed by die cutting after the completion of galvanising. The removal of extra zinc shall be carefully done so that threads shall have minimum deposits of zinc on them as specified.

### **3.10 PAINTING**

Unless explicitly stated in relevant chapters of the specification, the painting of all electrical equipment shall be as follows:

Epoxy based with suitable additives. The thickness of finish coat shall be minimum 50 microns (minimum total DFT shall be 100 microns). However in case electrostatic process of painting is offered for any electrical equipment, minimum paint thickness of 50 microns shall be acceptable for finish coat. Paint shade shall be as per technical specification.

### **3.11 QUALITY ASSURANCE PROGRAMME**

3.11.1 The Contractor shall adopt suitable quality assurance programme to ensure that the equipment and services under the scope of contract whether manufactured or performed within the Contractor's works or at his subcontractor's premises or at the Employer's site or at any other place of work are in accordance with the specifications. Such programmes shall be outlined by the Contractor and shall be finally accepted by the Employer/authorised representative after discussions before the award of the contract. The QA programme shall be generally in line with ISO-9001/IS- 14001.

A quality assurance programme of the contractor shall generally cover the following:

- i. His organisation structure for the management and implementation of the proposed quality assurance programme
- ii. Quality System Manual
- iii. Design Control System
- iv. Documentation Data Control System
- v. Qualification data for Bidder's key Personnel.
- vi. The procedure for purchase of materials, parts, components and selection of subcontractor's services including vendor analysis, source inspection, incoming raw-material inspection, verification of materials purchased etc.
- vii. System for shop manufacturing and site erection controls including process, fabrication and assembly.
- viii. Control of non-conforming items and system for corrective actions and resolution of deviations.
- ix. Inspection and test procedure both for manufacture and field activities.
- x. Control of calibration and testing of measuring testing equipments.
- xi. System for Quality Audits.
- xii. System for identification and appraisal of inspection status.
- xiii. System for authorising release of manufactured product to the Employer.
- xiv. System for handling storage and delivery.

- xv. System for maintenance of records, and
- xvi. Furnishing quality plans for manufacturing and field activities detailing out the specific quality control procedure adopted for controlling the quality characteristics relevant to each item of equipment/component as per format enclosed as Annexure-I.

### **3.12 GENERAL REQUIREMENTS - QUALITY ASSURANCE**

- 3.12.1 All materials, components and equipment covered under this specification shall be procured, manufactured, erected, commissioned and tested at all the stages, as per a comprehensive Quality Assurance Programme. An indicative programme of inspection/tests to be carried out by the contractor for some of the major items is given in the respective technical specification. This is, however, not intended to form a comprehensive programme as it is the contractor's responsibility to draw up and implement such programme duly approved by the Employer. The detailed Quality Plans for manufacturing and field activities should be drawn up by the Bidder and will be submitted to Employer for approval. Schedule of finalisation of such quality plans will be finalised before award.
- 3.12.2 Manufacturing Quality Plan will detail out for all the components and equipment, various tests/inspection, to be carried out as per the requirements of this specification and standards mentioned therein and quality practices and procedures followed by Contractor's/ Sub-contractor's/ sub-supplier's Quality Control Organisation, the relevant reference documents and standards, acceptance norms, inspection documents raised etc., during all stages of materials procurement, manufacture, assembly and final testing/performance testing. The Quality Plan shall be submitted on electronic media e.g. floppy or E-mail in addition to hard copy, for review. Once the same is finalised, hard copies shall be submitted for approval. After approval the same shall be submitted in compiled form on CD ROM.
- 3.12.3 Field Quality Plans will detail out for all the equipment, the quality practices and procedures etc. to be followed by the Contractor's site Quality Control Organisation, during various stages of site activities starting from receipt of materials/equipment at site.
- 3.12.4 The Bidder shall also furnish copies of the reference documents/plant standards/acceptance norms/tests and inspection procedure etc., as referred in Quality Plans along with Quality Plans. These Quality Plans and reference documents/standards etc. will be subject to Employer's approval without which manufacturer shall not proceed.
- 3.12.5 These approved documents shall form a part of the contract. In these approved Quality Plans, Employer shall identify customer hold points (CHP), i.e. test/checks which shall be carried out in presence of the Employer's Project Manager or his authorised representative and beyond which the work will not proceed without consent of Employer/Authorised representative in writing. All deviations to this specification, approved quality plans and applicable standards must be documented and referred to Employer along with technical justification for approval and dispositioning.
- 3.12.6 No material shall be despatched from the manufacturer's works before the same is accepted subsequent to pre-despatch final inspection including verification of records of all previous tests/inspections by Employer's Project Manager/Authorised representative and duly authorised for despatch by issuance of MDCC.
- 3.12.7 All material used for equipment manufacture including casting and forging etc. shall be of tested quality as per relevant codes/standards. Details of results of the tests conducted to determine the mechanical properties, chemical analysis and details of heat treatment procedure recommended and actually followed shall be recorded on certificates and time temperature chart. Tests shall be carried out as per applicable material standards and/or agreed details.

- 3.12.8 All welding and brazing shall be carried out as per procedure drawn and qualified in accordance with requirements of ASME Section IX/BS-4870 or other International equivalent standard acceptable to the Employer.
- 3.12.9 All welding/brazing procedures shall be submitted to the Employer or its authorised representative for approval prior to carrying out the welding/brazing.
- 3.12.10 All brazers, welders and welding operators employed on any part of the contract either in Contractor's/his sub-contractor's works or at site or elsewhere shall be qualified as per ASME Section-IX or BS-4871 or other equivalent International Standards acceptable to the Employer.
- 3.12.11 Test results or qualification tests and specimen testing shall be furnished to the Employer for approval. However, where required by the Employer, tests shall be conducted in presence of Employer/authorised representative.
- 3.12.12 For all pressure parts and high pressure piping welding, the latest applicable requirements of the IBR (Indian Boiler Regulations) shall also be essentially complied with. Similarly, any other statutory requirements for the equipments/systems shall also be complied with. On all back-gauged welds MPI/LPI shall be carried before seal welding.
- 3.12.13 All the heat treatment results shall be recorded on time temperature charts and verified with recommended regimes.
- 3.12.14 No welding shall be carried out on cast iron components for repair.
- 3.12.15 Unless otherwise proven and specifically agreed with the Employer, welding of dissimilar materials and high alloy materials shall be carried out at shop only.
- 3.12.16 All non-destructive examination shall be performed in accordance with written procedures as per International Standards. The NDT operator shall be qualified as per SNT-TC-IA (of the American Society of non-destructive examination). NDT shall be recorded in a report which includes details of methods and equipment used, result/evaluation, job data and identification of personnel employed and details of co-relation of the test report with the job.

In general all plates of thickness greater than 40mm & for pressure parts plates of thickness equal to or greater than 25mm shall be ultrasonically tested otherwise as specified in respective equipment specification. All bar stock/Forging of diameter equal to or greater than 50mm shall be ultrasonically tested.

The Contractor shall list out all major items/ equipment/ components to be manufactured in house as well as procured from sub-contractors (BOI). All the subcontractor proposed by the Contractor for procurement of major bought out items including castings, forging, semi-finished and finished components/equipment etc., list of which shall be drawn up by the Contractor and finalised with the Employer, shall be subject to Employer's approval. The contractor's proposal shall include vendor's facilities established at the respective works, the process capability, process stabilization, QC systems followed, experience list, etc. along with his own technical evaluation for identified subcontractors enclosed and shall be submitted to the Employer for approval within the period agreed at the time of pre-awards discussion and identified in "DR" category prior to any procurement. Such vendor approval shall not relieve the contractor from any obligation, duty or responsibility under the contract.

- 3.12.17 For components/equipment procured by the contractors for the purpose of the contract, after obtaining the written approval of the Employer, the contractor's purchase specifications and inquiries shall call for quality plans to be submitted by the suppliers. The quality plans called for from the subcontractor shall set out, during the various stages of manufacture and installation, the quality practices and procedures followed by the vendor's quality control

organisation, the relevant reference documents/standards used, acceptance level, inspection of documentation raised, etc.

- 3.12.18 Employer reserves the right to carry out quality audit and quality surveillance of the systems and procedures of the Contractor's or their sub vendor's quality management and control activities. The contractor shall provide all necessary assistance to enable the Employer carry out such audit and surveillance.
- 3.12.19 The contractor shall carry out an inspection and testing programme during manufacture in his work and that of his sub-contractors and at site to ensure the mechanical accuracy of components, compliance with drawings, conformance to functional and performance requirements, identity and acceptability of all materials parts and equipment. Contractor shall carry out all tests/inspection required to establish that the items/equipments conform to requirements of the specification and the relevant codes/standards specified in the specification, in addition to carrying out tests as per the approved quality plan.
- 3.12.20 Quality audit/surveillance/approval of the results of the tests and inspection will not, however, prejudice the right of the Employer to reject the equipment if it does not comply with the specification when erected or does not give complete satisfaction in service and the above shall in no way limit the liabilities and responsibilities of the Contractor in ensuring complete conformance of the materials/equipment supplied to relevant specification, standard, data sheets, drawings, etc.
- 3.12.21 For all spares and replacement items, the quality requirements as agreed for the main equipment supply shall be applicable.
- 3.12.22 Repair/rectification procedures to be adopted to make the job acceptable shall be subject to the approval of the Employer/ authorised representative.

### **3.12.23 Environmental Stress Screening**

All solid state electronic system / equipment / sub assembly shall be free from infant mortile components. For establishing the compliance to this requirement, the contractor / sub – contractor should meet the following.

1. The Contractor / Sub – contractor shall furnish the established procedure being followed for eliminating infant mortile components. The procedure followed by the Contractor / Sub – contractor should be substantiated along with the statistical figures to validate the procedure being followed. The necessary details as required under this clause shall be furnished at the stage of QP finalization.

**Or**

In case the Contractor / Sub – contractor do not have any established procedure to eliminate infant mortile components then two or 10% whichever is less, most densely populated Panels shall be tested for Elevated Temperature Cycle Test as per the following procedure.

#### **Elevated Temperature Test Cycle**

During the elevated temperature test which shall be for 48 hours, the ambient temperature shall be maintained at 50° C. The equipment shall be interconnected with devices and kept under energized conditions so as to repeatedly perform all operations it is expected to perform in actual service with load on various components being equal to those which will be experienced in actual service.

During the elevated temperature test the cubicle doors shall be closed (or shall be in the position same as they are supposed to be in the field) and inside temperature in the zone of highest heat dissipating components / modules shall be monitored. The temperature rise inside the cubicle should not exceed 10° C above the ambient temperature at 50° C.

In case of any failure during the test cycle, the further course of action should be mutually discussed for demonstrating the intent of the above requirement.

#### **Burn In Test Cycle**

The test shall be conducted on all the panels fully assembled and wired including the panels having undergone the above mentioned elevated temperature test.

The period of Burn in Test Cycle shall be 120 hrs and process shall be similar to the elevated temperature test as above except that the temperature shall be reduced to the ambient temperature prevalent at that time.

During the above tests, the process I/O and other load on the system shall be simulated by simulated inputs and in the case of control systems, the process which is to be controlled shall also be simulated. Testing of individual components or modules shall not be acceptable.

During the Burn in Test the cubicle doors shall be closed (or shall be in the position same as they are supposed to be in the field) and inside temperature in the zone of highest heat dissipating components / modules shall be monitored. The temperature rise inside the cubicle should not exceed 10° C above the ambient temperature.

The Contractor / Sub-contractor shall carry out routine test on 100% item at contractor / sub-contractor's works. The quantum of check / test for routine & acceptance test by employer shall be generally as per criteria / sampling plan defined in referred standards. Wherever standards have not been mentioned quantum of check / test for routine / acceptance test shall be as agreed during detailed engineering stage.

### **3.13 QUALITY ASSURANCE DOCUMENTS**

The Contractor shall be required to submit two hard copies and two sets on CDROM of the following Quality Assurance Documents as identified in respective quality plan with tick ( ✓ ) mark.

Each QA Documentation shall have a project specific Cover Sheet bearing name & identification number of equipment and including an index of its contents with page control on each document.

The QA Documentation file shall be progressively completed by the Supplier's sub-supplier to allow regular reviews by all parties during the manufacturing.

The final quality document will be compiled and issued at the final assembly place of equipment before dispatch. However CD-Rom may be issued not later than three weeks.

#### **3.13.1 Typical contents of Quality Assurance Document are as below:-**

- i) Quality Plan,
- ii) Material mill test reports on components as specified by the specification and approved Quality Plans.
- iii) Manufacturer / works test reports/results for testing required as per applicable codes and standard referred in the specification and approved Quality Plans.

- iv) Non-destructive examination results /reports including radiography interpretation reports. Sketches/drawings used for indicating the method of traceability of the radiographs to the location on the equipment.
- v) Heat Treatment Certificate/Record (Time- temperature Chart)
- vi) All the accepted Non-conformance Reports (Major/Minor) / deviation, including complete technical details / repair procedure).
- vii) CHP / Inspection reports duly signed by the Inspector of the Employer and Contractor for the agreed Customer Hold Points.
- viii) Certificate of Conformance (COC) whoever applicable.
- ix) MDCC

3.13.2 Similarly, the contractor shall be required to submit two hard copies and two sets on CD ROM of Quality Assurance Documents ( in line with above) pertaining to field activities as per Approved Field Quality Plans and other agreed manuals/ procedures, prior to commissioning of individual system.

3.13.3 Before dispatch/ commissioning of any equipment, the Supplier shall make sure that the corresponding quality document or in the case of protracted phased deliveries, the applicable section of the quality document file is completed. The supplier will then notify the Inspector regarding the readiness of the quality document (or applicable section) for review.

- i) If the result of the review carried out by the Inspector of the Quality document (or applicable section) is satisfactory. The Inspector shall stamp the quality document (or applicable section) for release.
- ii) If the quality document is unsatisfactory, the Supplier shall endeavour to correct the incompleteness, thus allowing finalizing the quality document (or applicable section) by time compatible with the requirements as per contract documents. When it is done, the quality document (or applicable section) is stamped by the Inspector.
- i) If a decision is made for dispatch, whereas all outstanding actions cannot be readily cleared for the release of the quality document by that time, the supplier shall immediately, upon shipment of the equipment, send a copy of the quality document Review Status signed by the Supplier Representative to the Inspector and notify of the committed date for the completion of all outstanding actions & submission. The Inspector shall stamp the quality document for applicable section when it is effectively completed. The submission of QA documentation package shall not be later than 3 weeks after the dispatch of equipment.

### **3.14 TRANSMISSION OF QUALITY DOCUMENTS**

As a general rule, two hard copies of the quality document and Two CD ROMs shall be issued to the Employer after the delivery date for the corresponding equipment. One set of quality document shall be forwarded to Corporate Quality Assurance Department and other set to respective Site.

For the particular case of phased deliveries, the complete quality document to the Employer shall be issued not later than 1 month after the date of the last delivery similarly as stated above.

### **3.15 INSPECTION, TESTING & INSPECTION CERTIFICATE**

3.15.1 The word 'Inspector' shall mean the Project Manager and/or his authorised representative and/or an outside inspection agency acting on behalf of the Employer to inspect and examine the materials and workmanship of the works during its manufacture or erection.

3.15.2 The Project Manager or his duly authorised representative and/or an outside inspection agency acting on behalf of the Employer shall have access at all reasonable times to inspect

and examine the materials and workmanship of the works during its manufacture or erection and if part of the works is being manufactured or assembled on other premises or works, the Contractor shall obtain for the Project Manager and for his duly authorised representative permission to inspect as if the works were manufactured or assembled on the Contractor's own premises or works.

- 3.15.3 The Contractor shall give the Project Manager/Inspector fifteen (15) days written notice of any material being ready for testing. Such tests shall be to the Contractor's account except for the expenses of the Inspector's. The Project Manager/Inspector, unless the witnessing of the tests is virtually waived, will attend such tests within fifteen (15) days of the date on which the equipment is noticed as being ready for test/inspection failing which the contractor may proceed with test which shall be deemed to have been made in the inspector's presence and he shall forthwith forward to the inspector duly certified copies of test reports in two (2) copies.
- 3.15.4 The Project Manager or Inspector shall within fifteen (15) days from the date of inspection as defined herein give notice in writing to the Contractor, or any objection to any drawings and all or any equipment and workmanship which is in his opinion not in accordance with the contract. The Contractor shall give due consideration to such objections and shall either make modifications that may be necessary to meet the said objections or shall inform in writing to the Project Manager/Inspector giving reasons therein, that no modifications are necessary to comply with the contract.
- 3.15.5 When the factory tests have been completed at the Contractor's or subcontractor's works, the Project Manager /Inspector shall issue a certificate to this effect fifteen (15) days after completion of tests but if the tests are not witnessed by the Project Manager /Inspectors, the certificate shall be issued within fifteen (15) days of the receipt of the Contractor's test certificate by the Project Manager /Inspector. Project Manager /Inspector to issue such a certificate shall not prevent the Contractor from proceeding with the works. The completion of these tests or the issue of the certificates shall not bind the Employer to accept the equipment should it, on further tests after erection be found not to comply with the contract.
- 3.15.6 In all cases where the contract provides for tests whether at the premises or works of the Contractor or any sub-contractor, the Contractor, except where otherwise specified shall provide free of charge such items as labour, material, electricity, fuel, water, stores, apparatus and instruments as may be reasonably demanded by the Project Manager /Inspector or his authorised representatives to carry out effectively such tests on the equipment in accordance with the Contractor and shall give facilities to the Project Manager/Inspector or to his authorised representative to accomplish testing.
- 3.15.7 The inspection by Project Manager / Inspector and issue of Inspection Certificate thereon shall in no way limit the liabilities and responsibilities of the Contractor in respect of the agreed Quality Assurance Programme forming a part of the contract.
- 3.15.8 To facilitate advance planning of inspection in addition to giving inspection notice, the Contractor shall furnish quarterly inspection programme indicating schedule dates of inspection at Customer Hold Point and final inspection stages. Updated quarterly inspection plans will be made for each three consecutive months and shall be furnished before beginning of each calendar month.
- 3.15.9 All inspection, measuring and test equipments used by contractor shall be calibrated periodically depending on its use and criticality of the test/measurement to be done. The Contractor shall maintain all the relevant records of periodic calibration and instrument identification, and shall produce the same for inspection by NTPC. Wherever asked specifically, the contractor shall re-calibrate the measuring/test equipments in the presence of Project Manager / Inspector.

### **3.16 PACKAGING & TRANSPORTATION**

**Items shall be packed & dispatched separately to respective sites i.e. to 400/220kV S/s at NKSTPP end & to 220kV S/s at Chatti Bariatu & Kerandari-A mine end.**

#### **3.16.1 Packing, Marking and shipping**

The packing and shipping shall be carried out in accordance with the standard practice of Contractor and with the following additional requirements:

- a) The equipment shall be prepared in such a manner as to protect the equipment from damage or deterioration during shipping or storage. The shipments can be exposed to heavy rains, hot sun, high humidity and sudden extreme changes of temperature. The equipment shall be packed and shipped so as to protect it from all such conditions and any other abnormal conditions, generally expected during shipping & storage.
- b) The metallic containers, if any, shall be considered as the property of the Contractor and he will be allowed to remove them from site once the contents are unpacked, inspected, documented and placed in temporary storage or in final position.
- c) The equipment shall be shipped in such a manner as to facilitate unloading, handling and storage enroute and at the site. The Contractor shall provide lifting lugs and special lifting devices for proper handling and erection.
- d) The Contractor shall be liable for any damage or loss resulting due to careless, improper, poor or insufficient packing and handling.
- e) Spare parts and spare equipment shall be packed separately in containers adequate for long term storage, plainly marked "Spare Parts Only". They shall be crated individually or in kits to be used in one single renewal or overhaul operation. Other spare part kits shall not be disturbed when using one set or kit.
- f) The Contractor shall at all times protect and preserve from damage, loss, corrosion and all other forms of damage, all parts of the works.

#### **3.16.2 Transportation**

- a) The Contractor shall make a careful examination of access rail/roadways to the site in order to confirm the practical maximum transport weight and dimensions as well as a careful examination of the ports of disembarkation particularly with respect to the capacity of the cranes installed and access roads.
- b) All instruments and computer/microprocessor based equipment imported into India from overseas for the purpose of this contract shall be air freighted to the nearest possible point and further by rail/road taking due precautions as per manufacturer's recommendations. Employer shall have the right to decide the items that should be air freighted and Employer's decision shall be binding on Contractor.

#### **3.16.3 Insurance**

- a) The Contractor shall insure all shipments and works at his own expense for not less than the full replacement cost plus any additional cost for accelerated manufacturing of the replacement parts.
- b) Loss or the damage to equipment during shipping or transportation to the site(s) or otherwise

shall not constitute groups for claims for extension in time or for extra payment.

**3.17 CLAMPS AND CONNECTORS INCLUDING TERMINAL CONNECTORS**

- 3.17.1 The material of clamps and connectors shall be Aluminium alloy casting conforming to designation A6 of IS:617 for connecting to equipment terminals and conductors of aluminium. In case the terminals are of copper, the same clamps/connectors shall be used with 2mm thick bimetallic liner.
- 3.17.2 The material of clamps and connectors shall be Galvanised mild steel for connecting to shield wire.
- 3.17.3 Bolts, nuts and plain washers shall be hot dip galvanised mild steel for sizes M12 and above. For sizes below M12, they shall be electro-galvanised mild steel. The spring washers shall be electro-galvanised mild steel.
- 3.17.4 All castings shall be free from blow holes, surface blisters, cracks and cavities. All sharp edges and corners shall be rounded off to meet specified corona and radio interference requirements.
- 3.17.5 They shall have same current rating as that of the connected equipment. All current carrying parts shall be at least 10 mm thick. The connectors shall be manufactured to have minimum contact resistance.
- 3.17.6 Flexible connectors, braids or laminated strips shall be made up of copper/aluminium.
- 3.17.7 Current rating and size of terminal/conductor for which connector is suitable shall be put on a suitable sticker on each component which should last atleast till erection time.

**3.18 BUSHINGS, HOLLOW COLUMN INSULATORS, SUPPORT INSULATORS, AND DISC INSULATORS**

- 3.18.1 Bushings shall be manufactured and tested in accordance with IS: 2099 & IEC: 137 while hollow column insulators shall be manufactured and tested in accordance with IEC 233/IS 5284. The support insulators shall be manufactured and tested as per IS: / IEC 168/IEC 273. The insulators shall also conform to IEC 815 as applicable. Support insulators/ bushings/ hollow column insulators shall be designed to have ample insulation, mechanical strength and rigidity for the conditions under which they will be used.
- 3.18.2 Porcelain used shall be homogenous, free from laminations, cavities and other flaws or imperfections that might affect the mechanical or dielectric quality and shall be thoroughly vitrified, tough and impervious to moisture. Hollow porcelain should be in one integral piece in green & fired stage.
- 3.18.3 Glazing of the porcelain shall be uniform brown in colour, free from blisters, burns and other similar defects.
- 3.18.4 When operating at normal rated voltage there shall be no electric discharge between conductor and insulators which would cause corrosion or injury to conductors or when operating at normal rated voltage.
- 3.18.5 The design of the insulator shall be such that stresses due to expansion and contraction in any part of the insulator shall be lead to deterioration. All ferrous parts shall be hot dip galvanised.

- 3.18.6 Bushing porcelain shall be robust and capable of withstanding the internal pressures likely to occur in service. The design and location of clamps, the shape and the strength of the porcelain flange securing the bushing to the tank shall be such that there is no risk of fracture. All portions of the assembled porcelain enclosures and supports other than gaskets, which may in any way be exposed to the atmosphere shall be composed of completely non hygroscopic material such as metal or glazed porcelain.
- 3.18.7 All iron parts shall be hot dip galvanised and all joints shall be air tight. Surface of joints shall be trued, porcelain parts by grinding and metal parts by machining. Insulator/ bushing design shall be such as to ensure a uniform compressive pressure on the joints.
- 3.18.8 Insulator shall also meet requirement of IEC - 815 as applicable, having alternate long & short sheds.

**3.19 CONTROL CABINETS, JUNCTION BOXES, TERMINAL BOXES & MARSHALLING BOXES FOR OUTDOOR EQUIPMENT.**

- 3.19.1 All types of control cabinets, junction boxes, marshaling boxes, lighting panels, terminal boxes, operating mechanism boxes, Kiosks etc. shall generally conform to IS:5039, IS:8623 and IEC:439 as applicable.
- 3.19.2 **Mechanism Box/ Control Cabinet/ Kiosks:** A sheet steel (atleast 2.5 mm thick), dust and vermin proof M.Box/CCC/CMB shall be provided with proper lighting and thermostatically controlled space heaters. The degree of protection shall be IP 55. One dummy terminal block in between each trip wire terminal shall be provided. At least 20% spare terminals shall be provided on each panel. The gasket used shall be of neoprene rubber.

Painting of boxes shall be as follows,

- External surface : Chemical resistant epoxy zinc phosphate primer, MIO (Micaceous iron oxide) as intermediate paint followed by polyurethane finish paint (**RAL 5012 Blue**)
- Internal surface : Chemical resistant epoxy zinc phosphate primer followed by chemical & heat resistant **epoxy enamel white paint**.

- 3.19.3 **Junction Boxes:** The junction boxes shall be made of minimum 2 mm thick sheet steel. Gland plates shall be removable type and made of 3 mm thick sheet steel. The boxes shall be provided with detachable cover or hinged door with captive screws. Top of the box shall be arranged to slope towards the rear of the box. The box shall be **hot dip galvanised** and shall be provided with suitable neoprene gaskets to achieve requisite degree of protection. Adequate spacing shall be provided to terminate the external cables. The boxes shall be suitable for mounting on various types of steel structures. The terminal blocks provided shall be of 650 V grade, rated for 10 A for control cables. Suitable numbering for terminal blocks shall be done. In case of junction box for power cable, the box shall be rated for maximum current carrying capacity. Terminal blocks shall be of one piece, Klippon RSF-1 or ELMEX CSLT-1 type with insulating barriers.
- 3.19.4 The cabinets/boxes/kiosks/panels shall be free standing or wall mounting or pedestal mounting type. They shall have hinged doors with padlocking arrangement. All doors, removable covers and plates shall be gasketed all around with neoprene gaskets.
- 3.19.5 The degree of protection of of all the outdoor boxes shall not be less than IP 55 as per IS 2147.
- 3.19.6 The cable entry shall be from bottom, for which removable gasketed cable gland plates shall be provided.

- 3.19.7 Suitable 240V, single phase, 50Hz ac heaters with thermostats controlled by switch and fuse shall be provided to maintain inside temperature 10deg. above the ambient.
- 3.19.8 The size of enclosure and the layout of equipment inside shall provide generous clearances. Each cabinet/box/kiosk/panel shall be provided with a 15A, 240V ac, 2 pole, 3 pin industrial grade receptacle with switch. For incoming supply, MCB of suitable rating shall be provided. Illumination of each compartment shall be with door operated incandescent lamp. All control switches shall be of rotary switch type.
- 3.19.9 Each cabinet/box/kiosk/panel shall be provided with two earthing pads to receive 75mmx12mm GS flat. The connection shall be bolted type with two bolts per pad. The hinged door shall be connected to body using flexible wire. The cabinets/boxes/kiosks/panels shall also be provided with danger plate, and internal wiring diagram pasted on inside of the door. The front label shall be on a 3mm thick plastic plate with white letters engraved on black background

### **3.20 TERMINAL BLOCKS**

- 3.20.1 They shall be non-disconnecting stud type of extensible design equivalent to Elmex type CAT-M4.
- 3.20.2 The terminal blocks shall be of 650 V grade, and rated to continuously carry maximum expected current. The conducting part shall be tinned or silver plated.
- 3.20.3 They shall be of moulded, non-inflammable thermosetting plastic. The material shall not deteriorate with varied conditions of temperature and humidity. The terminal blocks shall be fully enclosed with removable covers of transparent, non deteriorating plastic material. Insulating barriers shall be provided between the terminal blocks so that the barriers do not hinder the wiring operation without removing the barriers.
- 3.20.4 The terminals shall be provided with marking tags for wiring identification.
- 3.20.5 Unless otherwise required (expected current rating) or specified, terminal blocks shall be suitable for connecting the following conductors on each side:  
All CT & VT circuits - Min. four 2.5 sq.mm. copper flexible conductor  
AC & DC power supply -Two 16 sq.mm. Aluminium conductor  
Other control circuits - Min. two 2.5 sq.mm. copper flexible conductor.
- 3.20.6 The terminal blocks for CT and VT secondary leads shall be provided with test links and isolating facilities. CT secondary leads shall also be provided with short circuiting and earthing facilities.

### **3.21 Wiring**

- 3.21.1 All wiring shall be carried out with 1100 V grade stranded copper wires. The minimum size of the stranded conductor used for internal wiring shall be as follows:  
a) All circuits except CT circuits 2.5 sq.mm  
b) CT circuits 4 sq. mm (minimum number of strands shall be 3 per conductor).
- 3.21.2 All internal wiring shall be securely supported, neatly arranged readily accessible and connected to equipment terminals and terminal blocks.
- 3.21.3 Wire terminations shall be made with solderless crimping type of tinned copper lugs which firmly grip the conductor and insulation. Insulated sleeves shall be provided at all the wire terminations. Engraved core identification plastic ferrules marked to correspond with the wiring diagram shall be fitted at both ends of each wire. Ferrules shall fit tightly on the wires

shall not fall off when the wires and shall not fall off when the wire is disconnected from terminal blocks.

- 3.21.4 All wires directly connected to trip circuit breaker shall be distinguished by the addition of a red coloured unlettered ferrule. Number 6 & 9 shall not be included for ferrules purposes.
- 3.21.5 All terminals including spare terminals of auxiliary equipment shall be wired upto terminal blocks. Each equipment shall have its own central control cabinet in which all contacts including spare contacts from all poles shall be wired out. Interpole cabling for all equipment's shall be carried out by the Contractor.

### **3.22 CABLE GLANDS AND LUGS**

- 3.22.1 Cable glands shall be Double compression type, tinned/Nicked plated (coating thickness not less than 20 microns in case of tin and 10 to 15 microns in case of nickel) brass cable glands for all power and control cables. They shall provide dust and weather proof terminations. They shall comprise of heavy duty brass casting, machine finished and tinned to avoid corrosion and oxidation. Rubber components used in cable glands shall be neoprene and off tested quality. Required number of packing glands to close unused openings in gland plates shall also be provided.
- 3.22.2 The cable glands shall be tested as per BS:6121. The cable glands shall also be duly tested for dust proof and weather proof termination.
- 3.22.3 Cables lugs for power cables shall be tinned copper solder less crimping type conforming to IS:8309 and 8394 suitable for aluminum or copper conductor (as applicable). Cable lugs and ferrules for control cables shall be tinned copper type. The cable lugs for control cables shall be provided with insulating sleeve and shall suit the type of terminals provided on the equipments. The cable lugs shall suit the type of terminals provided. The cable lugs shall be of Dowell make or equivalent.

### **3.4 CONDUITS, PIPES AND ACCESSORIES**

- 3.4.1 The bidder shall supply and install all rigid conduits, mild steel pipes, flexible conduits, hume pipes, etc. including all necessary sundry materials, such as tees, elbows, check nuts, bushing reduces, enlargers, wooden plugs, coupling caps, nipples, gland sealing fittings, pull boxes, etc.
- 3.4.2 Rigid conduits shall be flow-coat metal conduits of Nagarjuna Coated Tubes or equivalent make. The outer surface of the conduits shall be coated with hot-dip zinc and chromate conversion coatings. The inner surface shall have silicone epoxy ester coating for easy cable pulling. Mild steel pipes shall be hot-dip galvanised. All rigid conduits/ pipes shall be of a reputed make.
- 3.4.3 Flexible conduits shall be heat-resistant lead coated steel, water-leak, fire and rust proof, and be of PLICA make or equivalent.

### **3.5 MOTOR CONTROL CENTRE**

- 3.5.1 The 415 Volt motor control centres (if provided separately) shall conform to the requirements for boxes/cabinets/kiosks. They shall be fixed type, shall be fully sectionalised and shall be equipped with load break switches. Motor feeders shall be provided with isolating switch fuse unit and Contractor with thermal overload relay and single phase protection. The motor Contractor shall have one normally open auxiliary contact for alarm purposes. The motor control circuit shall be independent from all other control circuits.

**3.5.2 Isolating Switches**

The incoming power supply isolating switch operation handle shall be interlocked with the control cabinet door as to prevent opening of door when main switch is closed. Device for by passing the door interlock shall also be provided. Switch handle shall have provision for locking in both fully open and fully closed positions.

**3.5.3 Fuses**

All fuses shall be of the HRC cartridge type, conforming to IS: 2208 and suitable to mount on plug-in type of fuse bases. Fuses shall be provided with visible operation indicators to show that they have operated. All accessible live connections shall be adequately shrouded, and it shall be possible to change fuses with the circuit alive, without danger of contact with live conductor. Insulated fuse pulling handle shall be supplied with each control cabinet.

**3.6 MOTORS**

**3.6.1 Motors shall be “Squirrel Cage” three phase induction motors of sufficient size capable of satisfactory operation for the application and duty as required for the driven equipment and shall conform to type tests and shall be subjected to routine tests as per applicable standards.**

**3.6.2 Enclosures**

- a) For motors to be installed outdoor, the motor enclosure shall have degree of protection IP: 55. For motors to be installed indoor, i.e. inside a box, the motor enclosure shall be dust proof equivalent to IP: 54.
- b) Two independent earthing points shall be provided on opposite sides of the motor for bolted connection of earthing conductor.
- c) Motors shall have drain plugs so located that they will drain water resulting condensation or other causes from all pockets in the motor casing.

**3.6.3 Operational Features :**

- a) Continuous motor ratings (name plate rating) shall be at least suitable for the driven equipment at design duty operating point of driven equipment that will arise in service.
- b) Motors shall be capable of giving rated output without reduction in the expected life span when operated continuously in the given system.

**3.6.4 Starting Requirements**

- a) All induction motors shall be suitable for full voltage direct on-line starting. These shall be capable of starting and accelerating to the rated speed alongwith the driven equipment without exceeding the acceptable winding temperature even when the supply voltage drops.
- b) Motors shall be capable of withstanding the electrodynamic stresses and heating imposed if it is started at a voltage of 110% of the rated value.
- c) The locked rotor current shall not exceed six(6) times the rated full load current for all motors subject to tolerance given in IS:325.
- d) Motors when started with driven equipment imposing full starting torque and supply voltage conditions specified shall be capable of withstanding at least two successive starts from cold condition at room temperature and one start from hot condition without injurious heating of winding. The motors shall also be suitable for three equally spread starts per hour under the above referred supply condition.
- e) The locked rotor withstand time under hot condition at 110% of rated voltage shall be more than starting time with the driven equipment of minimum permissible voltage by a least two seconds or 15% of the accelerating time whichever is greater. In case it is not possible to meet the above requirement, the Contractor shall offer centrifugal type speed switch mounted on the motor shaft which shall remain closed for speeds lower

than 20% and open for speeds above 20% of the rated. The speed switch shall be capable of withstanding 120% of the rated speed in either directions of rotation.

- 3.6.5 The maximum permissible temperature rise over the ambient temperature shall be within the limits specified in IS: 325 (for 3 phase induction motors) after adjustment due to increased ambient temperature specified.
- 3.6.6 The double amplitude of motor vibration shall be within the limits specified in IS:729. Vibration shall also be within the limits specified by the relevant standard for the driven equipment when measured at the motor bearings.
- 3.6.7 All the induction motors shall be capable of running at 80% of rated voltage for a period of 5 minutes.

### **3.7 AUXILIARY SWITCH**

The auxiliary switch shall conform of following type tests:

- a) Electrical endurance test - A minimum of 1000 operations for 2A. D.C. with a time constant greater than or equal to 20 milliseconds with a subsequent examination of mV drop/ visual defects/ temperature rise test.
- b) Mechanical endurance test - A minimum of 5000 operations with a subsequent checking of contact pressure test/ visual examination
- c) Heat run test on contacts
- d) IR/HV test, etc.

### **3.8 LAMPS AND SOCKETS**

#### **3.8.1 Lamps:**

All incandescent lamps shall use a socket base as per IS-1258, except in the case of signal lamps.

#### **3.8.2 Sockets**

All sockets (convenience outlets) shall be suitable to accept both 5 Amp & 15 Amp pin round Standard Indian plugs. They shall be switched sockets with shutters.

#### **3.8.3 Hand Lamp:**

A 240 Volts, single Phase, 50 Hz AC plug point shall be provided in the interior of each cubicle with ON-OFF Switch for connection of hand lamps.

### **3.9 SWITCHES & FUSES:**

Each control panel shall be provided with necessary arrangements for receiving, distributing, isolating and fusing of DC and AC supplies for various control, signaling, lighting and space heater circuits. The incoming and sub-circuits shall be separately provided with switch-fuse units. Selection of the main and sub-circuit fuse ratings shall be such as to ensure selective clearance of sub-circuit faults. Potential circuits for relaying and metering shall be protected by HRC fuses.

All fuses shall be of HRC cartridge type conforming to IS 9228 mounted on plug-in type fuse bases. Miniature circuit breakers with thermal Protection and alarm contacts will also be accepted. All accessible live connection to fuse bases shall be adequately shrouded. Fuses shall have operation indicators for indicating blown fuse condition. Fuse carrier base shall have imprints of the fuse rating and voltage.

All control switches shall be of rotary type. Toggle/piano switches shall not be accepted.

**3.10 TYPE, ROUTINE & ACCEPTANCE TESTS:**

All equipments to be supplied shall be of type tested design. During contract stage, bidder shall submit for Owner's approval the reports of all the type tests listed in this specification and carried out within last ten years from the date **28.11.2013**. These reports should be for the test conducted on the equipment similar to those proposed to be supplied under this contract and the tests should have been either conducted at an independent laboratory or should have be witnessed by a client.

However if contractor is not able to submit report of the type tests conducted within ten years from the date **28.11.2013** or in the case of type test reports are not found to be meeting the specification requirements, the bidder shall conduct all such tests under this contract at no additional cost to the owner either at third party lab or in presence of client/ owners representative and submit the reports for approval.


All acceptance and routine tests as per the specification and relevant standards shall be carried out. Charges for these shall be deemed to be included in the equipment price.


**3.11 CORONA AND RIV TESTS AND SEISMIC WITHSTAND TEST:**


- a) The corona (for 400kV only) and RIV tests shall confirm to the requirements as per Annexure A.
- b) The seismic withstand test for 400kV shall conform to requirements as per Annexure B.

**3.12 Enclosures:**

1. ANNEXURE- A - CORONA AND RADIO INTERFERENCE VOLTAGE (RIV) TEST
2. ANNEXURE- B - SEISMIC WITHSTAND TEST
3. ANNEXURE- I – MQP (NTPC format)
4. ANNEXURE- II – Quality Assurance (NTPC format)

CLAUSE NO.	<p style="text-align: center;"><b>TECHNICAL REQUIREMENTS</b></p> 		
<p style="text-align: right;"><b>Annexure – A</b></p> <p><b>CORONA AND RADIO INTERFERENCE VOLTAGE (RIV) TEST</b></p> <p>1.0</p> <p>2.0</p> <p>3.0</p> <p>3.1</p> <p>3.2</p> <p>3.3</p> <p>3.4</p> <p>3.5</p> <p>3.6</p> <p>4.0</p>	<p><b>General</b></p> <p>Unless otherwise stipulated, all equipment together with its associated connectors where applicable shall be tested for external corona both by observing the voltage level for the extinction of visible corona under falling power frequency voltage and measurement of radio interference voltage ( RIV).</p> <p><b>Test Levels</b></p> <p>The test voltage levels for measurement of external RIV and for corona extinction voltage are listed under the relevant clauses of the specification.</p> <p><b>Test Methods for RIV:</b></p> <p>RIV tests shall be made according to measuring circuit as per International Special – committee on Radio Interference ( CISPR) Publication 16 -1 ( 1993) Part – I. The measuring circuit shall preferably be tuned to frequency with 10 % of 0.5 MHz but other frequencies in the range of 0.5 MHz to 2 MHz may be used, the measuring frequency being recorded. The result shall be in microvolts.</p> <p>Alternatively, RIV tests shall be in accordance with NEMA standard Publication No. 107 – 1964 except otherwise noted herein.</p> <p>In measurement of RIV temporary additional external corona shielding may be provided. In measurement of RIV only standard fittings of identical type supplied with the equipment and a simulation of the connections as used in the actual installation will be permitted in the vicinity within 3.5 meters of terminals.</p> <p>Ambient noise shall be measured before and after each series of tests to ensure that there is no variation in ambient noise level. If variation is present, the lowest ambient noise level will form basis for the measurements. RIV levels shall be measured at increasing and decreasing voltages of 85% , 100%, 115% and 130% for the specified RIV test voltage for all equipment unless otherwise specified. The specified RIV test voltage for 420 KV is listed in the detailed specification together with maximum permissible RIV level in microvolts.</p> <p>The metering instruments shall be as per CISPR recommendations or equivalent device so long as it has been used by other testing authorities.</p> <p>The RIV measurement may be made with a noise meter. A calibration procedure of the frequency to which noise meter shall be tuned shall establish the ratio of voltage at the high voltage terminal to the voltage read by the noise meter.</p> <p><b>Test Methods for visible Corona</b></p> <p>The purpose of this test is to determine the corona extinction voltage of the apparatus, connectors etc. The test shall be carried out in the same manner as RIV test described above with the exception that RIV measurements are not required during test and a search technique shall be used near the onset and extinction voltage, when the test voltage is raised and lowered to determine their precise values. The test voltage shall be raised to</p>		
<p><b>NORTH KARANPURA STPP (3 X 660 MW) EPC PACKAGE</b></p>	<p><b>TECHNICAL SPECIFICATIONS SECTION VI, PART-B BID DOC. NO.:CS-4410-001-2</b></p>	<p><b>SUB SECTION B-14 SWITCHYARD</b></p>	<p><b>Page 6 of 102</b></p>

CLAUSE NO.	<b>TECHNICAL REQUIREMENTS</b> 		
	<p>130 % of RIV test voltage and maintained there for five minutes. In case corona inception does not take place at 130 %, the voltage level shall be raised till inception of corona or rated voltage whichever is lower. The voltage will then be decreased slowly until all visible corona disappears. The test procedure shall be repeated at least 4 times with corona inception and extinction voltage recorded each time. The corona extinction voltage for purposes of determining compliance with the specification shall be the lowest of the four values at which the visible corona (negative or positive polarity) disappears.</p>		
<b>NORTH KARANPURA STPP (3 X 660 MW) EPC PACKAGE</b>	<b>TECHNICAL SPECIFICATIONS SECTION VI, PART-B BID DOC. NO.:CS-4410-001-2</b>	<b>SUB SECTION B-14 SWITCHYARD</b>	<b>Page 7 of 102</b>

<b>CLAUSE NO.</b>	<p style="text-align: center;"><b>TECHNICAL REQUIREMENTS</b></p> 		
	<p style="text-align: right;"><b>Annexure – B</b></p> <p><b>SEISMIC WITHSTAND TEST</b></p> <p>The seismic withstand test on the complete equipment (except BPI) shall be carried out along with supporting structure.</p> <p>The bidder shall arrange to transport the structure from his contractor's premises / owner's sites for purpose of seismic withstand test only.</p> <p>The seismic level specified shall be applied at the base of the structure. The accelerometers shall be provided at the terminal pad of the equipment and at any other point as agreed by the owner. The seismic test shall be carried out in all possible combinations of the equipment. The seismic test procedure shall be furnished for approval of the purchaser.</p>		
<p style="text-align: center;"><b>NORTH KARANPURA STPP (3 X 660 MW) EPC PACKAGE</b></p>	<p style="text-align: center;"><b>TECHNICAL SPECIFICATIONS SECTION VI, PART-B BID DOC. NO.:CS-4410-001-2</b></p>	<p style="text-align: center;"><b>SUB SECTION B-14 SWITCHYARD</b></p>	<p style="text-align: center;"><b>Page 8 of 102</b></p>

MFR.'s LOGO	MANUFACTURER'S NAME AND ADDRESS	<b>MANUFACTURING QUALITY PLAN</b>  ITEM : SUB-SYSTEM:	PROJECT : PACKAGE : CONTRACT NO. : MAIN-SUPPLIER:
		QP NO.: REV.NO.: DATE: PAGE: .... OF ....	

SL. NO	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
					M	C/N				M	C	N	
1.	2.	3.	4.	5.	6.	7.	8.	9.	D*	**	10.	11.	
<b>LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.</b> <b>** M: MANUFACTURER/SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC</b> <b>P: PERFORM W: WITNESS AND V: VERIFICATION AS APPROPRIATE,</b> <b>CHP: NTPC SHALL IDENTIFY IN COLUMN "N" AS 'W'</b>													
MANUFACTURER/ SUB-SUPPLIER		MAIN-SUPPLIER		SIGNATURE				DOC. NO.:		REV ..... CAT.....			
										REVIEWED BY		APPROVED BY	APPROVAL SEAL

FORMAT NO.: QS-01-QAIP-09/F1-R1

1/1

ENGG. DIV./QA&I

CLAUSE NO.

QUALITY ASSURANCE



SWITCHYARD

SQE 20

Attributes / Characteristics  Items/Components Sub Systems	Make, model, Type & Rating, Test Certificate	Routine & Acceptance Test as per IS / IEC	Functional requirements as per NTPC Specification
Circuit Breaker (IEC:62271-100)	Y	Y	Y
Interruptor & hollow insulator (IEC:233/ IS:5284)	Y	Y	Y
Isolator (IEC:62271-102)	Y	Y	Y
Current Transformer (IEC:60044/BS:3938/IS2705)	Y	Y	Y
Capacitor Voltage Transformer (IEC:186A / 358/IS3156/IEC60044)	Y	Y	Y
Bus Post Insulator (IEC:168 / 815 / IS:2544)	Y	Y	Y
Disc,Pin & String Insulator (IEC:383 / IS:731)	Y	Y	Y
Long Rod Insulator (IEC:433)	Y	Y	Y
Surge Arrestor (IEC:99-4/IS:3070)	Y	Y	Y
Hardware fittings for Insulator (IS:2486 / BS:3288)	Y	Y	Y
Spacer Clamps & Connector (IS:10162 / 5561)	Y	Y	Y
Aluminium Tube (IS:5082 / 2673 / 2678)	Y	Y	Y
Wave Trap (IEC:353 / IS:8792 / 8793)	Y	Y	Y
Conductor (IS:398-P-II)(V)	Y	Y	Y
Galvanised Steel Structures (IS:2062/2629/4759/6745)	Y	Y	Y
Vibration Damper (IS:9708)	Y	Y	Y
Sag Compensating Spring DIN:2089/2096 IS:3195 / 7906	Y	Y	Y
Control & Relay Panel	Y	Y	Y
SF6 Gas filling & evacuating plant	Y	Y	Y
SF6 Gas Leak Detector	Y	Y	Y
Leakage Current Analyser	Y	Y	Y
Nitrogen Gas Filling Device	Y	Y	Y
Protection Relays	Y	Y	Y
Event Logger	Y	Y	Y
Operation Analyser	Y	Y	Y
Disturbance Recorder	Y	Y	Y
Tariff Metering System	Y	Y	Y
Synchronising Trolley	Y	Y	Y

NORTH KARANPURA STPP  
(3 X 660 MW)  
EPC PACKAGE

TECHNICAL SPECIFICATION  
SECTION-VI, PART-B  
BID DOC NO.:CS-4410-001-2

SUB-SECTION-E-51  
SWITCHYARD

CLAUSE NO.

**QUALITY ASSURANCE**



Attributes / Characteristics  Items/Components Sub Systems	Make, Type Rating, and Model, Test Certificates	Routine & Acceptance Test as per relevant IS/IEC	Functional requirements as per NTPC Specification
Relay Test Kit	Y	Y	Y
LT Switchgear /LT Panels (IEC:947 / IS:13947)	Y	Y	Y
Battery IS:1652	Y	Y	Y
Lighting Panels	Y	Y	Y
Surge Monitor	Y	Y	Y

Notes : 1) This is an indicative list of test/checks. The manufacture is to furnish a detailed Quality Plan indicating the practice and procedure along with relevant supporting documents during QP finalisation for all items.  
2) All major Bought Out Items will be subject to NTPC approval.

Project: 400/220 kV Switchyard Package for  
North Karanpura Super Thermal Power Project (3 X 660 MW)  
Customer: NTPC Limited  
Consultant: -----  
Technical Specification: Marshalling Kiosk & Junction Box

Bharat Heavy Electricals Limited  
Document No. TB-369-510-010A

### I. **APPLICABLE FOR MARSHALLING KIOSK**

#### **CHECK LIST FOR INFORMATION TO BE FURNISHED WITH OFFER RETURN THIS CHECKLIST AS PART OF THE OFFER DULY SIGNED**

The offer may not be considered if the following information and this Checklist are not enclosed with the Offer.

**BHEL ENQUIRY. NO:**

**BIDDER:OFFER REFERENCE:**

A)

(1)	(2)	(3)	(4)	(5)
S.No.	Parameters	Data	Yes / No	Remarks in case reply in Col (4) is <i>NO</i>
<b>1.</b>	<b>Applicable Standard</b>	<b>Latest IS -5039,IS-8623 or IEC-60439, IS-13947</b>		
<b>2.</b>	<b>Type</b>			
<b>3.0</b>	<b>Construction feature</b>			
3.1	Thickness of Sheet Steel	Either of 2.0 mm Cold rolled/ 2.5mm Hot Rolled		
3.2	Degree of protection	IP 55 as per IS13947		
3.3	Control Wiring	2.5 mm <sup>2</sup> , Stranded copper		
3.4	Space Heater / Lamp for illumination /Socket	Provided		
3.5	Distinct compartments for aux. Power circuits, interlocking circuit, receptacle (if applicable), CT& VT circuit (if applicable)	Provided		
<b>4.0</b>	<b>Power circuit Incoming</b>			
4.1	No. of AC Incomer feeders	Two		
4.2	Rating of Incomer feeders	<del>63</del> /100-amp, 3 - Phase, 4 - wire to be controlled by <del>TPN</del> /4-pole MCB		
4.3	Changeover between incomers	Automatic		
4.4	Terminal blocks of Incomer	CBT 110 of Elmex / Eq. For making loop-in & separately loop- out connection of 3.5 x 35 sq.mm connected cable.		
<b>5.0</b>	<b>Power circuit – Outgoing</b>			
5.1	No. of 3-phase AC outgoing feeders (Indenter to tick)	4      5      6      8		

Project: 400/220 kV Switchyard Package for  
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Customer: NTPC Limited  
Consultant: -----  
Technical Specification: Marshalling Kiosk & Junction Box

Bharat Heavy Electricals Limited  
Document No. TB-369-510-010A

(1)	(2)	(3)					(4)	(5)
S.No.	Parameters	Data					Yes / No	Remarks in case reply in Col (4) is NO
5.2	Rating of 3 -phase AC outgoing feeder	<del>16</del> / 32 amp, 3-phase, 4 -wire controlled by <del>FP</del> / <b>4-pole</b> MCB						
5.3	Type of terminal blocks for 3-phase outgoing feeders	CBT M5 of Elmex / Eq.						
5.4	No. of 1- phase AC outgoing feeders <b>(Indenter to tick)</b>	₹	€	<b>10</b>				
5.5	Rating of 1- phase AC outgoing feeders	<del>10</del> / 16 amp, 1-phase, 2 -wire controlled by <del>SP</del> / <b>DP</b> MCB						
5.6	Type of terminal blocks for 1-phase outgoing feeders	CBT M5 of Elmex / Eq.						
5.7	Provision of spare TBs of each type for power circuit	20 %						
5.8	<del>Contacts for remote alarm for supply fail (AC Incomer)</del>	Provided						
<b>6.0</b>	<b>Interlocking circuit</b>							
6.1	No. of Interlocking terminal block <b>(Indenter to tick)</b>	<del>150</del>	180	<del>240</del>	400	<del>Nil</del>		
6.2	Type of Interlocking terminal block	Non - disconnecting stud type CAT M4 of Elmex /Eq.						
<b>7.0</b>	<del><b>CT circuit (Indenter to tick)</b></del>	<b>Applicable</b>		<b>Not applicable</b>				
7.1	<del>No. of terminal block</del>	<del>75</del>						
7.2	<del>Type of terminal block</del>	<del>Disconnecting stud type CATD M4 of Elmex /Eq.</del>						
<b>8.0</b>	<del><b>VT circuit (Indenter to tick)</b></del>	<b>Applicable</b>		<b>Not applicable</b>				
8.1	<del>No. of terminal block</del>	<del>40</del>						
8.2	<del>Type of terminal block</del>	<del>Disconnecting stud type CATD M4 of Elmex /Eq.</del>						
<b>9.0</b>	<b>Receptacle (Indenter to tick)</b>	Applicable		Not applicable				
9.1	Rating of receptacle	63 /100 Amp complete with 3-ph, 4- pin industrial grade rotary switch						

**Project: 400/220 kV Switchyard Package for  
North Karanpura Super Thermal Power Project (3 X 660 MW)  
Customer: NTPC Limited  
Consultant: -----  
Technical Specification: Marshalling Kiosk & Junction Box**

**Bharat Heavy Electricals Limited  
Document No. TB-369-510-010A**

(1)	(2)	(3)	(4)	(5)
S.No.	Parameters	Data	Yes / No	Remarks in case reply in Col (4) is NO
9.2	Terminal block for Receptacle	CBT 250 of Elmex / Eq.		
<b>10.0</b>	<b>Clearance between TBs</b>			
10.1	Clearance between two rows of terminal blocks (End to End)	150 mm minimum		
10.2	Clearance between first/bottom row of terminal blocks and associated cable gland plate	250 mm minimum		
11.0	Feeder names with purpose shall be indicated in drawings	Yes		
12.0	Name plate details, type etc. shall be mentioned in notes of drawings	Yes		
13.0	Door handle with integral lock & master key	Provided		
14.0	TBs fully enclosed with removable covers of transparent, non-deteriorating type plastic material	Provided		
15.0	Fixing Hardware (Nuts, Bolts and Washers) for mounting MK	Provided		
16.0	Base Frame for MK	Provided		

**Project: 400/220 kV Switchyard Package for  
North Karanpura Super Thermal Power Project (3 X 660 MW)  
Customer: NTPC Limited  
Consultant: -----  
Technical Specification: Marshalling Kiosk & Junction Box**

**Bharat Heavy Electricals Limited  
Document No. TB-369-510-010A**

**B) TYPE TESTS**

i) Whether type test reports of the following test conducted earlier on identical or similar material are available (test reports are of the test conducted not earlier than 10 (ten) years prior to the date of techno-commercial bid opening). **(YES / NO)**

<b>S.No.</b>	<b>TESTS</b>	<b>REPORT NO.</b>	<b>Date</b>	<b>Conducted at accredited laboratory or witnessed by independent authority</b>
1	Degree of protection test			

ii) If type test reports are not acceptable to BHEL/Customer then above tests shall be conducted by the bidder free of cost. **(YES)**

**C)**

<b>S.No.</b>	<b>Description</b>	<b>Confirmation of Supplier</b>
1.	Bidder to confirm that at all drawings / data sheets/QP/ valid type tests reports/ all relevant information shall be submitted to BHEL for organising approval of ultimate customer.	
2.	Bidder to confirm that it will offer approved Make of the components and fitments at contract stage. In case the offered make is not approved by the customer, then alternate make shall be supplied without any commercial implications to BHEL.	

**Date:**

**Signature of the authorized representative of Bidder**

**Company Seal**

Project: 400/220 kV Switchyard Package for  
North Karanpura Super Thermal Power Project (3 X 660 MW)  
Customer: NTPC Limited  
Consultant: -----  
Technical Specification: Marshalling Kiosk & Junction Box

Bharat Heavy Electricals Limited  
Document No. TB-369-510-010A

## II. **APPLICABLE FOR CTJB**

### CHECK LIST FOR INFORMATION TO BE FURNISHED WITH OFFER RETURN THIS CHECKLIST AS PART OF THE OFFER DULY SIGNED

The offer may not be considered if the following information and this Checklist are not enclosed with the Offer.

**BHEL ENQUIRY. NO:**

**BIDDER:OFFER REFERENCE:**

A)

(1)	(2)	(3)					(4)	(5)
S.No.	Parameters	Data					Yes / No	Remarks in case reply in Col (4) is <i>NO</i>
<b>1</b>	<b>Applicable Standard</b>	Latest IS -5039,IS-8623, or IEC-60439, IS 13947						
<b>2</b>	<b>Type of JB</b>							
<b>3.0</b>	<b>Construction Feature</b>							
3.1	Thickness of Sheet Steel	Either of 2.0 mm Cold rolled/ 2.5mm Hot Rolled / <del>1.6 mm hot dip galvanized</del>						
3.2	Degree of protection	IP 55 as per IS 13947						
3.3	Control Wiring	2.5 mm <sup>2</sup> , Stranded copper						
3.4	Space Heater / Lamp for illumination /Socket	Provided						
<b>4.0</b>	<b>Type of terminal block (Indenter to tick)</b>	<b>As per Table-2A &amp; 2B of Section-2</b>						
4.1	No. of terminal block (Indenter to tick)	<del>30</del>	<del>45</del>	<del>75</del>	<del>90</del>	<b>130</b>		
<b>5.0</b>	<b>Clearance between TBs</b>							
5.1	Clearance between two rows of terminal blocks (End to End)	150 mm minimum						
5.2	Clearance between first/bottom row of terminal blocks and associated cable gland plate	250 mm minimum						

**Project: 400/220 kV Switchyard Package for  
North Karanpura Super Thermal Power Project (3 X 660 MW)  
Customer: NTPC Limited  
Consultant: -----  
Technical Specification: Marshalling Kiosk & Junction Box**

**Bharat Heavy Electricals Limited  
Document No. TB-369-510-010A**

(1)	(2)	(3)	(4)	(5)
S.No.	Parameters	Data	Yes / No	Remarks in case reply in Col (4) is NO
6.0	Name plate details, type etc. shall be mentioned in notes of drawings	Yes		
7.0	Door handle with integral lock & master key	Provided		
8.0	TBs fully enclosed with removable covers of transparent, non-deteriorating type plastic material	Provided		
9.0	Fixing Hardware (Nuts, Bolts and Washers) for mounting JB	Provided		

**B) TYPE TESTS**

i) Whether type test reports of the following test conducted earlier on identical or similar material are available (test reports are of the test conducted not earlier than 10 (ten) years prior to the date of techno-commercial bid opening). **(YES / NO)**

S.No.	TESTS	REPORT NO.	Date	Conducted at accredited laboratory or witnessed by independent authority
1	Degree of protection test			

ii) If type test reports are not acceptable to BHEL/Customer then above tests shall be conducted by the bidder free of cost. **(YES)**

**Project: 400/220 kV Switchyard Package for  
North Karanpura Super Thermal Power Project (3 X 660 MW)  
Customer: NTPC Limited  
Consultant: -----  
Technical Specification: Marshalling Kiosk & Junction Box**

**Bharat Heavy Electricals Limited  
Document No. TB-369-510-010A**

**C)**

<b>S.No.</b>	<b>Description</b>	<b>Confirmation of Supplier</b>
1.	Bidder to confirm that at all drawings / data sheets/QP/ valid type tests reports/ all relevant information shall be submitted to BHEL for organising approval of ultimate customer.	
2.	Bidder to confirm that it will offer approved Make of the components and fitments at contract stage. In case the offered make is not approved by the customer, then alternate make shall be supplied without any commercial implications to BHEL.	

**Date:**

**Signature of the authorized representative of Bidder**

**Company Seal**

Project: 400/220 kV Switchyard Package for  
North Karanpura Super Thermal Power Project (3 X 660 MW)  
Customer: NTPC Limited  
Consultant: -----  
Technical Specification: Marshalling Kiosk & Junction Box

Bharat Heavy Electricals Limited  
Document No. TB-369-510-010A

### III. **APPLICABLE FOR VTJB**

#### **CHECK LIST FOR INFORMATION TO BE FURNISHED WITH OFFER RETURN THIS CHECKLIST AS PART OF THE OFFER DULY SIGNED**

The offer may not be considered if the following information and this Checklist are not enclosed with the Offer.

**BHEL ENQUIRY. NO:**

**BIDDER:OFFER REFERENCE:**

A)

(1)	(2)	(3)		(4)	(5)
S.No.	Parameters	Data		Yes / No	Remarks in case reply in Col (4) is NO
1	Applicable Standard	Latest IS -5039,IS-8623, or IEC-60439, IS 13947			
2	Type of JB				
3.0	Construction Feature				
3.1	Thickness of Sheet Steel	Either of 2.0 mm Cold rolled/ 2.5mm Hot Rolled / <del>1.6 mm hot dip</del> galvanized			
3.2	Degree of protection	IP 55 as per IS 13947			
3.3	Control Wiring	2.5 mm <sup>2</sup> , Stranded copper			
3.4	Space Heater / Lamp for illumination /Socket	Provided			
4.0	Type of terminal block (Indenter to tick)	<del>Disconnecting stud type CATD M4 of Elmex /Eq.</del>	Non disconnecting stud type CAT M4 of Elmex /Eq.		
4.1	No. of terminal block (Indenter to tick)	As per Table-3 of Section-2			
5.0	Clearance between TBs				
5.1	Clearance between two rows of terminal blocks (End to End)	150 mm minimum			
5.2	Clearance between first/bottom row of terminal blocks and associated cable gland plate	250 mm minimum			

**Project: 400/220 kV Switchyard Package for  
North Karanpura Super Thermal Power Project (3 X 660 MW)  
Customer: NTPC Limited  
Consultant: -----  
Technical Specification: Marshalling Kiosk & Junction Box**

**Bharat Heavy Electricals Limited  
Document No. TB-369-510-010A**

(1)	(2)	(3)	(4)	(5)
S.No.	Parameters	Data	Yes / No	Remarks in case reply in Col (4) is NO
6.0	Name plate details, type etc. shall be mentioned in notes of drawings	Yes		
7.0	Door handle with integral lock & master key	Provided		
8.0	TBs fully enclosed with removable covers of transparent, non-deteriorating type plastic material	Provided		
9.0	Fixing Hardware (Nuts, Bolts and Washers) for mounting JB	Provided		
10.0	Fuse	18 Nos. 6A HRC fuses provided with internal wiring for VT JB-N75, as shown in Table-3 of Section-2		

### **B) TYPE TESTS**

i) Whether type test reports of the following test conducted earlier on identical or similar material are available (test reports are of the test conducted not earlier than 10 (ten) years prior to the date of techno-commercial bid opening). **(YES / NO)**

S.No.	TESTS	REPORT NO.	Date	Conducted at accredited laboratory or witnessed by independent authority
1	Degree of protection test			

ii) If type test reports are not acceptable to BHEL/Customer then above tests shall be conducted by the bidder free of cost. **(YES)**

**Project: 400/220 kV Switchyard Package for  
North Karanpura Super Thermal Power Project (3 X 660 MW)  
Customer: NTPC Limited  
Consultant: -----  
Technical Specification: Marshalling Kiosk & Junction Box**

**Bharat Heavy Electricals Limited  
Document No. TB-369-510-010A**

**C)**

<b>S.No.</b>	<b>Description</b>	<b>Confirmation of Supplier</b>
1.	Bidder to confirm that at all drawings / data sheets/QP/ valid type tests reports/ all relevant information shall be submitted to BHEL for organising approval of ultimate customer.	
2.	Bidder to confirm that it will offer approved Make of the components and fitments at contract stage. In case the offered make is not approved by the customer, then alternate make shall be supplied without any commercial implications to BHEL.	

**Date:**

**Signature of the authorized representative of Bidder**

**Company Seal**

TECHNICAL PRE- QUALIFICATION REQUIREMENT

Name of customer: NTPC Limited

Name of consultant: ---

Name of Project: 400/220 kV Switchyard Package for North Karanpura Super Thermal Power Project (3 X 660 MW)

Name of Item: Marshalling Kiosk &amp; Junction Box

PQR Sr. No	PQR Description	Supporting Document to be attached
1.	MK & JBs being offered should be from manufacturer who have manufactured and supplied at least ten (10) nos. of MK/ JB/ Distribution Boards for Substation/ Switchyard of 220kV or above class.	a) Copy of Purchase Orders / LR / MDCC / DI

Prepared By: Ranjit Dey (Manager/TBEM)	Checked By: Vivek Kapil (Sr. DGM/TBEM)	Approved By: Aruna Gulati (AGM & Head-Engg.)
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**PROJECT - NTPC NORTH KARANPURA -MK JB**

**SCHEDULE OF UNPRICED BID**

**Enquiry No:**

S.NO.	ITEM DESCRIPTION	HSN CODE	UNIT	QUANTITY	UNIT EX WORKS PRICES (INR)	TOTAL EX WORKS PRICES (INR) (Rs.)	GST RATE ON EX WORKS PRICES (%)	GST AMOUNT ON TOTAL EX WORKS PRICES (INR)	UNIT FREIGHT & INSURANCE CHARGES (INR)	TOTAL FREIGHT & INSURANCE CHARGES (INR)	GST ON FREIGHT & INSURANCE CHARGES (%)	GST AMOUNT ON FREIGHT & INSURANCE CHARGES (INR)	TOTAL FOR(D) PRICES (INR)
1	SUPPLY- MK & JB : MARSHALLING KIOSK MK-180R		NO.	3									
2	SUPPLY- MK & JB : JUNCTION BOX D-130		NO.	2									
3	SUPPLY- MK & JB : JUNCTION BOX WITH NON-DISCONNECTING TYPE 130 TBS		NO.	1									
4	SUPPLY- MK & JB : JUNCTION BOX WITH NON-DISCONNECTING TYPE 75 TBS ALONG WITH FUSE		NO.	3									
A	<b>TOTAL COST (SUPPLY) TO BHEL =</b>												

**FORMAT ONLY - NOT FOR FILLING PRICE**

**NOTE:**

1. PLEASE NOTE THAT UNPRICED COPY OF PRICE BID (i.e. WITH ALL PRICES BLANKED) SHALL BE FURNISHED ALONG WITH TECHNO-COMMERCIAL BID.
2. REQUIRED COPIES OF FORMAT BE MADE & DETAILS MAY BE ANNEXED.

**SIGNATURE & SEAL OF TENDERER**

# General terms and conditions on GeM 3.0 (Version 1.13)

## 1. Introduction

This document is an electronic record published by GeM under the provisions of the Information Technology Act, 2000 and the rules made there under (as applicable) and shall act as valid agreement between Seller / Service Provider and Buyer. Further the use of GeM Portal for Sale / Purchase of Goods / Services and the **resulting Contracts shall be governed by the following General Terms and Conditions (GTC) (unless otherwise superseded by Product / Service specific Special Terms and Conditions (STC), Product / Track / Domain Specific STC of Particular Service including its SLA (Service Level Agreement) and BID/Reverse Auction Specific Additional Terms and Conditions (ATC) as applicable).**

Government e-Marketplace (GeM) is the National Public Procurement Portal; an end-to-end online Marketplace for Central and State Government Ministries / Departments, Central & State Public Sector Undertakings (CPSUs & SPSUs), Autonomous institutions and Local bodies, for procurement of common use goods & services. The portal is owned and managed by GeM SPV which is a Section 8 (Non-Profit) Company registered under the Companies Act, 2013. GeM SPV operates, monitors and supervises all the business transactions on the portal through the Managed Service Provider as per defined roles and responsibilities.

## 2. General Terms and Definitions:

- a. **“APPLICABLE LAWS”** shall mean any statute, law, ordinance, notification, rule, regulation, judgment, order, decree, bye-law, approval, directive, guideline, policy or other governmental restriction as may be in effect.
- b. **“GOODS”** shall mean an Article / product or an intangible product like software, technology transfer, licenses, patents or other intellectual properties being offered for sale on the GeM portal by Seller(s) on GeM. The term ‘Goods’ shall also include works and services which are incidental or consequential to the supply of such goods, such as, transportation, insurance, installation, commissioning, training and guarantee / warrantee obligations as defined in the scope of supply given in the contract.
- c. **“SERVICES”** shall mean the services offered or provided by the Seller such as IT Professional Services, Manpower Services, Security Services, Transport Services, etc. listed as Services on GeM. The term ‘Service’ shall also include supply of goods / articles which are incidental or consequential to the provisioning of such Services as defined in the scope of supply given in the contract.

- d. **“SERVICE LEVEL AGREEMENT (SLA)”** shall mean the Contractual Commitment that prevails between the Buyer and the Service Provider with regard to type of service to be provided, deliverables, desired performance level, reliability and responsiveness, monitoring process and service level reporting, response and issue resolution time-frame, repercussions / penalties / remedies for service provider not meeting its commitment. The SLA of a particular contract may carry the matrix regarding the delivery of the goods and/or services and the corresponding penalties or remedies and liquidated damages as applicable.
- e. **“CATEGORY SPECIFICATION”** shall mean the framework of technical features, functional capabilities, technical properties, certifications of the items etc. in a particular category. The Specifications shall identify the key parameters defining the products with all necessary validations related to configuration, type of data, restrictions, range / allowed values, allowed units etc. Sellers as well as Buyers while offering / buying the Goods / services shall have to comply with the validation rules / restrictions provided for in the Category Specification. Buyers / Sellers can not add parameters and / or drop down values not provided for in category Specification. If any Buyer / Seller desire to add new parameter, value, validation etc. against any category specification, they have to raise request for the same to GeM for incorporation in Category Specification.
- f. **“BUYER”** is the Contract placing authority, which includes Central/State Government Ministries/Departments including its attached/subordinate offices, Central/State Public Sector Units (PSUs) and Autonomous Bodies acting through its authorized officer(s) for and on behalf of President of India/Governor of the State /PSU/Autonomous Bodies, as the case may be, for purchase of Goods/Services offered by Sellers on GeM.
- g. **“SELLER / SERVICE PROVIDER”** on GeM shall mean any legal entity such as firm(s) of Proprietorship / Partnership Firm / Limited Liability Partnership / Private Limited / Limited company / Society registered under Society’s Act / Statutory Bodies etc., registered on GeM to sell its Good(s) / Service(s) to the Buyers registered on GeM.

The “Seller on GeM” will be either OEM (Original Equipment Manufacturer\*) or Seller having authorization to sell products manufactured by the OEM in open market.

\* OEM is the owner of the Brand / Trademark of the product being offered or in case of un-registered brand’s products / products with own brand, the actual manufacturer of the final product.

In case of Services related to Goods, Service Provider on GeM will be either OEM or Service Provider having authorization to Service products manufactured by that OEM in open market. In respect of other Services, Service Provider on GeM will be any legal entity offering its services.

By registering on GeM portal , Seller / Service Provider hereby agrees to be bound by these General Terms and Conditions for Sale / Purchase of Goods and / or Services (GTC); Product / Service Specific Special Terms and Conditions (STC) and Service Level Agreements (SLAs) for various Services; and Additional (Bid Specific) Terms and Conditions (ATC) as applicable.

For the purpose of this document and transactions on GeM, Seller as well as Service Provider will be referred to as “Seller”

- h. **“USER ID and PASSWORD”** All users including Buyers and Sellers (primary as well as secondary) will get User ID and Password created on GeM following due registration process defined on GeM. It is the responsibility of the user to keep their User ID and Password secure and confidential. Individual user shall be solely and completely responsible for all transactions taking place on GeM portal using his / her User Id and Password and GeM shall not be responsible in any manner.
- i. **“LICENSE”** shall mean by registering the Seller and by offering Product / Service details on GeM, the Seller grants GeM a non-exclusive, royalty-free, irrevocable, perpetual and fully sub-licensable right to use, reproduce, modify, adapt, publish, translate, distribute, and/or display the content/materials which has been submitted to GeM excluding Aadhaar No. In case of registration of Primary user and creation of secondary user(s) by the Buyer/Seller, their Aadhaar (UID) details collected by GeM are solely for user verification and to apply e-signing on the documents. The e-sign is at par with digital signatures as per Information Technology Act Amendment 2008 and it works based on details available in Aadhaar database of UIDAI and there is no interference / intrusion in their personal details.
- j. **“CONTRACT”** shall mean the purchase order created / issued by the Buyer on GeM for supply of Goods / Services in electronic form which includes scope of supply, delivery instructions and specifications etc. as ordered by Buyer against such Contract besides the subject GTC, STC/ATC as the case may be.

### **3. Role, Responsibilities and Obligations of Seller/ Buyer:**

#### **A. Role and Responsibilities of Sellers on GeM are as under:**

- i. Only Director (s) / Partner (s) / Proprietor (as applicable) are authorized to become Primary User and register any legal entity on GeM as Seller.
- ii. Once Seller/Service Provider is registered and account is created on GeM, the Primary user of the Seller/Service Provider can create Secondary User Accounts within Seller/Service Provider Organization with different Roles and Responsibilities. However, the Primary User creating Secondary User accounts shall continue to be fully responsible and accountable for all actions / transactions done by Secondary Users on GeM Portal.
- iii. Since GeM is a trust based Portal, the complete accuracy and integrity of data submitted in respect of the Seller and also in respect of the Goods / Services offered on GeM will be the sole responsibility of the Seller/Service Provider. Seller will be liable for administrative action as per GeM terms and conditions in case of any discrepancy / infirmity in any data / information submitted on GeM.
- iv. The Primary / Secondary Users of Sellers, offering Goods/Services and/or participating in e-Bidding / Reverse Auction on GeM, must ensure that they have the requisite authorization to enter into contract with Buyer(s) in GeM for and on behalf of the Seller, failing which such Seller as well as the individual(s) shall be vicariously liable for its actions and also for any liability arising out of such actions.
- v. Seller can offer any number of products. However, it will be the sole responsibility of the seller to satisfy themselves regarding possessing the requisites for doing business for the offered product(s). The Sellers are solely responsible for ensuring that there is no violation of any Intellectual Property Rights in their offer for sell / providing service on GeM.
- vi. The Seller should not exercise any corrupt influence on any aspect of contract and commit to take all measures necessary to prevent corruption maintaining complete transparency, integrity and fairness in all activities related to GeM.
- vii. The seller would represent its business on the GeM portal and is mandated to comply with all the terms and conditions of the platform. Sellers would be solely and absolutely responsible for the information provided about their organization, business, products and services on the portal and would be required to produce proof of such information, if requested at any point in time by the Buyer and / or GeM.

- viii. GeM would not allow creation of any fresh data related to Seller identity on GeM portal. All details provided by the Seller at the time of registration would be counter checked / verified through other data bases of Government such as PAN, MCA 21, Udyog Aadhaar etc. For Financial details, PAN / Income tax Database shall be primary validating database and will override any conflicting data in any other database. If the data / details entered by the seller while registering on GeM is not verified with validating databases, registration will not be allowed. Further, in case of any conflict in details after registration, Seller's registration would be automatically suspended. It is the Seller's responsibility to keep all their information on GeM updated with the latest change(s). Non-updating of details on GeM within 7 days of such occurrence would make Seller liable for administrative actions.
- ix. Eligibility of Sellers in terms of Turn Over / Past Performance / Profitability etc. and also their eligibility for availing various benefits / advantages in terms of various Govt. Policies / Guidelines / Acts / Laws etc. shall be determined solely on the basis of data fetched / validated or verified through external agency / owner of that set of database such as Income Tax / PAN Data Base, MCA 21, Udyog Aadhaar, GSTN, Certifying Agencies such as BIS, BEE etc. In case of any discrepancy in data available in these databases, Seller has to get the same updated in the corresponding validating database before updating the same on GeM. Till such time only the existing validated information shall be used to decide seller's eligibility on GeM. Any default in sellers updating their data on partner sites / validating databases and any fall out of the same impacting adversely any transaction on GeM, shall entirely and exclusively be Seller's responsibility. GeM shall not be responsible for any consequential impact on any GeM transaction due to data discrepancy and / or suspension of seller account due to data discrepancy. Seller will be solely responsible for the same.
- x. The Seller shall be solely responsible for the Goods / Services including, without limitation, the applicable guarantee / warranty, shelf-life, quantity, quality and the title and for giving the correct and accurate details of the offer their Goods and / or /Services indicating product specifications, quantity which can be supplied over the specified time period, etc. as per catalogue or catalogue based template prescribed in GeM. Seller would ensure that the Goods or /Services offered are latest, new and complete in all respects. Where Seller is selling any Goods which needs spare parts, Seller should ensure and make available such spare parts for a minimum

period of three years from the date of expiry of warranty period (unless otherwise specified). The individual Sellers shall ensure that the products offered in e-Bidding and/or ordered shall remain available on GeM during the bid / contract validity period.

- xi. Sellers shall offer minimum discount of 10% on the Maximum Retail Price (MRP) mandatorily (unless otherwise specified for offering their products on GeM). Sellers are free to offer higher discounts. The Seller must offer its best possible lowest price on GeM and undertake that it would not sell or offer to sell the same product outside GeM in comparable quantity on similar terms and conditions at a price equal to or lower than Offer Price on GeM. In case any such infringement by Seller is noticed, the Seller shall be liable to be removed / debarred from the GeM.
- xii. By offering their product on GeM, the Seller agrees for sharing price details of the offered Goods / Service by GeM authorities with other Government agencies including Department of Excise & Customs, Income tax, GST etc.
- xiii. Listing of Goods / Services in irrelevant / inappropriate categories is strictly prohibited. If any such infringement made by Seller leads to placement of a contract by any Buyer for such inappropriately offered product(s)/service(s) by the Seller, such contract shall be treated as null and void. No claim whatsoever against such contract shall be admissible and entertained.
- xiv. The Seller(s) shall pass on all the benefits associated with any scheme / offer / freebies provided by the OEM on any product from time to time on an "as-is basis" to the Buyer. This obligation will also apply to OEM's directly supplying the goods. Holding back any such offer or accounting such freebies in quantity supplied shall make such consignments liable to be rejected by the consignee and shall also be considered as inappropriate and against the GeM policies for which GeM reserves all rights to take necessary action against such Seller/OEM as deemed fit.
- xv. By registering on GeM and by participating in any bid on GeM, Seller undertakes that presently it is not "Debarred from Bidding" on the grounds mentioned in Rule 151 of GFR 2017.

**B. Role and Responsibilities of Buyer on GeM:**

Buyer Registration on GeM is divided in two categories:

- a. **Primary User:** In GeM , the Primary User is as under:

- i. Any officer of Central / State Government / PSU / Autonomous Bodies / Local Bodies / Constitutional Bodies / Statuary Bodies at the level of Deputy Secretary of the Government of India or equivalent
- ii. Head of the Office at Sub Centre / Unit / Branch, can Register his / her organization / unit on GeM portal as Primary User.

Primary User shall be responsible for registering the organization on GeM, for creating User accounts for Secondary Users, assigning them roles and responsibilities on GeM and for supervision of all transactions performed by Secondary Users under him / her.

Primary User shall also be vicariously responsible for ensuring compliance of General Financial Rules and / or Rules Governing Public Procurement in respect of their organization, all GeM terms and conditions and other Procurement Policies / Guidelines notified by the government from time to time, by all the secondary users including timely payments and for dispute resolutions as per GeM terms and conditions.

Primary user cannot perform any Procurement related transactions on GeM portal.

- b. **Secondary Users:** Secondary Users are officials responsible for procurement transactions on GeM including Placement of Contracts, Receipt of Stores, and Payments to the Sellers etc. The access rights permissible to registered Secondary users would be decided by the Primary User of the Department. Secondary Users may be given the roles of Buyer / Consignee / Drawing and Disbursement Office (DDO) / Paying Authority etc. For transaction on GeM portal, Buyer is the official who is responsible for processing procurement transaction up to Order Placement stage. Consignee is the Secondary User in Buyer Organization responsible for certifying receipt and acceptance of the goods procured.

Buyer's responsibilities on GeM portal are as under:

- i. The Buyers are responsible to ensure that the procurement done by them are in compliance of General Financial Rules and / or Rules Governing Public Procurement in respect of their organization, all GeM terms and conditions and other procurement Policies / Guidelines notified by the government from time to time, including timely payments as per GeM terms and conditions.
- ii. The Buyers (in all capacities i.e. as Buyer, Consignee, DDO, Paying Authority etc) are responsible to ensure that the procurement done by them are in compliance with GeM Terms and Conditions / Guidelines

and all contract related transactions are completed within time lines prescribed in GeM Contract.

- iii. The Buyers must ensure that they have the requisite authorization to enter into contract with Seller(s) on GeM for and on behalf of the organization, failing which such individual(s) shall be individually liable for its actions and also for any liability arising out of such actions.
- iv. While making procurement on GeM, the Buyers shall judiciously search and shortlist items using filters such as quantity, technical parameters, delivery period, warranty period, consignee location(s), Seller's eligibility etc. as per their approved requirements. Placement of contract for a product / service uploaded by the Seller in any wrong/inappropriate product category is strictly prohibited and such contracts shall be treated as null and void and such Buying shall adversely affect Buyer Rating on GeM.
- v. The Buyers shall satisfy themselves that the price of the selected offer is reasonable. Buyer is at liberty to utilize all the data / information and Business Analytics made available in GeM including e-bidding and reverse auction.
- vi. The Buyers, before placing the order on GeM, should have the required mandatory approval with prior sanction and approval of the competent authorities and shall be in compliance with and as per procedures outlined in GFR and other procurement guidelines issued by the Government from time to time.
- vii. On award of the Contract(s), it would be construed that the Buyer has obtained all necessary Administrative & Financial sanctions of the competent authority and adequate funds are available indicating the relevant Head of accounts in the awarded Contract(s).
- viii. The Buyers should not exercise any corrupt influence on any aspect of contract and commit to take all measures necessary to prevent corruption maintaining complete transparency and fairness in all activities related to GeM.
- ix. Buyers are not allowed to place any order at GeM prices outside GeM. The prices on GeM are only applicable if the procurement is made through GeM portal. Using GeM prices for procurement outside GeM portal is strictly prohibited. Further, Buyers are not allowed to place any off-line contract to the Seller directly based on the outcome of e-Bidding

/ RA conducted on GeM. All such contracts shall be treated as null and void and GeM reserves the right to delete all data related to such transactions from GeM database besides taking suitable actions against such Buyers including suspension from GeM and / or reduction of Buyer rating etc.

#### **4. Enabling provisions of Rule 149 of General Financial Rules- 2017**

Enabling provisions of Rule 149 of General Financial Rules- 2017 as amended vide Ministry of Finance OM dated 02.04.2019 regarding procurement through GeM and necessary guidelines and terms and conditions thereon:

GeM portal may be utilized by the Government buyers for on-line purchases as under:-

- i. Up to Rs.25,000/- through any of the available suppliers on the GeM, meeting the requisite quality, specification and delivery period.
- ii. Above Rs.25,000/- and up to Rs.5,00,000/- through the GeM Seller having lowest price amongst the available sellers (excluding Automobiles where limit of Rs.30,00,000/- will be applicable), of at least three different manufacturers, on GeM, meeting the requisite quality, specification and delivery period. The tools for online bidding and online reverse auction available on GeM can be used by the Buyer if decided by the competent authority.
- iii. Above Rs.5,00,000/- through the supplier having lowest price meeting the requisite quality, specification and delivery period after mandatorily obtaining bids, using online bidding or reverse auction tool provided on GeM (excluding Automobiles where limit of Rs.30,00,000/- will be applicable).
- iv. The Government Buyers may ascertain the reasonableness of prices before placement of order using the Business Analytics (BA) tools available on GeM including the Last Purchase Price on GeM, Department's own Last Purchase Price etc.
- v. GFR rule 149 allows direct on-line purchases on GeM up to Rs. 25,000/- through any of the available suppliers on the GeM, meeting the requisite quality, specification and delivery period. However this is subject to procuring authorities certifying the reasonability of rates. While making such direct on-line purchase below Rs. 25,000/-, the buyer should have

approval of competent authority and should also record reasons for selecting the specific product in case lowest priced products are not being accepted / ordered.

- vi. Tools have been deployed on GeM portal to show the price of compared products on other e-commerce sites (wherever available) and also the rates at which orders have been placed on GeM for such items in recent past. While taking decision on reasonableness of price, the buyers may also take into account the discount over MRP; Last Purchase Price on GeM, Department's own Last Purchase Price; rates on other e-commerce websites etc. The prices on e-commerce site give a broad idea and its terms and conditions may be different. If it is found that the price available on GeM marketplace is not reasonable or is substantially higher than e-commerce sites or LPP, the GeM Portal provides tools for online bidding or reverse auction which can be used by the Buyers to get better competitive rates and then satisfy themselves about reasonableness of the price as per GFR -2017 before placement of contract. Bidding should be considered as the preferred mode of procurement above Rs. 25,000/-.
- vii. In case of Direct Purchase, during carting period, rates for carted quantity, for that buyer, are frozen for carting period as notified from time to time on GeM against any upward revision by seller. However, advantage of any downward revision in the offer price of carted item shall be automatically provided to the buyer.
- viii. According to the provisions of Rule 149 (ii) of GFR, 2017, GeM shall be utilized by Government buyers for direct on-line purchases above Rs. 25,000/- and up to Rs. 5,00,000/- however such purchase has to be through the Seller having the lowest price (L-1) amongst the available Sellers on the GeM. In order to ensure that buyers select only L-1 available offer, the GeM portal requires that buyer first compares all the product options available on GeM to ensure that it meets its requirements/ specifications. While comparing, care should be taken that comparison has to be done between products of at least three different Manufacturers / OEMs. For L-1 buying, comparison has to be made between products of at least three different OEMs. If Buyer wants to buy any specific OEM's product then he has to go for Proprietary Article Certificate (PAC) buying after obtaining necessary approvals of competent authorities for PAC buying as per GFR-2017.
- ix. **Proprietary Article Certificate (PAC) Buying:** While making procurement under PAC Buying on GeM, Buyer has to comply with following conditions:

- (a) In case a Govt. Buyer on GeM wants to make procurement on proprietary basis on the GeM Portal after obtaining the requisite approvals / PAC certificate from their competent authority as per Rule 166 of GFR-2017, the Buyer can use PAC filter provided on GeM for selecting a specific model/ make available from a particular GeM Seller. As per GFR, Proprietary Article Certificate in the following form should be available with Buyer before procuring the goods under PAC Buying:
- (i) The indented goods are manufactured by M/s. ....
  - (ii) No other make or model is acceptable for the following reasons: .....
  - (iii) Concurrence of Finance wing to the proposal vide: .....
  - (iv) Approval of the competent authority vide: .....
- (b) The Seller's price on the Portal is just their offer prices and the proper discovery of price generally happens through bidding/RA. Moreover, in PAC procurement irrespective of multiple listing by authorised sellers, the important issue of price control remaining with the OEM cannot be overlooked. Therefore, in case of all the PAC procurements, the Buyers will have to carry out extra due diligence in establishing the reasonableness of prices before placement of contract as per Para (vii) of Rule -149 of GFR-2017.
- (c) Except for direct buying up to Rs. 25,000/- subject to establishing the reasonableness of price, the bidding will be mandatory for procurements above Rs. 25,000/-. As result of bidding, the response could be as under:
- i. Only OEM is available or only single authorised seller is available.
  - ii. OEM as well as multiple authorised Sellers are available.
  - iii. Multiple authorised Sellers of the OEM are available.
- (d) After bidding, under PAC buying, the Buyer may take decision with the approval of the competent authority to process the

procurement subject to establishing the reasonableness of prices before placement of contract as per Para (vii) of Rule - 149 of GFR-2017.

- x. In order to give flexibility to the buyers in sourcing their requirements through GeM, provision has been made in e-bid and RA modules for indicating delivery period in terms of “number of days from date of placement of contract”. While stipulating delivery period in their bid documents, Buyers are advised to be careful since un-realistic delivery period stipulations may result in elimination of some genuine sellers, lack of competition and may ultimately have impact on cost of procurement. While fixing delivery period in e-bid/ RA bid, buyers should not only take into consideration the quantity required and the essentiality of requirement of that quantity within stipulated time period but also the possible impact of shorter delivery period on competition in e-bidding / RA.
- xi. Splitting of demands by creating multiple Bids / RAs of same goods / services or making repeated procurements of same Goods / Services through L-1 buying as per rule 149(i) and 149(ii) of GFR-2017 are strictly prohibited on GeM. Splitting of demand deprives the organizations from achieving the best competitive prices leveraging economies of scale. It also implies avoiding the necessity of obtaining the sanction of higher authority required with reference to the estimated value of the total demand. It is a violation of Para Rule 149 (viii) of GFR -2017 and terms and conditions of GeM Portal and Buyer including the Primary Buyer shall be entirely responsible for the same. If any such splitting of demand is noticed, GeM shall have the right to take necessary action such as blocking of such Bids/RAs and / or cancelling such contracts.
- xii. GeM is a dynamic online marketplace. The product/service listings across the existing categories are dynamic. Moreover, new categories of products/services are continuously being added on GeM. In situations where there is only one offer available in a product/ service category and/or there is offer from only one Seller after filter based search, the buyer should not select such offer for buying. Efforts should be made by Buyer to get their past suppliers and prospective Sellers on-boarded on GeM so as to ensure availability of sufficient Sellers on GeM. This however will not apply for PAC procurement.
- xiii. **e-Bidding and Reverse Auction (RA) on GeM**

- (a) The e-Bidding / RA module of GeM is a tool provided to the Buyer(s) for organizing bidding / RA from GeM Sellers of the particular product category for a pre-defined requirement i.e. quantity, technical parameters for Goods/ Services of the particular product category required for one or more Buyers / Consignees.
- (b) Prior to initiating e-Bidding / RA, the Buyer shall judiciously search and shortlist item among the items offered on GeM using filters such as quantity, technical parameters, warranty period, consignee location(s) etc. as per the requirement. In case the search made using actual quantity required, fails to identify sufficient offers, the Buyer may use an indicative quantity for initial search and selection of product and quantity may be amended to match the actual requirement at the time of finalizing e-Bidding / RA.
- (c) The technical parameters and warranty of the item identified by the Buyer shall be base parameters of the item for conducting e-Bidding / RA for the required Goods/Services.
- (d) The e-Bidding / RA document will be finalized by the Buyer(s) by stipulating requirements such as Quantity, Consignee Details, Terms of Delivery, Delivery Period, EMD, Performance Bank Guarantee, Time & Date for Start and End of Bid Submission and for Opening of Bids and required Bid Validity period etc. GeM system shall decide Start / Reference Price and Step Value of Decrement in case of RA based on product selection and / or outcome of bidding process.
- (e) Bid Life Cycle: Bid Life Cycle is the period within which a buyer has to complete the entire life cycle i.e. technical evaluation, financial evaluation and order creation of Bid process. By default, it is 90 days from the date of Bid publication. This can be configured to 120 / 150 or 180 days in exceptional cases through catalogue Management System (CMS) for a particular product category (not for a particular Buyer or Bid).
- (f) The e-Bidding / RA invitation / Notice shall be published on GEM, stipulating the last date for bid submission / opening of bids giving at least clear 10 days time after the publication. Any change in last date for bid submission will be intimated to

eligible bidders through e-mail / GeM. The e-Bidding invitation shall be extended to all the registered Sellers on GeM who have Goods / Services for that particular category listed on GeM, at least 2 hours prior to closing time of e-Bidding / RA. The GeM normally requires 48 hrs for approval / rejection of the product / service offered by Sellers before it is listed on the portal. Considering these time lines, the Sellers are required to offer their Goods / Services on GeM well in advance before bid closure. The decision of the Buyer/GeM regarding technical/commercial eligibility of the individual Seller to be invited for e-Bidding / RA shall be final.

- (g) The Seller participating in the e-bidding / RA may offer any one of their product(s) already listed on GeM. The bid submitted under e-Bidding / RA shall remain valid for 15 days (or as stipulated by the Buyer in the bid document) from the Bid Opening Date (till 24.00 Hrs IST). Bid Validity can be further extended with mutual consent between Buyer and Seller subject to the condition that total Bid Life Cycle cannot go beyond the stipulated time limit as per GeM CMS. The products offered in e-Bidding / RA can not be withdrawn by the Sellers from GeM during the bid validity period. The Buyer reserves the right to postpone/cancel the e-bidding and intimation thereof will be sent by e-mail / GeM to the Bidders. Any amendment / corrigendum to the e-bid invitation issued by the Buyer will be made online and shall be uploaded on the GeM. The participation by the Seller in e-bidding shall be construed as his / her acceptance for all the Terms and Conditions as outlined in the e-bidding including GTC, STC and ATC. However, the Buyer shall have right to decide the technical and commercial acceptability of the individual bids based on eligibility criteria and compliances as stipulated in the bid document. The technical parameters shown in the bid are from a particular catalogue as selected by the buyer while applying initial filters in selection of the product. The sellers are free to bid for same, equivalent or superior specifications catalogue / products. In the public interest, buyers will evaluate such bids based on their requirements / end use and

bid parameters and will accordingly technically accept or reject the bids on merits.

- (h) In bid documents, Buyers can incorporate suitable eligibility criteria and additional terms and conditions only using various filters and ATC module available in e-bidding / RA modules of GeM. Buyers are not allowed to incorporate eligibility criteria and / or additional / special terms and conditions exterior to the GeM portal by making reference to any other website / documents etc.
- (i) In case, two or more acceptable bidders are found to have quoted identical lowest bid price, Buyer has to conduct Reverse Auction for the required Goods among all technically qualified bidders in case of bids for Goods. In case of Services bids, if the multiple L-1 bidders have quoted the lowest allowed price for that service, Buyer shall have two options for placement of Contract:
  - a) Placement of contract by selection of an agency from amongst the L-1 bidders through a Random Algorithm run by GeM system.
  - b) Placement of contract on any one of the L-1 bidders based on any criteria as deemed fit by the Buyer with appropriate internal approvals
- (j) The Buyer reserves the right to accept/reject any bid including the lowest bid received through e-bid and/or annul the e-bidding process.
- (k) The participating bidders shall not disclose details of their bids or other details of their e-bids to other bidders or indulge in any anti-competitive behaviour including price manipulation in violation of Competition Act, 2002.
- (l) The Buyer/GeM will not be held responsible for consequential damages such as no internet connection, no power supply, system problems, loss of electronic information, power interruption etc.
- (m) Against any bidding or RA conducted on GeM, if a bidder quotes Nil Charges/consideration, the bid shall be treated as non-responsive and will not be considered.

(n) There shall be no EMD for Bids / RA having estimated value less than Rs. 5 lakh. For bids / RA having estimated value more than Rs 5 Lakh, while finalizing e-Bid / RA, Buyer shall indicate the exact amount of EMD required to be submitted by bidders in the form of Bank Guarantee on GeM portal in the prescribed format. Scanned copy of the same shall be uploaded by Seller in the online bid and hard copy of the same will have to be submitted directly to the Buyer within 5 days of bid opening. GeM recommends quantum of EMD @ 1% of estimated value of procurement. The Buyer also has the option to select EMD between 0.5% to 5%. The same should be valid for 45 days beyond the bid validity. Following categories of Sellers shall however, be exempted from furnishing EMD:

- i. Micro and Small Enterprises who are manufacturer of the Primary Product Category or Service Provider of the Primary Service Category and give specific confirmation to this effect at the time of bid submission and whose credentials are validated online through Udyog Aadhaar and through uploaded supporting documents.
- ii. Start-ups as recognized by Department of Industrial Policy and Promotion (DIPP).
- iii. KVIC, ACASH , WDO, Coir Board, TRIFED and Kendriya Bhandar.
- iv. Sellers who have got their credentials verified through the process of Vendor Assessment by Vendor Assessment Agencies for the Primary Product / Primary Service for which Bid / RA has been invited.
- v. Sellers/ Service Provider having annual turnover of Rs 500 Crore.
- vi. Micro and Small Enterprises registered with NSIC for the Primary Product Category whose credentials are validated through NSIC database and through uploaded supporting documents.
- vii. Micro and Small Enterprises registered with DIC for the Primary Product Category whose credentials are validated through DIC database and through uploaded supporting documents.

- viii. Sellers / Service Providers holding BIS License for the Primary Product Category whose credentials are validated through BIS database and through uploaded supporting documents.
  - ix. Central / State PSUs.
  - x. Seller / Service Provider registered with designated Agency / Authority as specified in the bid document by the Buyer – such bidder shall have to upload scanned copy of relevant registration document in place of EMD document while bidding.
- (o) EMD submitted by the bidder shall be forfeited, if the bidder:
- i. Withdraws or modify or impairs or derogates from the bid in any respect within the period of validity of its bid; or
  - ii. If it comes to notice that the information / documents furnished in its bid is false, misleading or forged; or
  - iii. Fails to furnish requisite performance security / PBG within stipulated time required as per e-bid / RA conditions.
- (p) Notwithstanding above, GeM SPV / GeM Admin also reserve the right to debar such seller from GeM portal. Such debarment shall be for minimum 3 months initially on first such offence and on repeat offence, the debarment period can be increased suitably by GeM SPV / GeM Admin. By submitting a bid on GeM, the Bidder explicitly undertakes to abide by the above clause.
- (q) Earnest money of unsuccessful bidders shall be returned within 15 days after the award of contract or expiry of bid validity whichever is earlier. Earnest money of successful bidder shall be returned within 15 days after receipt of Performance Security / e-PBG.
- (r) In case of RA, Start / Reference Price and Step Value of Decrement shall be indicated to the Bidders at the start of the auction. Any participating bidder can bid one or multiple Step Decrement lower than the prevailing Lowest Bid at that time.
- (s) The Bidder shall be able to view Bid Start Price, Bid Decrement Value, Prevailing Lowest Bid value and last Bid Placed by him. Whenever a lower price bid is received in the closing moment

i.e. within 15 minutes of existing end time of Reverse Auction, the end time of reverse auction shall be extended automatically by another 15 minutes. All participant sellers of that RA shall be notified by the GeM system about extension of time through email and/or SMS and they shall be allowed to submit revised bid under the RA. The same process shall be repeated, if there is another lower bid received in the RA during last 15 minutes of RA.

(t) GeM / Buyer shall not have any liability to bidders for any interruption or delay in access to the GeM site / Reverse Auction link etc, irrespective of the cause.

(u) By creating a bid on GeM, the Buyer undertakes as under:

"I confirm that this tender document complies with the "Public Procurement (Preference to Make in India) Order, 2017" issued by DIPP and "Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012" issued by MoSME".

(v) **Bid to RA:** While creating bid on GeM, Buyer shall have the provision to select Bid to RA option. If this option is selected by the Buyer at the time of bid creation, Sellers would be required to submit their Technical and Commercial bids before bid closure. After completion of technical evaluation by the Buyer, Reverse Auction would be conducted amongst first 50% of the technically qualified bidders arranged in the order of prices from lowest to highest. Number of sellers eligible for participating in RA would be rounded off to next higher integer value if number of technically qualified bidders is odd (e.g. if 7 bids are technically qualified, then RA will be conducted amongst L-1 to L-4). In case number of technically qualified bidders are 2, RA will be between both without any elimination.

In case Primary products of only one OEM are left in contention for participation in RA based on lowest 50% bidders qualifying for RA, the number of sellers qualifying for RA would be increased to get at least products of one more OEM (directly participated or through its reseller) if available. Further, if bid(s) of any seller(s) eligible for SME preference is / are coming within price band of 15% of L-1 or if bid of any seller(s)

eligible for Make in India preference is / are coming within price band of 20% of L-1, then such SME / Make in India seller shall also be allowed to participate in the RA process. After the RA process, the award of contract(s) shall be made by the buyer keeping in view the Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012 and Public Procurement (Preference to Make-in-India) Order, 2017 last revised on 29.5.2019 as amended from time to time.

- (w) In case any Seller / Service provider has been debarred in any particular Department / Organization, Buyers of that particular Department / Organization only shall have the right to disqualify such Sellers / Service providers at the time of technical evaluation of Bids during the period of debarment, subject to the condition that orders of such debarment has been taken with approval of Competent Authority of that Department / Organization and has been communicated to the concerned Seller / Service Provider before bid opening date.
- (x) GeM is an end to end on-line procurement portal and not a tender publishing portal. GeM has detailed GTC, product / service specific STC and a rich ATC library in-built in the portal which can be used to create a comprehensive bid document. Based on the available terms and conditions, there is hardly any need to add any additional conditions to be attached with any GeM bid. However, for inclusion of some clause which is considered absolutely necessary for that particular bid for reasons to be explained in detail, a provision for inclusion of additional conditions in the bid through corrigendum is available in Request Management System. Only indispensable conditions that are not covered in and are not in conflict with GeM GTC, Product / Service STC and the standard ATC library, and which are in compliance with the Govt. orders on Public Procurement and are not restrictive and not against the core principals of transparency, fairness and efficiency enshrined in GeM, can be requested through RMS ATC request for making part of GeM bid through corrigendum. Each such request has to be made only after due approval of the Competent Authority in Buyer Organization confirming that the request has been made with the approval of the Competent

Authority. Buyer organization shall be solely responsible for the impact of the requested clauses on the bidding process and its outcome. The clauses which are already covered in standard ATC library available on GeM Portal, will not be allowed through RMS.

- (y) Determination of eligibility in case of products requiring BIS License: In case the bid requires availability of BIS License, bidder has to upload currently valid and operative BIS License copy (Valid on the date of bid opening) to be considered eligible. Submitted BIS License may be in the name of Bidder / OEM or in the name of the Manufacturer to whom the OEM has outsourced manufacturing of his brand of product. The name of the Brand of the offered product should be mentioned in the BIS License. BIS certificate issued under Compulsory registration Scheme for electronic products to OEM/Brand owners for the products marketed under their brand name wherein their products are manufactured at third-party manufacturing unit is valid and is allowed for participation in the bids floated on GeM. The Manufacturer's Authorization in all such cases wherein the manufacturing is done by a third party shall be issued by the Brand owner / OEM and not by the third-party manufacturing unit mentioned in the BIS certificate.
- (z) **Bid Splitting:** In case of critical / vital / safety / security nature of the item, and / or large quantity under procurement and / or urgent delivery requirements and / or inadequate vendor capacity, Buyer may decide to have more than one source of supply. In such cases Buyer may opt for Bid Splitting while creating the bid on GeM, clearly indicating the Bid Splitting ratio in which order will be split among L-1, L-2, L-3 etc as per ratio of splitting pre-disclosed in the bid . After technical and financial evaluation, before splitting the quantity, it should be ensured by the Buyer that the L1 price is reasonable. After deciding the acceptable reasonable price, L1 would be awarded contract for at least the first / highest percentage indicated in the bid splitting ratio. For the rest of the bid quantity, the L-1 rates / lowest accepted rate will be counter offered to the next higher quoting bidder(s) for price matching. On acceptance of the counter offer, the order will be placed on next higher

quoting bidder(s) for the respective percentage. In case of non-acceptance of the counter offer by the next higher quoting bidder(s), a similar offer shall be made to L3 and L4, and so on. In case counter offered rates are not accepted for ratio of splitting quantity as per bid document by any of the subsequent bidders, the left over quantity will be divided between bidders who have accepted the rates in the ratio of their originally allocated quantities subject to their confirmation and after getting consent on mutually agreed delivery schedule for the additional quantity.

## 5. **Contract(s):**

Following documents shall be construed to be part of the contract generated through GeM:

- i. Scope of supply including price as enumerated in the Contract Document.
- ii. General Terms and Conditions (GTC).
- iii. Product / Service specific Special Terms and Conditions (STC).
- iv. Product / Track / Domain Specific STC of Particular Service including its SLA (Service Level Agreement)
- v. Bid / RA specific Additional Terms and Conditions (ATC).

The Terms and Conditions stipulated in STC & SLA will supersede those in GTC and Terms and Conditions stipulated in ATC will supersede those in GTC and STC in case of any conflicting provisions.

## 6. **Prices:**

- i. **Offer price on GeM portal:** The prices of the offered Goods or Services shall be firm and fixed at any point of time and shall be indicated in INR for each accounting unit. The Seller can choose to offer Goods or Services with uniform all inclusive unit price for deliveries at locations across India on All India basis or for specified locations selected at the time of product listing. As such, for supply of Goods contract, no additional charges such as local levies / transportation / loading unloading charges etc., shall be payable over and above the contract price. For selected freight intensive products, as notified on GeM, the Seller may quote unit price inclusive of GST with delivery charge(s) (including transportation, loading unloading and local levies) payable extra as defined in the relevant categories. In

respect of items requiring installation and / or commissioning and other services (as indicated in technical details of the item), the charges for the same shall also be included in the offered price on GeM.

Once a Buyer carts a particular quantity of offered Goods / Service, during carting period as notified from time to time on GeM, rates for carted quantity, for that buyer, are frozen for the period as specified on the portal against any upward revision by seller. However, advantage of any downward revision in the offer price of carted item shall be automatically provided to the buyer.

- ii. **Offer price in e-bidding:** Bidder is required to indicate offer price in the price schedule as provided in the bidding document. Complete breakup of price as required must be indicated. However evaluation of the bid shall be on the basis of total all inclusive, landed price at consignee destination (unless otherwise specified in the ATC).
- iii. **Offer price in RA:** Bidder is required to indicate total offer price. Evaluation of the bid shall be on the basis of total all inclusive, landed price at consignee destination (unless otherwise specified in the ATC). Successful bidder shall have to provide complete breakup of the quoted price in the required price bid format before award of contract.

## 7. Performance Security and Performance:

- i. *There shall be no Performance security / PBG requirement for contracts:*
  - a) *Placed under Direct Purchase / L-1 Purchase Option under Para (i) and (ii) of GFR rule 149;*
  - b) *Placed through Bids / RA with estimated bid value up to Rs 5 Lakh (in case of Goods contracts); and*
  - c) *Placed through Bids / RA with estimated bid value up to Rs 5 Lakh (in case of Services contracts)*
- ii. In case of contracts placed following e-Bidding / RA, Performance Security / Performance Bank Guarantee (PBG) (in format provided on GeM) valid for 2 months beyond the date of completion of all contractual obligations including warrantee obligations, will be obtained from the successful Bidder, for ensuring due performance of the contract. GeM recommends quantum of Performance Security @ 2% of the value of contract. The Buyer also has the option to select Performance Security between 2% to 10%. While finalizing e-Bid / RA, Buyer shall indicate the % of Performance Security required to be submitted by successful bidders. In case of any extension of contract

obligation period, the seller shall be liable to suitably extend the validity of the Performance Security.

Such Performance Bank Guarantee, in prescribed format, from a scheduled commercial bank must be submitted by Seller to the Buyer within 15 days of award of contract on GeM. The payments to the seller shall become due only after receipt of Performance Bank Guarantee by the Buyer and verification of its genuineness.

If the Seller fails or neglects to observe or perform any of his obligations under the contract it shall be lawful for the Buyer to forfeit either in whole or in part, the Performance Security furnished by the Seller.

If the Seller duly performs and completes the contract in all respects the Buyer shall, refund the Performance Security to the Seller within 30 days of completion of all contractual obligations by the Seller.

## **8. Duties & Taxes:**

- i. Offer Prices on GeM shall be on all inclusive basis i.e. including all taxes, duties, local levies / transportation / loading-unloading charges etc. In the case of Bid / RA, complete break-up of the quoted price in the required price bid format shall furnished by the Bidder, before award of contract.
- ii. Statutory variation in the rate of GST, taking place between the date of award of contract and the original / refixed delivery period, shall be to the Buyer's account. For claiming any change in price due to such Statutory variation, the seller shall have to lodge claim before the Buyer providing documentary evidence of change in rate of GST taking place after the date of award of contract and the date of supply within the original / refixed delivery period. Buyer shall issue necessary amendment in the contract to enable generation of supplementary invoice or revised invoice as the case may be.
- iii. No increase in price on account of statutory increase in the rate of GST taking place during the period of delivery period extension with liquidated Damages shall be admissible. Nevertheless the Buyer shall be entitled to the benefit of any decrease in price on account of reduction in GST taking place during extended delivery period.
- iv. The Bill Form / On-line invoice shall be generated by the Seller which may inter-alia include the following confirmations from the Seller:

- a. Certified that the Goods and Services Tax (GST) charged on this Bill is not more than what is payable under the provision of the relevant Act or the Rules made there under.
  - b. Certified that the goods on which GST has been charged have not been exempted under the GST Act or the rules made there under and the charges on account of GST on these goods are correct under the provisions of that Act or the Rules made there under.
  - c. Certified that the Seller is registered with above indicated GSTIN as dealer in the State where in their Billing address is located for the purpose of GST.
  - d. The on-line bill form / invoice generated on GeM is not a replacement for the GST invoice. The proper GST invoice as per requirements of GST rules shall be sent by the seller to the buyer / consignee directly along with the Goods / Services as and when deliveries are made to the consignee.
- v. Seller shall comply with all the necessary statutory compliances including but not limited to providing GST invoices or other documentation as per GST Law relating to the supply of Goods or Services, uploading the details of the invoices, payment of taxes, timely filing of valid statutory returns for the tax period in the GST portal. In case the Input Tax Credit of GST is denied or demand is recovered from Buyer on account of any act/ omission of the Seller in this regard, the Seller shall be liable in respect of all claims of tax, penalty and / or interest, loss, damages, costs, expenses and liability that may arise due to such non-compliance. Buyer shall have the right to recover such amount from any payments due to the Seller or from Performance Security, or any other legal recourse from the said Seller. If any tax is required to be paid by the Seller in pursuance of any demand from tax authorities, on account of Seller's suppression of facts, fraud or wilful misstatement of facts while offering the products or submitting the bids, then the same shall not be passed on to Buyer through debit notes or Invoices or Supplementary Invoices and the seller shall be solely liable for payment of the same.

## **9. Integrity Pact:**

All the Users in GeM i.e. Seller as well as Buyer agree not to indulge in any corrupt practices including without limitation any activity or action to influence the transaction on any aspect of contract and commit to take all measures necessary to prevent corruption maintaining complete transparency and fairness in all

activities related to GeM. Users agree to follow and adhere with the Integrity Pact guidelines provided on GeM Portal.

#### **10. Guarantee And Warrantee:**

- i. The Goods/Services supplied under the Contract(s) shall be in accordance with the contract specifications & quality and the Goods shall be brand new and have standard Guarantee/Warrantee for one year period from the date of final acceptance by the consignee unless otherwise specified in category specifications, specific Bid/RA . Seller, at the time of listing their product on GeM portal or offering their products against any Bid / RA, may accordingly provide longer Guarantee/Warrantee period (i.e. more than 1 year) and in such case, Guarantee/Warrantee period stipulation made in category specifications / Bid / RA document, shall prevail over standard Guarantee / Warrantee period of 1 year stipulated in these General Terms and Conditions.
- ii. Notwithstanding the fact that the Buyer or its Quality Assurance Officer may have inspected and/or approved / accepted the said Goods, it is further guaranteed that if during the said guarantee / warrantee period, the Goods be discovered not to conform to the requisite description and quality and/or not giving satisfactory performance or have deteriorated, and the decision of the Buyer in that behalf shall be final and binding on the Seller and the Buyer shall be entitled to call upon the Seller to rectify and/or replace the Goods or such portion thereof as is found to be defective by the Buyer within 7 days. Otherwise, the Seller shall pay to the Buyer such compensations that may arise by reasons of the warranty therein contained. In cases requiring Spares, the Seller guarantees that they will supply Spare Parts, if and when required on agreed basis for an agreed price for a minimum period of three years from the date of expiry of warrantee period (unless otherwise specified in STC / ATC). The agreed basis could be, including but without any limitation, an agreed discount on the published catalogue or an agreed percentage of profit on the landed cost. The aforesaid provisions made specifically for Goods, shall also be applicable for Services to the extent the same are practically possible.

#### **11. Buyer / Consignee's Right Of Rejection (Return Policy):**

- i. The Goods delivered shall bear the self certified Manufacturer's/Seller's Warranty/Guaranty. Buyer / Consignee shall have the right to inspect the supplied Goods themselves and/or through their appointed agency at consignee's own cost, at Consignee's site(s) after receipt and accept or reject

on proper justification any consignment of the Goods received within a period of 10 days (unless otherwise specified in STC or ATC) of receipt of consignment of goods. The date of receipt shall be reckoned from the date of receipt of the Goods as notified in the Provisional Receipt Certificate (PRC) which will be issued online by consignee immediately after receipt of Goods.

- ii. In case of Service contract, the Buyer reserves right to reject the same in conformance with the terms and conditions of the agreed Service Level Agreement (SLA). However, such right to reject services offered by the Seller under the contract shall be exercised by the Buyer within 10 days (unless otherwise specified in STC or ATC) of the date of receipt of the Service. The date & time of start and completion of the Service, shall be indicated by the Seller while raising on-line invoice for a specified period of Service as per Service Level Agreement (SLA). The date of such invoice or the date of completion of the service, whichever is later shall be reckoned as date of receipt of the Service.
- iii. On Acceptance / Part Acceptance or Rejection of Goods / Services, Consignee will issue an on line 'Consignee's Receipt cum Acceptance Certificate' (CRAC), which will form the basis of Payments to the Seller.
- iv. No payment shall be made for rejected goods or services. After intimation of the rejection / part rejection by the Buyer/ Consignee, the Seller shall be liable to remove / lift back such rejected Goods within 10 days without any extra charge/cost to the Buyer / Consignee failing which suitable ground rent / warehousing charges would be payable by the Seller to the Buyer /Consignee. If the Seller fails to remove / lift back such rejected Goods within reasonable time period, the Buyer / Consignee shall have the right to dispose off such rejected goods at the risk and cost of the seller.

## **12.Payment Authority and Payment Terms:**

Payments shall be made to the Seller in the manner below:

### **i. For Goods :**

In case of goods, 100% payment will be released within ten (10) days of issue of consignee receipt-cum-acceptance certificate (CRAC) and on-line submission of bills unless otherwise specified in STC / ATC.

### **ii. For Services:**

In case of services, 100% payments on the basis of monthly (unless otherwise specified) bills will be paid within ten (10) days of issue of consignee receipt-cum-acceptance certificate (CRAC) and on-line submission of bills unless otherwise specified in STC / ATC.

### **13. Terms of Delivery:**

All the Goods or Services in the GeM shall be offered on Free Delivery at Site basis including loading/unloading. In respect of items requiring installation, commissioning and other services in the scope of supply (as indicated in respective product category specification / STC / ATC), the cost of the same shall also be included in the offer price.

### **14. Delivery Period**

Seller shall indicate the quantity which can be supplied over the specified time period(s). The Seller would offer these details, which would constitute the part of the awarded Contract(s) in the GeM and would make a binding Contract between the Seller & the Buyer. Any modification thereto shall be mutually agreed and incorporated in the Contract. This Delivery Period/Time shall be deemed to be essence of the Contract and delivery must be completed not later than such date(s).

### **15. Extension of Delivery Period and Liquidated Damages:**

Buyer may, on the request of the Seller or otherwise, extend the delivery date suitably subject to the following conditions:

- i. The original Delivery Period may be re-fixed by the Buyer without any Liquidated damages subject to Force Majeure conditions mentioned below and also on the ground/reasons of delay attributable to the Buyer / Consignee.
- ii. For other cases, provided the price trend is not lower, the Delivery Period may be suitably extended for which an amount equal to the Liquidated Damages for the extended period(s) for delay in the supply of the Goods/Services after the expiry of contract delivery period /re-fixed delivery period, shall be recovered from the Seller as mentioned hereinafter for the extended period. No increase in price on any ground after the original/re-fixed delivery date shall be admissible during such extended period(s). Nevertheless the Buyer shall be entitled to the benefit of any decrease in price on account of reduction in GST taking place during extended delivery period.

iii. **Liquidated Damages:** If the Seller fails to deliver any or all of the Goods/Services within the original/re-fixed delivery period(s) specified in the contract, the Buyer will be entitled to deduct/recover the Liquidated Damages for the delay, unless covered under Force Majeure conditions aforesaid, @ 0.5% per week or part of the week of delayed period as pre-estimated damages not exceeding 10% of the contract value without any controversy/dispute of any sort whatsoever.

iv. **Force Majeure Conditions :**

If at any time during the continuance of the Contract, the performance in whole or in part by either party of any obligation under this Contract shall be prevented or delayed by the reasons of any war, hostility, acts of the public enemy, epidemics, civil commotion, sabotage, fires, floods, explosion, quarantine restrictions, strikes, lockouts or act of God provided notice of happening of such event duly evidenced with documents is given by one party to the other within 10 days from the date of occurrence thereof, neither party shall be by reasons of such event, be entitled to terminate the Contract nor shall either party have any claim for damages against the other in respect of such non-performance or the delay in performance, and deliveries under the contract shall be resumed as soon as practicable after such event has come to an end or ceased to exist, and the decision of the Buyer as to whether the deliveries have been so resumed or not, shall be final and conclusive, Provided further that if the performance in whole or part of any obligation under this contract is prevented or delayed by reason of any such event for a period exceeding **10 days**, either party may at its option terminate the contract provided also that the Buyer shall be at liberty to take over from the Seller at a price to be fixed by Buyer, which shall be final, all unused, undamaged and accepted material, bought out components and Goods in course of manufacture in the possession of the Seller at the time of such termination or such portion thereof as the Buyer may deem fit excepting such materials, bought out components and Goods as the Seller may with the concurrence of the Buyer elect to retain.

## **16. Dispute Resolution Between Buyer and Seller:**

### **AMICABLE SETTLEMENT:**

In the event of any question, dispute or difference arising connection with the Contract, the Parties shall use their respective reasonable endeavour to settle any dispute amicably. If a Dispute is not resolved within 30 days after written notice of

any dispute by one Party to the other, the same shall be resolved through the mechanism of a co-ordination committee to be formed by the Buyer and Seller/Service Provider and to be chaired by the Primary User of Buyer Organization/Department along with representatives from Buyer Department and Seller.

**ARBITRATION:**

In the event of any question, dispute or difference arising under the terms and conditions of the contract placed through GeM, the same shall be referred to the sole arbitration by an officer nominated as Arbitrator by the Primary Buyer of the concerned Buyer Organization. It will be no objection that the arbitrator is a Government Servant and that he had to deal with the matters to which the contract relates or that in the course of his duties as a Government servant he has expressed views on all or any of the matters in dispute or difference. The award of the arbitrator shall be final and binding on the parties to the contract. The arbitration shall be governed as per Indian Arbitration and Conciliation Act 1996 as amended up to date. The place for arbitration shall be at the place from where contract has been placed by the Buyer or at the place of Primary Buyer as decided by the Primary Buyer.

In the event of the Arbitrator dying, neglecting or refusing to act or resigning or being unable to act for any reason, or his award being set aside by the court for any reason, it shall be lawful for the Primary Buyer to appoint another arbitrator in place of the outgoing arbitrator in the manner aforesaid.

In respect of all contract placed through GeM, the dispute would not be referred or entertained by Micro and Small Enterprise Facilitation Council, Consumer Forum or any other adjudication forum.

All disputes in connection with the Contract, shall be subject to the exclusive jurisdiction of the Court within the local limits of whose jurisdiction, the place from where Contract was issued is situated

GeM SPV would not be a party to any such dispute/matter.

In case any Seller / Service provider makes GeM a party / respondent in any case involving any dispute between Buyer and Seller arising out of a concluded contract or arising out of bidding process initiated / concluded by the Buyer on GeM, it would be obligatory on the part of the Buyer to represent GeM also through their Counsel / Lawyer in the proceedings before the legal authority and ensure timely filing of replies / affidavits etc provided by GeM also through their Counsel / Lawyer before the concerned legal authority during the course of

litigation. A standard reply on behalf of GeM, covering following aspects shall be incorporated in all replies / affidavits filed by the Buyer in such cases:

*“Government e-Marketplace is a National Public Procurement Portal; an end-to-end online Marketplace for Central and State Government Ministries / Departments, Central & State Public Sector Undertakings (CPSUs & SPSUs), Autonomous institutions and Local bodies, for procurement of common use goods & services. Prima facie, the dispute in the present case appears to be between the Buyer and Seller arising out a contract placed / bid created by the Buyer on Government e-Marketplace. As per Clause 16, Clause 17 and Clause 22 of the General Terms and Conditions of Government e-Marketplace (duly accepted by the Buyer and Seller), GeM is not to be made a party to any dispute between the Buyer and the Seller. As such Government e-Marketplace is liable to be deleted from the array of parties.*

*In light of the above, we request your goodself to kindly delete Government e-Marketplace from the array of parties.”*

#### **17.Laws Governing the Contract:**

- i. The contract shall be governed by the laws of India for the time being in force.
- ii. Irrespective of the place of delivery, the place of performance or the place of payment under the contract, the contract shall be deemed to have been made at the registered address of the Buyer and / or Primary Buyer.
- iii. Jurisdiction of Courts: The courts of the place from where the contract has been made shall alone have jurisdiction to decide any dispute arising out of or in respect of the contract.
- iv. GeM SPV would not be a party to any such litigation.
- v. In case any Seller / Service provider makes GeM a party / respondent in any case involving any dispute between Buyer and Seller arising out of a concluded contract or arising out of bidding process initiated / concluded by the Buyer on GeM, it would be obligatory on the part of the Buyer to represent GeM also through their Counsel / Lawyer in the proceedings before the legal authority and ensure timely filing of replies / affidavits etc provided by GeM also through their Counsel / Lawyer before the concerned legal authority during the course of litigation. A standard reply on behalf of GeM, covering following aspects shall be incorporated in all replies / affidavits filed by the Buyer in such cases:

*“Government e-Marketplace is a National Public Procurement Portal; an end-to-end online Marketplace for Central and State Government Ministries / Departments, Central & State Public Sector Undertakings (CPSUs & SPSUs), Autonomous institutions and Local bodies, for procurement of common use goods & services. Prima facie, the dispute in the present case appears to be between the Buyer and Seller arising out a contract placed / bid created by the Buyer on Government e-Marketplace. As per Clause 16, Clause 17 and Clause 22 of the General Terms and Conditions of Government e-Marketplace (duly accepted by the Buyer and Seller), GeM is not to be made a party to any dispute between the Buyer and the Seller. As such Government e-Marketplace is liable to be deleted from the array of parties.*

*In light of the above, we request your goodself to kindly delete Government e-Marketplace from the array of parties.”*

#### **18.Limitation of Liability:**

Notwithstanding anything contained in this agreement, no party will be liable for any special, incidental or consequential damages arising out of or in connection with this agreement or any breach hereof (including for loss of data or profits, or cost of cover), whether or not such party has been advised of the possibility of such damages, and whether under a theory of contract, tort (including negligence) or otherwise; except for liabilities arising out of any violation, misappropriation or infringement of a party’s intellectual property rights, or from a breach by either party of its obligation. In no event will either party’s aggregate liability arising out of or in connection with this agreement or any breach hereof (whether under a theory of contract, tort (including negligence), warranty or otherwise) exceed the Contract Price entered into the Contract between Buyer and Seller.

#### **19.Termination for Default:**

If the Seller does not perform its obligations within the Delivery Period/Date mentioned in the Contract, the same would constitute the breach of the Contract and the Buyer shall have the right to Cancel or withdraw the Contract for the unsupplied portion after the expiry of the original or re-fixed delivery date or period stipulated in the Contract. Such cancellation of contract on account of non - performance by the Seller would entitle the Buyer to forfeit the performance security besides other actions such as downgrading the Seller’s rating or debarment from the GeM for specified period as decided by GeM on merits.

## 20. Closure of Transaction:

After satisfactory completion of all the obligations under the Contract and release of payments for the goods / services, the transaction shall be treated as closed.

## 21. Grounds for Administrative Action

(i) Administrative actions may be taken by GeM against the Buyer or the Seller either suo-moto on the basis of the platform mechanisms identified through analytics or on the basis of a complaint or report made to GeM by any stakeholders or any third party information or upon Court order, inter –alia, for non-adherence to the GeM Website Policies including Terms and Conditions and the Incident Management Policy published on the GeM Website.

(ii) The Seller would be liable for administrative actions such as suspension / debarment / removal from GeM, if they fail to abide by any of the Website Policies including the terms & conditions stipulated in this document and/or on anyone or more of the following grounds:

- (a) Listing the products/services not in the relevant categories and/or listing the same with vague/conflicting product specifications/details and irrelevant product photographs.
- (b) Offering Goods / Services without having proper authorization
- (c) Supplies goods of inferior/ substandard quality
- (d) Supplies or offers to supply refurbished or counterfeit or fake products
- (e) Withdraws or modify or impairs or derogates from the bid in any respect within the period of validity of its bid;
- (f) Seller furnishes inaccurate, false, misleading or forged or fails to furnish any information / documents, within the prescribed time limits, to GeM or to a Buyer, including during e-Bidding/ RA process;
- (g) Fails to furnish requisite performance security / PBG within stipulated time required as per e-bid / RA conditions;
- (h) Fails to update GeM about any change in information furnished within the prescribed time limits;
- (i) Executes services without conforming to requirement given in Service Level Agreement (SLA);
- (j) Fails to execute an order/ contract or fail to execute it satisfactorily
- (k) Is declared bankrupt or insolvent;
- (l) Fails to produce the requisite documents/ information during the course of inspection / assessment at any stage;

- (m) Performs any activity which is listed as prohibited activities on GeM.
- (n) On any other ground for which, in the opinion of GeM, the retention of the seller or any of its offered product in GeM is not in Public Interest.
- (o) The grounds mentioned above are illustrative only. Users are also advised to read the list of prohibited activities published on the website.
- (iii) Notwithstanding anything contained in the GTC, GeM reserves the right to cancel or annul the registration of any Seller or remove any of the Good/Services listed by a Seller on the GeM Website to comply with any provision of the Applicable Laws and / or Court Orders.
- (iv) GeM may take an administrative action in terms of the GeM Website Policies against a Buyer which may include reporting of any breach or misconduct to the Buyer Primary User and/or to the competent authority and GeM reserves the right to review the rating of such Buyer, and / or block Buyer's account for such time as considered appropriate by GeM.
- (v) The Seller and the Buyer understands that the grounds for administrative action as provided under the Contract are only indicative and additional grounds may be provided under the GeM Website Policies including the Incident Management policy. The Seller / Buyer warrants to abide by all additional grounds as may be specified by GeM in the GeM Website Policies from time to time.

## **22.Role of Government E- Marketplace - Gem SPV**

Government e-Marketplace – GeM SPV is the owner of the GeM portal which monitors and supervises all the business transactions on the portal. The role and responsibilities of the company are as under:

- a. To develop, operate and maintain technology driven e-marketplace, through a Managed Service Provider (MSP), to be used by government agencies for procurement of various goods and services in a transparent and efficient manner.
- b. Overall supervision and monitoring of GeM portal operations, policy management, finalization and implementation of various business processes and work flows in adherence with the applicable law and executive orders

issued from time to time . To provide tools for on-line Bidding, on-line Reverse Auction and Business Analytics Tools on GeM.

- c. To work continuously for improvements in the Business Processes and Work Flows for various activities / functions on GeM based on feedback from various stakeholders to enhance transparency, efficiency, competitiveness, equality, economy in procurement of goods and services by government agencies.
- d. To finalize General Terms and Conditions for sale and purchase of Goods and Services on GeM, Product / Service Specific Special Terms and Conditions, Special Terms and Conditions for Bunching of Goods / Services, Bid Specific Special Conditions, Project Specific Special Conditions etc.
- e. To finalize, upload and approve Technical Specification Frameworks for various item / service categories on GeM and to monitor conformity of offered products to the larger framework so finalized and uploaded.
- f. To decide addition / deletion of any of the offered product(s)/Product category (ies) and their framework of technical parameters on GeM.
- g. To work and co-ordinate with different Organizations/Departments / Agencies for integration of their Databases with the GeM portal on real time basis for the purpose of verification/authentication of data entries made by stakeholders.
- h. To offer and manage Demand Aggregation services for identified categories across buyers with assured reasonability of price, recommending for placement of orders by individual buyers
- i. To co-ordinate with MSP for conducting workshops for the various Stakeholders in capacity building and in change management associated with the implementation of technology enabled procurement process.
- j. To monitor MSP that the Buyers, Sellers and Service Providers are being assisted properly by them to onboard their goods and services on the GeM platform.
- k. To identify and offer services of 3<sup>rd</sup> parties for Vendor Assessment relating to technical, financial capacity, past experience of sellers including manufacturing / testing facilities / quality control arrangement(s) of manufacturing premises and/or any of the premises related to manufacturing process of products / services offered by the seller / service provider on GeM.

- l. To identify and offer services of 3<sup>rd</sup> parties for testing and certifying the quality of the product offered/ supplied, through documents, test reports/ certificates, testing at any independent lab or through inspection/testing by its authorized representative/s at firm's premises or at user's premises, that buyer choose to use.
- m. Overall monitoring and management of Call Centre/Help desk operations being provided by the MSP.
- n. Removal / debarring the Sellers/Buyers and Goods / services in GeM.
- o. Management of complaints and their redressal mechanism in GeM (not disputes related to concluded contracts).
- p. To identify, integrate and manage MoUs with verifying, certifying and validating entities across government(s) and also professional agencies to reinforce the online paperless, contactless and cashless system on GeM.
- q. To issue Notices, Circulars, News, Flashes, Updates etc in GeM
- r. Reporting and MIS mechanism in GeM
- s. Any other related activities in the GeM
- t. In exceptional circumstances, for ensuring propriety of procurement processes or to obviate possible misuse of GeM functionalities, GeM SPV as GeM Admin may keep any Bidding / RA process on hold for some time as considered appropriate.
- u. To take approved User Charges from Buyers and Sellers for the various transactions on the GeM portal as decided and notified on the GeM portal.

### 23. Miscellaneous Provisions

- a. **Assignment:** Users understand and agree that the GTC, STC and ATC provisions, rights and obligations granted by GeM are non- transferrable or assignable by the User to any third party, without the prior written consent of GeM. If same is permitted by GeM, all the conditions, rights and obligations of the GTC or any on-going STC/ATC shall also be binding upon such third party assignee besides the User.
- b. **Indemnification:** The Seller shall at all time indemnify Buyer against all suits and claims which may be made in respect of the goods/services for infringement of any right protected by patent, registration of designs or trade mark. Provided always that in the event of any claim and suit in respect of alleged breach of patent, registered designs or trade-mark being

made against the Buyer, the Buyer shall notify the Seller/ Service Provider of the same who shall at its own expense either settle any such dispute or conduct and litigation that may arise there from.

Buyers and Sellers agree to indemnify, defend and hold harmless GeM, its officials, Managed Service Provider (herein after individually and collectively referred to as "indemnified parties") from and against any and all losses, liabilities, claims, suits, proceedings, penalties, interests, damages, demands, costs and expenses (including legal and other statutory fees and disbursements in connection therewith and interest chargeable thereon) asserted against or incurred by the indemnified parties that arise out of, result from, or in connection with

- i. Breach of the contract(s); or
- ii. Any claims made by any third party due to, or arising out of, or in connection with, use of the Website; or
- iii. Any claim made by any third party regarding content/ information or materials provided by Seller cause any damage to a third party; or arising out of, or in connection with, use of the Website.
- iv. Violation of any intellectual property rights or any other rights.

Once GeM notifies the Buyer/ Seller of such claims, they shall defend and indemnify GeM for the same. Further, in no case they shall compromise or settle any claim or admit any liability on the part of GeM without the express or prior written consent of GeM which can be withheld or denied or modified by GeM in its sole discretion or as per the Applicable Laws.

- c. **Severability:** If due to any change in Applicable laws, certain part of the GTC or any applicable STC or any provisions of the GeM policies or portions thereof, becomes unenforceable, the remaining provisions shall continue in full force and effect so as to give effect to the intent of the parties.
- d. **Website Terms and Policies Updation:** Buyers and Sellers are advised to check the website terms and conditions as well as policies such as Privacy Policy and the Website Disclaimer at all times, as GeM may update the Website and such terms from time to time.
- e. **List of Prohibitive Activities (Suggestive And Non-Exhaustive):**

**LIST OF PROHIBITIVE ACTIVITIES:** The following is an indicative list of prohibitive activities which the Buyers and the Sellers registered on GeM platform shall not perform on the GeM platform. A breach of any of the prohibited activities shall give the right to GeM under the Applicable Laws or in terms of these GTC or the GeM Website Policies to take administrative action which may include partial or permanent disabling of account on GeM Website, debarment etc. Additionally, GeM may remove any non-compliant information and reserves the right to preserve and share with the appropriate authority such information and associated records for investigation purposes. The Buyer and the Seller understand that this list is only indicative and additional activities may be prohibited under the GeM Website Policies. The Buyers and the Sellers shall undertake to provide their full support that may be required by GeM for removal and disabling of the non compliant information. The prohibited activities include:

- (i) Indulging in cyber crime or other criminal activities which can become a threat to GeM, GeM Website, to the Government of India or to any State Government or Government Agency.
- (ii) Advertising, exhibiting, representing, publishing, pronouncing, listing, delivering, offering to sell or selling any kind of Goods/Services which can cause any kind of infringement or disparagement of intellectual property rights.
- (iii) Selling refurbished, counterfeit and/or fake Goods / Services under a brand or misusing others brand name.
- (iv) Offering to sell or selling above the MRP any Goods or misrepresenting the MRP.
- (v) Delivering some other Goods or Services instead of the Goods or Services Contracted for or delivering empty parcels or used Goods in breach of the terms of the Contract.
- (vi) Offering to sell or selling freebies which are 'Not for sale' Goods.
- (vii) Listing of the Goods on GeM Website without authorization to sell Goods manufactured by the OEM in open market or without proper authorisation, if any required, for providing the Service.
- (viii) Listing of the Goods or Services is done on GeM Website without guarantee/warranty or without a genuine guarantee/warranty.

- (ix) Listing of the Goods or Services in irrelevant or inappropriate categories or with vague or conflicting specifications or description (including descriptive or pictorial description).
- (x) The Buyer /Seller registering on GeM and/or offering or buying the Goods and/or Services and/or participating in e-bidding/reverse auction on GeM, without the requisite authorization to enter into contract on behalf of the concerned legal entity. Failing which such individual(s) shall be individually liable for its actions and also for any liability arising out of such actions.
- (xi) If any Seller has been debarred from GeM then such Seller or their authorized sellers shall also not be permitted to register and offer/sell their products on GeM and / or participate in Bids / RA on GeM.
- (xii) Using GeM prices for making procurement outside GeM Portal.
- (xiii) Splitting of demands by creating multiple Bids/RAs of same goods / services or making repeated procurements of same goods/services through Direct Purchase / L-1 buying as per rule 149(i) and 9(ii) of GFR-2017.
- (xiv) Uploading goods / services containing information that —
  - (a) belongs to another person and to which the user does not have any right to;
  - (b) is grossly harmful, harassing, blasphemous, defamatory, obscene, pornographic, paedophilic, libellous, invasive of another's privacy, hateful, or racially, ethnically objectionable, disparaging, relating or encouraging money laundering or gambling, or otherwise unlawful in any manner whatever;
  - (c) harm minors in any way;
  - (d) infringes any patent, trademark, copyright or other proprietary rights;
  - (e) violates any law for the time being in force;
  - (f) deceives or misleads the addressee about the origin of such messages or communicates any information which is grossly offensive or menacing in nature;
  - (g) impersonate another person;

- (h) contains software viruses or any other computer code, files or programs designed to interrupt, destroy or limit the functionality of any computer resource;
- (xv) threatens the unity, integrity, defence, security or sovereignty of India, friendly relations with foreign states, or public order or causes incitement to the commission of any cognizable offence or prevents investigation of any offence or is insulting any other nation.
- (xvi) Achieving or trying to achieve illegal access to features on GeM Website not specifically authorised or exceeding the scope of authorized access to or other features of the GeM Website;
- (xvii) Obstructing or causing GeM to lose (in whole or in part) the services provided by any internet service provider ("ISPs") or carrying out any cyber security incident;
- (xviii) Sending unsolicited emails, bulk messaging, auto messaging, junk email, spam and like.

**24. Incident management Policy on GeM:** GeM is a trust based system and self-declaration is the key, along with a strong automated process to penalize any deviant behaviour on part of Sellers / Buyers. For this purpose, deviations from the terms and conditions of procurement on GeM, including general terms and conditions, special and additional terms and conditions and any other relevant Government rules and guidelines, are termed as "deviation". A deviation can occur while listing the products on GeM, at pre-contract stage, during bidding or at post contract stage on GeM. The mechanism for reporting and initiating action on such deviation has been detailed in the Incident Management Policy available on GeM portal under Resources. All stake holders of GeM shall be bound by the actions as detailed in the Incident Management Policy. All administrative actions under this Incident management Policy, taken by GeM against any of the stakeholders shall not cause any limitation on the legal and/or contractual remedies including any financial recoveries, available to Buyers/Sellers under the Terms and Conditions of contract and/or GeM policies. In case the Buyer / Seller choose to pursue any of these remedies, GeM shall not be made party to such proceedings / remedial actions taken by Buyer/Seller under the contractual provisions.

**25. Use of Aadhaar Number in GeM:** Purpose of the Aadhaar authentication in GeM is to identify the user using eKYC. GeM has provisioned the option for Sellers and Buyers to provide virtual Aadhaar ID instead Aadhaar number. GeM receives First Name, Last Name, Mobile Number, Email ID, DOB and Gender details. It is used to link the mobile number with the user who is registering on GeM; on which subsequently OTP is sent for

achieving the property of non-repudiation in different artefacts / documents generated on GeM. GeM has provisioned an alternative Identity Information option through PAN based verification to Sellers.

## ATC TO GEM GTC - SPECIAL TERMS & CONDITIONS

### FOR MARSHALLING KIOSK AND JUNCTION BOX FOR NTPC NORTH KARANPURA PROJECT

1. **Bidder to submit offer directly through GEM PORTAL.** Bidder may visit <https://gem.gov.in/>. No other mode for submission of tender is acceptable. Note: This is two part bid and Techno-commercial bid will be opened as scheduled date and time.
2. For any technical clarification, please contact Mr. Ranajit Dey, Manager (TBEM); Contact No. 0120-674-8494; e-mail: [ranajitd@bhel.in](mailto:ranajitd@bhel.in)
3. For any commercial clarification, please contact Ms. Shipra Gupta (TBMM); Contact No.0120- 6748509; e-mail: [shipra@bhel.in](mailto:shipra@bhel.in)
4. **Delivery requirement: Proposed delivery plan is IMMEDIATE.** However, vendor has to match their best delivery plan as per below activity schedule table. In case, BHEL's delivery requirement is not met by vendor(s), then a chance may be given to all such vendors to review their quoted delivery schedule in line with BHEL's delivery requirement. However, if vendor fails to meet the requisite delivery plan, then BHEL reserves the right not to consider the offer of such vendor(s).

Sl. NO.	ACTIVITY	ACTIVITY TIME IN WEEKS	REMARKS IF ANY
1	Inputs to vendor by BHEL. Last inputs date will consider	1	BHEL Activity
2	Submission of Documents necessary for getting manufacturing clearance like Drawings, Date sheet etc.	4	<b>Vendor to ensure</b> Delivery completion date mentioned by BHEL
3	Approval of documents/ Manufacturing Clearance from BHEL / Customer *	4	BHEL Time to issue Manufacturing Clearance
4	Manufacturing time	12	<b>Vendor to ensure</b> Delivery completion date mentioned by BHEL
5	Inspection call	2	<b>Vendor to ensure</b> Delivery completion date mentioned by BHEL
6	Customer Inspection & Dispatch Clearance	2	BHEL Time to issue MICC
7	Dispatch	2	<b>Vendor to ensure</b> Delivery completion date mentioned by BHEL

**Note – 1** - Supplier to ensure every revised submission incorporating comments within 1 week from the date of comments by BHEL.

#### 5. SCOPE OF SUPPLY AND BOQ ( BIDDER TO SUBMIT UN-PRICE BID FORMAT AND ENCLOSED)

SN	ITEM DESCRIPTIONS	UNIT	QTY
1	SUPPLY- MK & JB : MARSHALLING KIOSK MK-180R	SET	3
2	SUPPLY- MK & JB : JUNCTION BOX D-130	SET	2
3	SUPPLY- MK & JB : JUNCTION BOX WITH NON-DISCONNECTING TYPE 130 TBS	SET	1
4	SUPPLY- MK & JB : JUNCTION BOX WITH NON-DISCONNECTING TYPE 75 TBS ALONG WITH FUSE	SET	3

## ATC TO GEM GTC - SPECIAL TERMS & CONDITIONS

### FOR MARSHALLING KIOSK AND JUNCTION BOX FOR NTPC NORTH KARANPURA PROJECT

6. **Technical specification Doc. No. TB-369-510-010A Rev 00.** BHEL technical specification is applicable. No permissible Technical Deviation has been envisaged.

7. **Clause No. 2.1 of General Terms & Conditions ( GTC) for tender Enquiry / Contract should be as follows:**

**PRICES: A.** all prices shall be FIRM & Ex-works price including packing & forwarding charges No enhancement of rate for whatsoever reasons unless and until asked by BHEL shall be allowed.

**PROJECT STATUS:** Domestic in nature. GST is applicable as per prevalent law.

**SCOPE OF TENDER:** SUPPLY ONLY IN SCOPE OF BIDDER.

8. **Guarantee Clause:** The Contractor shall guarantee that the equipment supplied shall be new and in accordance with the contract documents and be free from defects in design, material and workmanship for a period of eighteen (18) months from the date of Completion of the Facilities (or any part thereof) or twelve (12) months from the date of Operational Acceptance of the Facilities (or any part thereof) whichever occurs first. **Contractual completion schedule – 14 months (Supply) and 16 months (Installation) from the date of NOA i.e. 28-04-2021.**

9. **Performance BG / Deposit Clause:** Supplier shall arrange to submit Performance BG / Deposit of 10% of contract value on a non-judicial stamp paper of appropriate value along with first invoice or within 60 days from placement of Purchase Order (PO) whichever is earlier. PBG should valid till guarantee period with claim period of 3 months extra over and above guarantee period.

Bidder agrees to submit performance security required for execution of the contract within the time period mentioned. In case of delay in submission of performance security, enhanced performance security which would include interest (SBI rate + 6%) for the delayed period, shall be submitted by the bidder. Further, if performance security is not submitted till such time the first bill becomes due, the amount of performance security due shall be recovered as per terms defined in the NIT / contract, from the bills along with due interest.

10. **Inspection agency** –Inspection shall be carried out as per Customer approved Quality Plan. For the same, Supplier to submit Quality Plan to BHEL for customer approval. Items to be inspected by customer /BHEL/other agencies authorized by BHEL.

11. **Quantity Variation:** The quantity for individual items may vary up to any extent, however total quantity may vary +/- 20 % during contract execution stage. It is also to be noted that any items can be completely/partially deleted during detailed engineering stage.

12. **REVERSE AUCTION – Applicable as per GeM T&C.**

13. **Make in India (PPP-MII) (Refer clause no: 17 of Addendum of GTC):** This tender is not a global tender and **only class-I** suppliers as defined under the DPIIT order no. P-45021/2/2017-PP (BE-II) dated 04.06.2020 are eligible to bid in this tender. **Bids received from Class-II & Non-Local supplier shall be rejected.** Bidder to specify the percentage of local content as per the format of self-declaration for local content” **endorsed by CA.**

14. **MOP Circular :** APPLICABLE

15. **INTEGRITY PACT:** Not Applicable.

16. **Vendor Approval-** Vendor should be approved with customer as on date of Techno-commercial bid opening. Price bid of only customer approved vendors shall be opened. For non-approved vendors

# ATC TO GEM GTC - SPECIAL TERMS & CONDITIONS

## FOR MARSHALLING KIOSK AND JUNCTION BOX FOR NTPC NORTH KARANPURA PROJECT

“Credentials of vendor like performance certificates, experience certificates for technically cleared vendors. TSGENCO / PGCIL / NTPC approved vendors are preferable.

### 17. BHEL TBG – TERMS OF PAYMENT CLAUSE

**For Supply only in scope of the supplier:** 100% of payment within 60 days after receipt of complete invoice along with documents in 3 sets (original + 2 copies) as follows:

- LR / GR duly endorsed by BHEL Site Official.
- Material Receipt Certificate issued by BHEL Site Official.
- GST Compliant Tax Invoice
- Packing List (Case-wise)
- Copy of Transit Insurance Certificate from underwriters.
- Material Inspection Clearance Certificate (MICC) issued by BHEL Quality Management
- Guarantee Certificate
- Copy of Performance Bank Guarantee (PBG)
- Certificate of acceptance of Type Test Reports issued by BHEL Engineering Management wherever specifically mentioned in the Purchase Order.

18. All other terms and conditions shall be as per **GEM GTC**.

### 19. **IMPORTANT INSTRUCTION:**

- Bidder to mention QUOTED and GST in % against every items in their UN-PRICED BID FORMAT.
- GeM Seller ID- GeM seller ID is mandatory for the bidders and must be mentioned in their offer. In case at the time of submission of offer GeM seller ID is not available with bidder, then successful tenderer should ensure to have GeM Seller ID prior to award of contract. Department of Expenditure (DOE) OM no. 6/9/2020-PPD dated 24.08.2020 may be referred in this regard.
- In case any discrepancy between the requirements mentioned under special terms & conditions and general terms & conditions, special terms and conditions shall prevail.
- Final acceptance of technical qualified vendor for placement of order is subject to approval of CUSTOMER.

		Deviation	Remarks if any
1.	Schedule of Commercial Deviation, if any	NIL	
2.	Schedule of Technical Deviation, if any (Against Technical Specification)	NIL	

***“We confirm that we have quoted as per specified price format provided along with this tender”.***

**NAME & SEAL OF TENDERER**

#### **Enclosed:**

- UN-PRICED BID FORMAT
- PQR
- GeM GTC