Tender Ref No. GEM/2022/B/2393485 dated 04.08.2022 Appointment of Advanced Metering Infrastructure (AMI)-Implementing Agency for Smart Metering for 2.5 Lakh Consumers in UT of Jammu & Kashmir on DBFOOT Basis					
Clarification & Amendment 2					
S.No.	**Page No.**	**Specifications as per RfP**	**Queries/ Modifications/Changes Suggested**	**Type of Reply**	**Comments**
1	160	1.11 Exclusion from Scope of Work:	Following shall be excluded from AMI-IA's scope of work …. b. Entire scope of AMI Network Cum Operation Center …. Please clarify whether the Hardware/ Equipment for deployment on DC-DR is in the scope of AMISP	Clarification	The back-end IT infra for the AMI project has been set up in Data Centre in Srinagar town and Disaster Recovery Centre in Jammu town. The bidder is requested to review the hardware supplied for the existing project through site visit and take the same into consideration for designing and bidding for effective operation of the upcoming system without affecting the operations of the existing system. If any other hardware/software is required for the integration till HES is to be provided by the AMI-IA.
2	21	Section 2. Eligibility Requirements E2, (E. RF Technology Solution Provider- Technical Requirements)	**Existing Clause** The RF Solution provider should have been in the communications network installation/maintenance services business for the last 1 (one) year in India. OR… Please confirm RF solution providers having established office for more than 1 year and having valid WPC certificate are allowed to bid.	Clarification	Yes. The RF provider should be in communication business in India since 1 years and have valid WPC certificate.
3	132	Section 4. Technical Proposal –Forms Form 22: Manufacturer Authorisation Form (MAF)	… 2. Above undertaking shall be registered or notarized so as to be legally enforceable. We request you to consider OEM's to provide non-notarized Manufacturer's Authorization From during bid submission. We can provide notarized copy of MAF after award of contract since notary is not valid if dates are extended during bid process.	Clarification	Tender Condition shall prevail.
4	245, 252, 256	Section 6. Project Requirements 13. Annexures Annexure B Technical Specifications for Whole Current A.C. Three Phase Smart Energy Meter Annexure C Three phase CT operated alternating current Smart Meter of Accuracy Class 0.5S (DT Meter, LT-CT Meter, etc.) Annexure D Three phase CT/PT operated alternating current Smart Meter of Accuracy Class 0.5S/ 0.2S (as required) –Feeder Meter, Boundary Meter, HT Consumers, etc.	Please specify the format of GTP to be submitted during bidding stage similar to the GTP provided for Annexure A Technical Specifications for Whole Current A.C. Single Phase Smart Energy Meter.	Clarification	The technical specifications mentioned in the Annexures - A, B, C & D will form the part of the GTP compliance that needs to be submitted during the bidding stage.

5	145	Section 5. Financial Proposal Schedule B of Form 1	It is being requested to kindly provide the SoR (Schedule of Rates) of Auxiliary LT items as per the below mentioned provision made in SBD for AMISP version 4 released by REC Ltd. "Rate per unit quoted by the bidder shall not exceed the SoR rates as approved by the Utility. In case SoR is not available for any specific item, rate per unit quoted by the bidder shall not exceed the estimated unit rate to be provided by the Utility".	Amendment	Schedule 2: Auxillary LT items(Per Unit Offer Price): Main Service Distribution Box, Service Cable Supply, Installation, Commissioning & other services: Rate per unit quoted by the bidder against the items of Scheduled 2 of Financial bid shall not exceed the rates as provided in Annexure 1 of this amendment, wherever mentioned. In case of higher values, the same shall be proportionately adjusted on per meter per month rates against Item No. 1 of Schedule 1.
6	65	Section 7. Contract Forms and Conditions of Contract (b) Payment Mechanism 5.2 Payment Mechanism	In case the RECPDCL fails to make the payment to AMISP on the due date of the invoice raised by AMISP, there should be a provision for interest on the outstanding amount on invoice to AMISP. The recommended clause to be added is as follows: "In the event that the AMISP has duly followed the procedure enumerated above and the RECPDCL fails to make any payment on its respective due date, the RECPDCL shall pay interest to the AMISP on such delayed payment amount (including disputed amount) as from the due date of payment. The applicable interest rate on the delayed payment amount will be equal to the marginal cost of funds-based lending rate (MCLR) for one year of the State Bank of India plus 400 bps (MCLR shall be as applicable on the 1st April of the financial year in which the date of release of delayed payment lies). In case the period of default lies in two or more financial years the interest amount shall be calculated separately for the periods falling in different years."	Clarification	RECPDCL shall ensure requisite Payment Security Mechanism to AMI-IA as mentioned in the RFP
7	171	Section 6: Project Requirements 2.3 Head End System (HES) : The HES shall be on premise Data Centre and support deployment with high availability clustering and automatic load balancing that ensure hardware as well as application failover. Adequate data base and security features for storage of data at HES need to be ensured.	Kindly clarify that for the HES deployed in data centre, Infrastructure requirements like space, Air-conditioning, and power supply for data centre will be provided by the utility.	Clarification	The back-end IT infra for the AMI project has been set up in Data Centre in Srinagar town and Disaster Recovery Centre in Jammu town. Data Centre infrastructure to be provided by the Utility.
8	12	Section 1. Request for Proposal Notice : c) Last date for e-bidding: 07 September 2022	The clarification on the above is quite essential for ascertaining the commercial aspects. Therefore, it is requested to extend the bid submission timeline to 21 September, 2022 from, 07 September, 2022.	Clarification	Extension in last date of bid submission will be informed accordingly.
9	349 to 360	Section 7. Contract Forms and Conditions of Contract : Annexure Z: Technical Specification for Distribution Box	Technical Spcification of MSDB Box	Amendment	The material of Box is replaced from existing Polycarbonate to SMC (Sheet Moulding Compound). The revised specification is enclsoed at Annexure 2 of this amendment.
10	414	Section 7 Clause 31.1-31.5 [Advance Payment security (Optional)]	Provide to the successful bidder...	Amendment	Deleted

Benchmark rates against items of Schedule 2 of Financial bid - Annexure -1		
Item No. as per GeM	**Item name**	**Benchmark price(excl.of GST)**
Sc		
6	No. of SMC Main Service Distribution Box MSDB for 30% of total required qty considering existing boxes installed	3544
7	4CX35 mm2 XLPE armoured Cable from AB Cable taping point through Piercing connector/wedge to MSDB	414
8	2CX16 mm2 Cable from MSDB to meter on pole and consumer premises,1.1k V Grade, Un- Armoured, XLPE Insulated Stranded Conductor FRLS type for pole mounted of 3mtr and meter to consumer premise of 20 mtr for 10% of consumer of Single phase Service connections	122
9	2CX16 mm2 Cable from MSDB to meter in consumer premise/accessible heights ,1.1kV Grade, Armoured, XLPE Insulated Stranded Conductor FRLS type at 20 mtr for Single phase Service connections	153
10	4CX16 mm2 Cable from LT Line to meter on pole ,1.1kV Grade,Un- Armoured, XLPE Insulated Stranded Conductor FRLS type for pole mounted of 5mtr and meter to consumer premise/accessible heights at 20 mtr for 10% of consumer of Three phase Service connections	198
11	4CX16 mm2 Cable from LT line to meter on consumer premises/accesibel heights,1.1kV Grade, Armoured, XLPE Insulated Stranded Conductor FRLS type Three phase Service connections at 20 mtr	233
12	Ground Mounted - 9X1 Smart Meter Cabinet Box for 5% of connection	12000
13	Piercing Connectors with Aluminium Alloy connector for MSDB 1 phase meters connection and 3-ph Consumers from LT ABC	150
14	Mini-Wedge Connectors for 1 phase meters connection and 3-ph Consumers from LT ABC	278
15	Service main clamps for supporting cable from Meter to Consumer	92
16	Misc Items such insulation tape, binding wire, screws, etc. at per 4 connections.	101
17	Lugs for cable installation from MSDB to meter and Meter to Consumer for 1- Ph Connection and 3-Ph Connection.	9
18	1CX35 mm2 Cable,1.1kV Grade, XLPE Insulated, Un-Armoured, FRLS type for 16kVA, 25kVA Xmer	111
19	1CX70 mm2 Cable,1.1kV Grade, XLPE Insulated, Un-Armoured, FRLS type	185
20	1CX120 mm2 Cable,1.1kV Grade, XLPE Insulated, Un-Armoured FRLS type for 100kVA Xmer	283
21	1CX240 mm2 Cable,1.1kV Grade, XLPE Insulated, Un-Armoured ,FRLS type for 150kVA - 200kVA Xmer	507
22	1Cx300 mm2 Cable, 1.1kV Grade, XLPE Insulated, Un-Armoured, FRLS type for 250kVA - 300kVA Xmer and for 400kVA - 500kVA Xmer with 02 parallel runs	632
23	1Cx400 mm2 Cable, 1.1kV Grade, XLPE Insulated, Un-Armoured, FRLS type for 630 kVA – 700kVA Xmer with 02 parallel runs and for 700kVA - 800kVA Xmer with 03 parallel runs	792
24	1Cx630 mm² Cable,1.1kV Grade, XLPE Insulated Un-Armoured, FRLS type for 1000kVA Xmer with 02 parallel runs	1302
25	Sundry items such as lugs, tapes etc. for proper terminations/CT Connections etc.	400
26-45	Main Service Distribution Box, Service Cable, DT cable and other components Installation and other Services	15% of the benchmark cost mentioned against corresponding line items 6 - 25 mentioned above.

Annexure Z: Technical Specification for Distribution Box

1. SCOPE

This specification covers the technical requirements of the design, engineering, manufacturing, testing at manufacturer's works, packing, forwarding and supply of Single/Three phase LT Distribution Box complete with all accessories for efficient and trouble free operation at the site.

2. APPLICABLE STANDARDS:

The equipment covered by this specification shall conform to the requirements stated in latest edition of relevant IS/IEC/ other applicable standards and shall conform to the statutory authorities.

Sr.	IS/IEC	Particulars
1	IS14772- 2020	General requirements for enclosures for accessories for household and similar fixed electrical installations specification
2	IS 8623-1993 Part 1 & 2	Specification for low-voltage switchgear and control gear Assemblies Part 2 Particular requirements for busbar trunking systems.
3	IS 11731-1986	Methods of test for determination of Flammability of solid Electrical insulating materials when exposed to an igniting
4	IS 11000-1984	Fire hazard testing
5	IS 13411-1992	Glass Reinforced polyester dough moulding Compounds
6	IS 4247	Test for Non Ignitable and Self Extinguishing Properties of Solid· Electrical insulating Material
7	IS 4249	Classification and methods of tests for non-ignitabte and self-extinguishing properties of solid electrical insulating materials
8	IS 2500-2000	Sampling Procedure for Inspection by Attributes
9	IEC 60695	Glow Wire Test at 960 Deg. C
10	UL 94	Tests for Flammability of Plastic Materials
11	UL 746-C	Polymeric Materials in Electrical equipment's
12	UL 1059	Terminal blocks up to 1500V
13	IEC 61238-1:2003	Compression and Mechanical connectors for Power cable part 1: Test methods and requirements

3. CLIMATIC CONDITIONS OF THE INSTLLATION:

a) Max. Ambient Temperature : 50 deg C
b) Max. Daily average ambient temp: 40 deg C
c) Min Ambient Temp : -15 deg C

d) Maximum Humidity : 95%
e) Minimum Humidity : 10%
f) Average No. of thunderstorm days per annum : 50
g) Average Annual Rainfall : 750 mm
h) Average No. of rainy days per annum : 60
i) Rainy Months: June to Oct.

The atmosphere is generally laden with mild acid and dust in suspension during he dry months and is subjected to fog in cold months. The design of equipment and accessories shall be suitable to withstand seismic forces corresponding to an acceleration of 0.1g.

4. General Technical Requirements:

S. No	DESCRIPTION	REQUIREMENT
1	Type of Box	Three phase, Four wire, 10 Ways
2	Application	Outdoor
3	No. of Incoming	1
4	No. of Outgoing	9
5	Incoming cable size	4C X 50 sq mm XLPE armoured
6	Outgoing cable size	2Cx10/ 2Cx16 sq mm -8 Nos & 4Cx25 Sq mm -1 No XLPE armoured, 1.1kV
7	Degree of Protection	IP 55
8	Dielectric withstand for the box	5kV for 1 min
9	Flammability requirement	FVo
10	Gaskets	Ethylene-Propylene-Diene Rubber
11	Bus Bar	
11.1	Rated voltage	415V
11.2	System frequency	50 Hz
11.3	Rated current of the each Bus bar	200 A
11.4	Number of Bus Bar Sets	4 (Three phase, One Neutral)
11.5	Bus Bar Material	Aluminum
11.6	Current Density (Max.)	2.5 Amp/Sq.mm
11.7	Temperature rise	Maximum permissible temperature rise above ambient for the busbar and terminals shall be 45 ^{0}C at rated load.
11.8	Short Time withstand current for bus bar	3kA for 1Sec
11.9	Number of Terminals	4 Working + 1 Spare for Phases and 16 Nos for Neutral Busbar
12	Cable Entry arrangement	

5. GENERAL CONSTRUCTIONS

5.1 Enclosure

The enclosure shall be weather proof, tamper proof and shall be made of Compression Moulded reinforced SMC (Sheet Moulding Compound) material as per IS:13410-1992, Grade S3 with FVo fire retardant, self-extinguishing, UV stabilize, recyclable and Anti oxidation properties with minimum 2mm of thickness. The enclosure shall be of adequate strength, unbreakable and shall be made in two pieces (base and cover). The enclosure and cover shall be off white colour. Enclosures cover shall open by 110 degrees on the top of the enclosure and a suitable supporting latch shall be provided at the outer side of the box to hold cover when it is in fully open condition. In the joints, fixed parts shall be properly riveted to the cover base and cylindrical play shall be provided on the cover to ensure smooth opening of the boxes. The Incoming and Outgoing cables should be connected to the bus bar using detachable Allen bolt and key. The enclosure base should have holes to accommodate incoming cables and outgoing cables with suitable rubber grommet material.

5.2 Bus Bar

The Bus bars meeting the requirement of aforesaid current rating and maximum current density shall be provided in identical pairs for Phase as well as for neutral as mentioned in specification. Insulator supports suitable for fixing the busbars at base shall be provided at the ends of Bus Bar casings. The Bus bar housings shall be arranged and mounted at a suitable stepped angle so that providing new connections is easy and can be done without much bending of the cables. The Busbar's adaptor shall be mounted through screws and further riveted. Colours of the adaptors shall be Red, Yellow and Blue for the phases and Black for Neutral. Heat Shrink Tube shall be provided with each box for protecting bare aluminum conductor near contact area of terminal.

The arrangement shall be completely insulated busbar with non- detachable allen screw type arrangement. The bus bar shall be Aluminum EC Grade. The connection arrangement shall be Nut & Bolt Screw Type Connection.

5.3 Sealing of Box

For the enclosure, the gasket shall be made up of Natural Rubber and shall be provided all around the cover. The box shall be provided with panel lock with a key arrangement and key shall be identical for all the boxes. Addition to lock and key arrangement the box shall be provided with two U-shaped latches of approx. size 25 mm on bottom side of the box. The latch shall be SS with Suitable thickness. The latch shall be provided along with suitable clamp assembly in base as well as cover, such that these are fully covered by the latch after closing. The clamps along with the latch shall be provided with a sealing hole on both the sides such as top provide a thru sealing arrangement on both the corners of the door opening in the assembly.

5.4 Earthing connector

At both side of the enclosure, 1 number Electro Galvanized Earthing connector on each side shall be provided for the incoming and outgoing cable sizes as specified in the specification. The earthing connector shall be sufficient to carry the fault current. The Cable armour shall

run through cable gland upto earth earthing connector. Earthing connectors shall be provided with earthing nuts and bolt for proper connections, where the cable armouring get tighten to the earthing nuts and bolts.

5.5 Mounting Arrangement

Boxes shall be provided with mounting arrangement suitable for installation on PCC poles by using Stainless Steel Strap with 20mm x 0.7mm thickness. The arrangement shall be such that the strap runs behind the box and holds the box with pole.

In addition to the above arrangement, wall mounting arrangement shall also be provided.

6. NAME PLATE Marking

The distribution box shall be provided with weather proof name plate clearly visible and effectively secured against removal. Indelibly and distinctly marked with all essential particulars as per relevant standards along with the following.

a) Manufacturer's name
b) P.O. No. with date
c) Embossing word “PROPERTY OF CED”
d) Serial number / Batch Number
e) Voltage and Current Rating of the Bus Bar
f) Guarantee Period

7. TESTS

All routine, acceptance & type tests shall be carried out in accordance with the relevant IS/IEC. All routine & acceptance tests shall be witnessed by the purchaser/his authorized representative. All the components shall also be type tested as per the relevant standards. Following tests shall be necessarily conducted on the LT Distribution box in addition to others specified in IS/IEC standards

7.1 Type Tests

a) For the Box & Laminates:

S.no	Tests/ Standard	Requirements
1	Protection against electric shock (IS 14772:2020 – Clause 10)	Enclosure shall be so designed that when they are mounted as for normal use, the live parts of any correctly installed accessories or any parts of these accessories which may become live due to a fault shall not be accessible.
2	Provision for earthing (IS 14772:2020 – Clause 11)	Enclosure shall be provided with a facility for permanent and reliable connection to earthing

3	Resistance to ageing, humid conditions, Ingress of solid objects and to harmful ingress of (IS 14772:2020 – Clause 13.1.1)	Resistance to Ageing: Enclosure shall be kept in a heating cabinet with temp 70 ± 2 deg C for 7 days as per IS. After completion of the test, the enclosure shall not show any cracks. Humid conditions: Enclosure shall be kept in a cabinet with humidity between 91 to 95 % for 7 days as per IS. After completion of the test, enclosure shall not show any damage. Resistance against ingress of solid objects and to harmful ingress of water: Enclosure shall be subjected to test for degree of protection (IP 55) as per IS 12063.
4	Mechanical strength/impact Resistance Test 5 (IS 14772:2020 – Clause 15)	The sample shall be subjected to Impact resistance test as per the respective standards and shall not show occurrence of any of the following: 1. making uninsulated live parts accessible to contact 2. producing a condition that might affect the mechanical performance of the enclosure 3. producing a condition that would increase the likelihood of an electric shock
5	Resistance to heat/ Ball Pressure Test (IS 14772:2020 – Clause 16)	The test shall be made on a sample in a heating cabinet at a temp of 125 ±2'C for 1hr per IS. After completion of test , the diameter of the impression caused by the ball shall be measured and should not exceed 2 mm.
6	Resistance to Abnormal heat and fire/ Glow wire test (IEC 60695:2.10 : 2020)	Parts of insulating materials which might be exposed to thermal stresses due to electric effects shall not be affected by abnormal heat and by fire. The compliance shall be checked by means of the glow wire test performed at 850 0 C, according to IS 11000 (Part 2/sec 1) with no flame and glowing.
7	Resistance to Tracking (IS 14772:2020 – Clause 19)	The sample when tested as per clause no 17 of IS: 14772, shall show no flashover after completion of the Test.
8	Flammability test (IS: 11731 (Part II)-1986)/ UL:94)	The sample shall comply to flammability requirements of category FVO as per respective standards.
9	Test for self-extinguishing property IS:4249-1967	The sample when tested as per clause 3.5.1 of IS 4249, shall comply to the specified requirements
10	Test for water absorption (IS 13411 AnnexureD)	The sample shall be heated to a temperature of 50±3'C for 24 h, as per IS and after completion, the water absorbed should not be more than 1%
11	Verification of Die-electric properties (ASTM D 149)	The enclosure shall be tested as per clause no 8.22 of IS 8623 (Part 1), with test voltage of 5KV for 1 minute and withstand it satisfactorily.
12	UV light Exposure (ASTM G 154)	No Colour Change Should Occur

b) For Bus Bar

S.NO	Test/ Standard	Requirements
1	Verification of temp Rise test (IS:8623 Part-I Cl.No. 8.2.1)	Maximum permissible temperature rise for the busbar and terminals shall be 850 C and 1100 C respectively.
2	Verification of Dielectric Strength (IS:8623 Part-I Cl.No. 8.22)	The test voltage at the moment of application shall not exceed 50% of the 2.5kV and it shall then be increased steadily within a few seconds to the full value and maintained for 1 minute. Their shall be no flash over at the bus bars.
3	Short circuit withstand Strength. (IS:8623 Part-I Cl.No. 8.2.3)	The assemblies shall be rated for prospective short circuit current of 3kA for 1 Sec.
4	Verification of Clearance and Creepage distance. (IS:8623 Part-I Cl.No. 8.2.5)	The clearance and creepage distance shall comply with dielectric properties, abnormal conditions such as short circuit, which shall not reduce the distance between busbars and connection.
5	Mechanical Operations IS:8623Part-I Cl.N0.8.2.6	The number of operating cycles shall be 50
6	Tab Pull out Test (UL-1059)	The male tab block employing quick- connect terminals shall be subjected to a direct, in line pull along the axis of the tab. The force of 89N pull shall be applied on the terminal block mounted as in service condition and this shall be with stood satisfactorily.
7	Heat cycle Test (UL 1059)	Current of 150% of rated current is to be passed through the connection for 84 ON periods of 3.5 hrs, each followed by a 1/2 hour OFF period as specified in the standard, temperature rise for 'the last ON period shall not be more than 5deg C higher than the first ON period.

7.2 Routine tests (For Boxes and Bus Bar):

a) Marking

b) Visual Examination and Dimensions
c) Protection against electric shock
d) Provision for earthing
e) Test for self-extinguishing properties

7.3 Acceptance tests

Following tests shall be performed as per the sampling plan defined in the Cl. No. 10 of the IS 2500 for ever offered lot size.

a) For Boxes:

i Marking
ii Visual Examination and Dimensions
iii Protection against electric shock
iv Provision for earthing
v Resistance to ageing, humid conditions, Ingress of solid objects and to harmful ingress of water
vi Mechanical strength / lmpact Resistance Test
vii Resistance to Abnormal heat and fire / Glow wire test at 650 degree Centigrade
viii Flammability test

b) For Bus Bar

i Temperature Rise Test
ii Verification of Dielectric Properties of moulded casing of bus bar
iii Glow Wire Test at 950 degree Centigrade of moulded casing bus bar

7.4 TESTS AT SITE :

The purchaser reserves the right to conduct all tests on each type of Multi-connection Distribution box system after arrival at site and bidder shall guarantee test certificates figures under actual service conditions.

8. TYPE TEST CERTIFICATES:

The bidder shall furnish the type test certificates for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at CPRI/ERDA/CIPET as per the relevant standards, Type tests should have been conducted in certified Test laboratories during the period not exceeding 5 years from the date of opening the bid. In the event of any discrepancy in the test reports, i.e. any test report not acceptable, same shall be carried out without any cost implication to the Purchaser.

9. PRE- DESPATCH INSPECTION:

Equipment shall be subject to inspection by a duly authorized representative of the Purchaser. Inspection may be made at any stage of manufacture at the option of the purchaser and the equipment if found unsatisfactory as to workmanship or material, the same is liable to rejection. Bidder shall grant free access to the places of manufacture to the Purchaser's representatives at all times when the work is in progress. Inspection by the Purchaser or its authorized representatives shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by the Purchaser.

Following documents shall be sent along with material:
a) Test reports
b) MDCC issued by Purchaser
c) Invoice in duplicate
d) Packing list
e) Drawings & catalogue
f) Guarantee / Warrantee card
g) Delivery Challan
h) Other Documents (as applicable)

10. INSPECTION AFTER RECEIPT AT STORE:

The material received at the Purchaser store shall be inspected for acceptance and shall be liable for rejection, if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Project Engineering department.

11. GUARANTEE:

Bidder shall stand guarantee towards design, materials, workmanship & quality of process I manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the purchaser up to a period of at least 60 months from the date of commissioning or 66 months from the date of last

supplies made under the contract whichever is later, Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Company, failing which the purchaser will be at liberty to get it replaced/rectified at bidder's risks and costs and recover all such expenses plus the Company's own charges (@ 20% of expenses incurred), from the bidder or from the " Security cum Performance Deposit" as the case may be. Bidder shall further be responsible for free replacement for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the purchaser.

12. PACKING:

Bidder shall ensure that all the equipment covered under this specification shall be prepared for rail/road transport in a manner so as to protect the equipment from damage in transit. The material used for packing shall be environmentally friendly.

13. QUALITY CONTROL:

The bidder shall submit with the offer Quality assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and bought out items and fully assembled component and equipment after finishing. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished, The Purchaser's engineer or its nominated representative shall have free access to the manufacturer's/sub-supplier's works to carry out inspections.

14. MINIMUM TESTING FACILITIES:

Bidder shall have adequate in house testing facilities for carrying out all routine tests, acceptance tests as per Indian/ international standards.

15. MANUFACTURING ACTIVITIES:

The successful bidder will have to submit the bar chart for various manufacturing activities clearly elaborating each stage, with quantity. This bar chart should be in line with the Quality assurance plan submitted with the offer. This bar chart will have to be submitted within 15 days from the release of the order.

16. DRAWINGS:

After the award of the contract four (4) copies of following drawings, drawn to scales describing the
equipment in detail shall be forwarded for approval.

Sr. No.	Description	For approval	For Review Information	Submission
1	Technical Parameters	√		√
2	General Arrangement drawings	√		√
3	Bus bar arrangement	√		√
4	Single Line diagram and wiring diagram	√		√
5	Manual/ catalogues	√	√	√
6	Transport/ Shipping dimension drawing	√	√	√

7	QA & QC Plan	√	√	√
8	Routine, Acceptance and Type Test Certificates	√	√	√

Bidder shall be subsequently provide four (4) complete sets of final drawings, one of which shall be auto positive suitable for reproduction, before the dispatch of the equipment. Soft copy (Compact Disk CD) of all the drawing, GTP, Test certificates shall be submitted after the final approval of the same to purchaser.
All the documents & drawings shall be in English language.
Instruction Manuals: Bidder shall furnish two softcopies (CD) and four (4) hard copies of nicely bound manuals (In English language) covering erection and maintenance instructions and all relevant information and drawings pertaining to the main equipment as well as auxiliary devices.

17. GUARANTEED TECHNICAL PARTICULARS:

S.No	**Particulars**	**Unit**	**As furnished by bidders**
1	Incoming Supply	Single/Three phase	
2	Type of Box	Type A/B (For Single Phase	
3	Application	Outdoor	
4	Number of Incomings	Nos	
5	Number of Outgoings	Nos	
6	Incomer cable size	Sq. mm.	
7	Number of bus Bar Sets	Nos	
8	Outgoing cable size	Sq. mm	
9	Degree of Protection	IP55	
10	Dielectric withstand for the box	kV	

11	Flammability Requirement	FVo	
12	Box Material SMC (As per IS:1341-1992, Grade S3)		
13	Colour of the Box		
14	Thickness of the Box	mm	
15	Material of Gasket – Natural Rubber		
16	Material withstand Temperature	Deg C	
17	Dimension of the Box. Height-400mm / Width-300mm / depth-200mm	mm	
18	Earthing Arrangement	Yes	
19	Sealing Arrangement	Yes	
20	Hinges	Yes	
21	Bus Bar - Aluminum		
a	Rated Voltage	kV	
B	System Voltage	kV	
c	Rated Current of the Bus Bar	Amps.	
D	Number of Bus Bar	Nos.	
E	Bus Bar Material		
F	Current Density	Amp/Sq.mm	
G	Temperature Rise	Deg C	
H	Short Time withstand current	kA for 1 Sec.	

I	Material of insulation for mounting Bus bar (Bus Bar Supports		
J	Clearance between phases	mm	
K	Clearance between phase to neutral	mm	
L	Number of Terminals Working + Spare	Nos	
22	Weight of the Box	Kg	
23	Weather Recyclable Material	Yes / No	
24	Expected for Enclosure/ Bus Bar and its Assembly	Yeas	