

AMENDMENT TO THE CLAUSES OF TECHNICAL SPECIFICATION AGAINST TENDER NOTICE NO. NIT/ODSSP/OPTCL/01 DT 25.09.2013. AMENDED VIDE TENDER NOTICE NO. NIT/ODSSP/OPTCL/01 (R) DT 10.01.2014

Sl. No	Ref. Clause No. & of the Tender Document	As per tender document	Ammended against Clauses of Tender Document
1.	Clause No. - 1.0, Scope of Work , Chapter-E10-I-RS Joist & PSC Pole at Page 3/14 of Vol.-II, TS.	This specification covers design, manufacture, testing and supply of 150x150mm RS Joist 11 Meter long designed for a working load of 34.6kg. The bidder should enclose Performance Certificates from the above users, issued in favour of the Sub Vendor/ manufacturer, as proof of successful operation in field.	<p>i) This specification covers design, manufacture, testing and supply of 150x150mm GI RS Joist 11 Meter long having unit weight of 34.6kg. Per Mtr. Thickness of the web shall be 11.8mm.</p> <p>ii) No Performance certificate in respect of 11Mtr RS Joist is required.</p>
2.	Clause No.-3.0, Performance Testing, Chapter-E12-VIII-Cable Termination & Jointing Kit at Page 5/14 of Vol.II, TS	The successful contractor/ bidder should undertake the testing of termination and jointing kits at CPRI or any Govt. Laboratory.	Cable termination & Jointing Kit shall have been type tested during last 5 years. If required further, type test will be done at CPRI/ERDA/NABL accredited Laboratory or any Govt. Laboratory. The type test charges and transportation charges to type test laboratory shall be borne by OPTCL. But if there is significant design difference between the one tested and the material to be supplied, the cost of such test shall be to the Contractor's account.
3.	Clause No. -14.0.1, SCOPE, Chapter-E14-Line & Errection, at Page 58/78 of Vol.II, TS	For easy in transportation all GI joist/ channels should be made into two pieces (6&4, 6&5, 7&6 mts) with jointing GI channels plates etc. as per sample drawing (which is indicative).	Jointing in lines only, will be allowed where the transportation is not possible and subject to OPTCL approval. For 11Mtr. long (6mtr + 5 mtr), (7mtr + 4mtr) and For 13Mtr. long (6mtr + 7 mtr), (8mtr + 5mtr) GI joist are permissible. Jointing is to be done through nuts & bolts with jointing GI channels/ plates etc. as per sample drawing No. ODSSP/LINE/11
4.	Clause No. – 1.0, Chapter-E6-Battery & Battery Charger, Page 3/6 Vol- II, TS	Supply, installation and commissioning of 48V VRLA 100AH storage battery along with Battery charger: Minimum no of cell shall not be less than 24.	Supply, installation and commissioning of 48V VRLA type storage battery along with Battery charger: It shall have 4nos. of 12V battery & 100AH capacity.
5.	Clause No- 1.2, Sl. No. 15.0 (C), Chapter E5 –III- 33kV VCB(Outdoor) Page 4/10, Vol II , TS	Creepage Distance: 580MM.	Creepage Distance: 900MM

6.	Cl. No. - 7.1.4 , Chapter-E5-II- Station Transformer page 6 / 31, Vol –II, TS	Interlayer Insulation shall be Nomex/epoxy dotted kraft paper	Interlayer Insulation shall be epoxy dotted kraft paper.
7.	ClauseNo- 3.1 Chapter- E6-Battery & Battery Charger, Page 11/22, Vol-II, TS	The 'trickle' charger and 'quick' charger shall be complete with silicon controlled rectifier units, dry type air-cooled transformers, control electronics, smoothing filters etc. suitable for operation from 415V + 10%, 50 Hz + 5%, 3- ph A.C. supply.	The 'trickle' charger and 'quick' charger shall be complete with silicon controlled rectifier units, dry type air-cooled transformers, control electronics, smoothing filters etc. suitable for operation from 220V + 10%, 50 Hz + 5%, 1- ph A.C. supply.
8.	Chapter E5-III- 33kV VCB(outdoor) , Page 10 /10 Vol-II, TS,	<u>TOPOGRAPHICAL AND METEOROLOGICAL SITE CONDITIONS</u> Maximum ambient temperature : 60°C	<u>TOPOGRAPHICAL AND METEOROLOGICAL SITE CONDITIONS</u> Max ambient temperature : 50°C
9.	Cl. No. 5.0, 5.1 & 5.2 Chapter- E4- Indoor switchgears for AIS & GIS, Page 6 / 57, Vol -II, TS	<u>Clause No.- 5.0</u> Normal Current rating 1250 Amp. <u>Clause No. – 5.1</u> Current rating of the vacuum interrupters shall be 1250Amp. <u>Clause No. – 5.2 at Sl. No.(ii) & (iii)</u> ii) For Interrupter – 650A iii) For Outgoing Feeders/ For Incomer 650A	<u>Clause No.- 5.0</u> Normal Current rating 630 Amp <u>Clause No. – 5.1</u> Current of the vacuum interrupters shall be 630Amp. <u>Clause No. – 5.2 at Sl. No.(ii) & (iii)</u> ii) For Interrupter – 630A iii) For Outgoing Feeders/ For Incomer – 630A
10.	Annexure-C Chapter - E12-IV-Polymer Insulator, Page 19/21, Vol-II TS	<u>Annexure-C Headings and Sl. No. 6(a) and elsewhere</u> Min. requirement of 11KV Polymer Insulator 45KN	<u>Annexure-C Headings and Sl. No. 6(a) and elsewhere</u> i) Min. requirement of 11KV Polymer Insulator 70KN ii) Mechanical characteristics Minimum failing load 11kV & 33kV – 70KN

11.	Clause No. – 5.0, Chapter –E4- Indoor AIS & GIS, Page No 5/ 57, Vol- II of TS,	<u>CIRCUIT BREAKER (VCB): 33 KV</u> The circuit breaker (VCB) shall be mounted on a withdrawable truck which shall roll out horizontally from service position to isolated position with ease and it shall also be possible to take out the breaker truck from cubicle smoothly on to the floor. It is preferred to provide with guides for withdrawal and insertion of truck into the cubicle with ball bearing arrangement on the top of the truck. Circuit breaker shall be of vacuum only and the truck shall have distinct 'SERVICE' and 'TEST' position. Special multi point hinged locking arrangement shall be provided to prevent opening of door in the event of internal arc in breaker compartment. Isolation shall be horizontal.	<u>CIRCUIT BREAKER (VCB):33 KV</u> GIS Circuit Breaker shall be of fixed type enclosed in the SF ₆ gas tank. Withdrawable facility is not applicable in case of GIS Switchgear. For AIS the details given at Clause No. 5.0 of Chapter -E4 stands.
12.	Clause No. – 5.1, Chapter –E4- Indoor AIS & GIS, Page No 6/57 Vol- II of TS,	<u>Interrupting media Vacuum:</u> In vacuum circuit breakers, facilities shall be provided for monitoring the contact erosion and any change in contact gap. The vacuum bottles shall be easily replaceable on site and the mechanism shall be conveniently adjustable to permit resetting the contact gap. However, for GIS same is not applicable as there sealed.	<u>Interrupting media Vacuum:</u> i) In case of AIS, vacuum circuit breakers, facilities shall be provided for monitoring the contact erosion and any change in contact gap. The vacuum bottles shall be easily replaceable on site and the mechanism shall be conveniently adjustable to permit resetting the contact gap. ii) In case of GIS, Vacuum bottles are to be replaced by changing the gas, when required.
13.	Clause No. – 11.0, Chapter –E4-Indoor AIS & GIS, Page No 9/57 Vol- II of TS,	11.0 <u>INTERLOCKS</u> The circuit breaker shall operate only in one of the three defined positions i.e. service, test and isolated. The breaker shall not close in any of the intermediate positions.	11.0 <u>INTERLOCKS</u> i) For AIS, the circuit breaker shall operate only in one of the three defined positions i.e. service, test and isolated. The breaker shall not close in any of the intermediate positions. ii) For GIS, the same is not applicable. The 3-position of the DISCONNECTOR switch of GIS shall be ON-OFF-EARTH.
14.	Clause No. – 14.0, Chapter –E4, Volume- II of TS, Page No 10 of 57	<u>AUXILIARY SWITCH AND AUXILIARY PLUG & SOCKET</u> There shall be minimum 6NO and 6NC contacts in breaker auxiliary switch (10 amps DC rating) shall be provided in each circuit breaker.	<u>AUXILIARY SWITCH AND AUXILIARY PLUG & SOCKET</u> There shall be minimum 6NO and 6NC contacts in breaker auxiliary switch (10 amps DC rating) shall be provided in each circuit breaker. However, additional contact shall be made available by using contact multiplier relay.

15.	Clause No. – 18.0, Chapter –E4, Volume- II of TS, Page No 12 / 57	<u>Sl. No. 5 of Basic Technical requirement</u> Rated normal burden for VT's-(Core-I/II) - 50VA/15VA	<u>Sl. No. 5 of Basic Technical requirement</u> Rated normal burden for VT's-(Core-I/II) - 15VA each
16.	Clause No. – 21.0, Chapter –E4, Volume- II of TS, Page No 12 / 57	<u>Clause No 21.0 BUSBARS</u> Bus bar material shall be of high conductivity electrolytic copper only and accessibility of the same shall be from top only. All bus bars shall be tubular /rectangular design insulated with heat shrinkable BPTM compound sleeves and joints shall have sufficient clearances in order to meet the BIL (70kV RMS and 170 kVp) withstand. Phase identification shall be made at the end by coloured tape.	<u>Clause No 21.0 BUSBARS</u> Bus bar material shall be of high conductivity electrolytic copper only and accessibility of the same shall be from top only. All bus bars shall be tubular /rectangular design insulated with heat shrinkable BPTM compound sleeves and joints shall have sufficient clearances in order to meet the BIL (70kV RMS and 170 kVp) withstand. Phase identification shall be made at the end by coloured tape. Note: - In GIS switchgear, Busbars, VCB, Disconnecter shall be in the SF ₆ Gas chamber. The bus bar shall not be solid insulated.
17.	Clause No. – 41.0, Chapter –E4, Volume- II of TS, Page No 33 / 57	<u>QUALIFYING REQUIREMENT</u> The equipment offered shall be procured from short listed vendor at E-23 and shall have been successfully Type Tested during last five years on the date of bid opening. The Type Test reports shall be submitted along with the bid.	<u>QUALIFYING REQUIREMENT</u> The equipment offered shall be procured from short listed vendor at E-23 and shall have been successfully Type Tested during last five years on the date of bid opening. The front page of the Type Test report showing the evidences of the tests, duly signed by the bidder shall be uploaded alongwith the bid. The following Type tests of VCB should have done: 1) Short Time withstand current 2) Temperature Rise 3) Lightning Impluse Test 4) Internal Arc Test 5) Make & Break Test duties 6) Power frequency voltage test 7) Partial discharge test, 8) Resistance measurement test 9) Tightness test 10)Closing characteristic test 11) Opening Characteristic tests The VCB shall be of M2, C2 & E2 duty class.

18.	Clause No. –1.0, PART-C Chapter –E4, Volume- II of TS, Page No 53 / 57	<u>Scope</u> The containiser substation (Out Door E-House) will have all equipment of Indoor GIS subastaion in an portable E-House. However the Transformer, Surge Arrester, out door isolators and other take off arrangements will be be as per the technical specifications of AIS/GIS sub stations mentioned elsewhere in this specification.	<u>Scope</u> The Containiser substation (Out Door E-House) will have all equipment of Indoor GIS subastaion in an portable E-House i.e. 33kV GIS & 11kV AIS . The Transformer, Surge Arrester, isolators shall be placed Outdoor. The equipment & other take off arrangements will be as per the technical specifications of AIS/GIS sub stations mentioned elsewhere in the specification.
19.	Clause No. –2.0, PART-C Chapter –E4, Volume- II of TS, Page No 53 / 57	<u>Enclosure rating and design</u> The switchboard and control equipment housings which shall be located within on-board protected enclosures such as switch rooms and operator’s cabins shall be manufactured to IP 55.	<u>Enclosure rating and design</u> The switchboard and control equipment housings which shall be located within on-board protected enclosures such as switch rooms and operator’s cabins shall be manufactured to IP 55 . Note: Due to typographical error, it is IP 54 in query reply.
20.	Clause No. –3.2, PART-C Chapter –E4, Volume- II of TS, Page No 54 / 58	<u>Shell</u> The outer shell of the E house shall be manufactured with atmospheric corrosion resistant steel. The main load bearing members such as posts, base members, bottom and top side rails, end rails headers are pressed formed profiles of appropriate geometry. Thickness of such profile shall vary from 3.2mm to 6.0 mm of grade IS 10748, Grade -IV .	<u>Shell</u> The outer shell of the E house shall be manufactured with atmospheric corrosion resistant steel. The main load bearing members such as posts, base members, bottom and top side rails, end rails headers are pressed formed profiles of appropriate geometry, shall be minimum 3mm thick with Alu-zinc coating of 275 gm/sqm.
21.	Clause No.–3.4, PART-C Chapter-E4, Volume- II of TS, Page No 55 / 58	<u>Side and End Walls</u> External walls are to be vertically corrugated 1.6 mm thick conforming to IS 2062/IS 513. The corrugated panels are continuously butt welded to form entire side wall and the assembled side wall has to be continuously welded to the peripheral frame members. The side wall shall also provide cut outs for door, windows If any.	<u>Side and End Walls</u> External walls are to be vertically corrugated 3 mm thick and alu zinc coating 275 g/sqm conforming to IS 2062/IS 513. The corrugated panels are continuously butt welded to form entire side wall and the assembled side wall has to be continuously welded to the peripheral frame members. The side wall shall also provide cut outs for door, windows If any. Jointing through clinching technology / Robot welding / CNC turret punch press are acceptable.
22.	Clause No. –6.0, PART-C Chapter –E4, Volume- II of TS, Page No 57 / 58	<u>Insulation</u> E- Houses will be insulated on sides, end walls and doors with 50mm thick Glass Wool. Roof with 80 mm. Densities should be 48 kg/m3.	<u>Insulation</u> E- Houses will be insulated with PUF insulation on sides, end walls and doors with 50mm thick Glass Wool. Roof with 80 mm. Densities should be 48 kg/m3.

23.	Clause No. –7.0, PART-C Chapter –E4, Volume- II of TS, Page No 57 / 58	<u>Inner Panneling</u> Interiors of the E Houses will be aesthetically finished so as to give a pleasing appearance with high quality workmanship. All joints will be neatly finished. For side, roof and end walls paneling will be done with 1.6mm thick Galvanised sheet.	<u>Inner Panneling</u> Interiors of the E Houses will be aesthetically finished so as to give a pleasing appearance with high quality workmanship. All joints will be neatly finished. For side, roof and end walls paneling will be done with Minimum 3 mm thick sheet steel with Alu zinc of 275 g/sqm Galvanised sheet.
24.	Clause No. –18.8, PART-A Chapter –E4, Volume- II of TS, Page No 15/ 58	<u>Fuse Protection</u> The Primary winding shall be protected by HRC Fuses in suitable holder designed by the manufacturers. The secondary windings shall be protected by HRC cartridge fuses in fuse holder consisting of carriers and bases. The carriers and bases shall be of high grade flame retarding and non-hygroscopic moulded insulating materials with hard glass surface. Each fuse shall be identified with engraved plastic label. Potential transformer shall be 3nos single phase & there shall be two cores. One core having 0.2 Class (Metering) & other having 3P Class (Protection). Bus P.T. shall be mounted in a separate draw out carriage.	<u>Fuse Protection</u> The Primary winding shall be protected by HRC Fuses in suitable holder designed by the manufacturers. The secondary windings shall be protected by HRC cartridge fuses in fuse holder consisting of carriers and bases. The carriers and bases shall be of high grade flame retarding and non-hygroscopic moulded insulating materials with hard glass surface. Each fuse shall be identified with engraved plastic label. Potential Transformer shall be 3nos single phase & there shall be two cores. One core having 0.2 Class (Metering) & other having 3P Class (Protection). Bus IVT shall be in a separate chamber with extended Bus bar. Digital display voltmeter shall be installed on IVT panel.
25.	Cl. No. –5.4, PART-A Chapter –E4, Volume- II of TS, Page No 37 / 58	The circuit breakers shall be fitted with spring mechanism type. The inherent design of the circuit breakers shall be such that they shall satisfactorily perform all test duties and interrupt out-of-phase current and produce very low over voltage (<2.0 p.u) on all switching circuits, capacitive and inductive to IEC:62271 - 100 & 200 and other associated standards mentioned in the clause of this specification.	The circuit breakers shall be fitted with spring mechanism type. The inherent design of the circuit breakers shall be such that they shall satisfactorily perform all test duties and interrupt out-of-phase current and produce very low over voltage (<2.5 p.u) on all switching circuits, capacitive and inductive to IEC:62271 - 100 & 200 and other associated standards mentioned in the clause of this specification.
26.	Cl.No.28.3.5(g),Chapter – E4 of TS Vol - II,	<u>Functional Description</u> The relay shall have a facility to have communication on IEC61850 protocol through redundant rear port for SAS connectivity.	<u>Functional Description</u> The relay shall have a facility to have communication on IEC61850 protocol through redundant rear port (i.e. RJ45 or FO) for SAS connectivity.
27.	Cl. No. - 29.1.1, Chapter – E4 , Page 24 /58 Vol – II TS	1. <u>Additional Protection Function</u> * Homopolar component filter , which is used to remove the Homopolar component from the phase	1. <u>Additional Protection Function</u> * Homopolar DC component relay filter, which is used to remove the Homopolar component from the phase currents.

		currents.	
28.	Cl. No. - 29.1.1, Chapter – E4 , Page 24 /58 Vol – II TS	1. <u>Additional Protection Function</u> * 2nd, 4th and 5th harmonic restraint features	1. <u>Additional Protection Function</u> * 2nd and 5th harmonic restraint features
29.	Chapter – E4 of TS Vol - II Part-C , Clause 2.1	<u>General Description</u> The E-room shall accommodate 33 kV and 11 kV Switchgear panels containing VCB (630A), CT (630A), disconnecter (630A), IVT, bus bar 800A inside GIS chamber and Battery and Battery Charger, ACDB, DCDB , RTU etc	<u>General Description</u> The E-room shall accommodate for both 33 kV and 11 kV Switchgear panels containing VCB (630A), CT (630A), disconnecter (630A), IVT, bus bar (800A) inside GIS chamber and Battery and Battery Charger, ACDB, DCDB, RTU. Outdoor Isolator shall be of 1250A.
30.	Clause No. 18.1 / 18.2 of Chapter – E4 , Vol-II TS	<u>General</u> The VT Supplied under this specification shall be of Indoor Single phase Polycrete Complying to IEC 185.	<u>General</u> The VT Supplied under this specification shall be of Indoor Single phase, Epoxy Resin Cast type , Complying to IEC 185.
31.	Clause No. 39, Chapter – E4, Page 32/ 58 , Vol-II of TS	<u>Overall Dimension</u> Width of the switch gear cubicle shall be maximum 1000mm with height of 2450 max and Max Depth with Line PT shall not exceed 3300mm.	<u>Dimension</u> The dimension for 33kV GIS shall not exceed 600mm (Width) X 2000mm (Depth) X2500mm (Height) The dimension for 33kV AIS shall not exceed 1200mm (Width) X3200mm (Depth) X 2700mm (Height) The dimension for 11kV AIS shall not exceed 800 mm(Width)X2100mm(Depth)X2500mm (Height)
32.	Chapter – E5-III of TS Vol-II Clause No. -5.0.(a) of page 5 of 10	<u>Control Cubicle</u> The cubicle shall be of gasketed weather proof construction, fabricated from sheet Aluminum alloy sheet having minimum 3 mm thick.	<u>Control Cubicle</u> The cubicle shall be of gasketed weather proof construction, fabricated from sheet Aluminum alloy sheet having minimum 3 mm thick. CRCA sheet having 3 mm for load bearing & 2 mm for others is also acceptable.
33.	Clause No. -5.5 Chapter – E4, Page 37/58 Vol-II of TS	<u>Connecting terminal for Cables</u> The Connecting terminal for cables shall have silver plating of at least 50 Microns thickness.	<u>Connecting terminal for Cables</u> The Connecting terminal for cables shall have silver plating of at least 10 Microns thickness.
34.	Clause No. - 2.1 , Chapter- E11-RTU & SCADA-	<u>Design Standards</u>	<u>Design Standards</u>

	Design Standards, Page 4/18, VOL-II(TS)	For easy maintenance the architecture shall support pluggable modules on backplane.	For easy maintenance, the Substation RTU has to be rack based with pluggable modules on backplane or Dinrail mounted type.
35.	Clause No. -9.0, Chapter – E11, Page 8 /18 Vol-II of TS	<u>Sequence of Events (SOE) feature</u> The RTU shall have an internal clock with the stability of 10ppm or better.	<u>Sequence of Events (SOE) feature</u> The RTU shall have an internal clock with the stability of 10ppm or less than 10 ppm.
36.	Clause No.- 4.0 , Chapter – E11, Page 6/18 Vol-II of TS	<u>Communication ports</u> The RTU shall be designed to connect maximum 5 MFTs	<u>Communication ports</u> The RTU shall be designed to connect minimum 8nos of MFT and provision should be there to integrate up to 12nos. of MFT.
37.	Clause No.- 14.0 , Chapter – E11, Page 10/18 Vol-II of TS	<u>Contact Multiplying Relays (CMRs)</u> Contact Multiplying Relays (CMRs) are required to multiply the contacts of breaker, isolators and protection relays etc	<u>Contact Multiplying Relays (CMRs)</u> Contact Multiplying Relays (CMRs) are required to multiply the contacts of breaker, isolators and protection relays etc. the Protection relays should be interfaced with RTU in IEC 61850 and RTU shall also have KEMA or equivalent certification of IEC 61850.
38.	Clause No.1.0 & 1.1 of Table Chapter- E5-VIII, Vol.-II, Sl.No.1. at Page- 3/16,	This specification covers manufacturing testing and supply of 3 Pole, 400Amp , 50Hz, Single break for 33kV & 630 A for 11kV class Air Break switches for outdoor installations to be used at 33/11 kV Sub-stations /Structures (Station Transformer). At tapping point used for 3Pole, 200Amp, Single break AB Switch.	This specification covers manufacturing testing and supply of 3 Pole, 200Amp , 50Hz, Single break for 33kV Air Break switches for outdoor installations to be used at 33/11 kV Sub-stations /Structures (Station Transformer). Note: - No AB Switches on 11kV side.

Sl. No	Ref. Clause No. & of the Tender Document	As per tender document	Ammended against Clauses of Tender Document
39.	Clause No.1.2 sl. No. (ii) Of Line Philosophy, Chapter- E2, Vol.-II, TS at Page- 3/42,	Clause No.1.2 <u>Line Philosophy</u> ii) 33 kV incoming lines to AIS sub stations will be with 11 mtr Galvanised RS Joist. and 11 kV out going lines will be with 10 mtr (300 kg capacity) PSC pole pin points	Clause No.1.2 <u>Line Philosophy</u> ii) 33 kV incoming lines to AIS sub stations will be with 11 mtr Galvanised RS Joist Single Pole upto 10 ⁰ deviation, Double Pole structure for more than 10 ⁰ upto 60 ⁰ deviation

		and (400 kg capacity) for cut points.	and 4-Pole structure for deviation of more than 60° upto 90°. Road crossings will be with 13mtr height single pole GI RS Joist. 11 kV out going lines shall be with 10 mtr height (300 kg capacity) single PSC pole upto 10° deviation. DP structures with 11mtr. GI RS Joist for deviation more than 10° upto 60°, Four with 11mtr. GI RS Joist of more than 60° upto 90° shall be adopted. In case of GIS S/S, 33kV lines and 11 kV lines will be similar to 33kV lines in AIS S/S. Normal Span length shall be 60 mtr for 33 kV line and 70 mtr for 11 kV line
40.	Clause No. 7.3 Table of Approval Procedures, Chapter-E2 at Page 18/42 of Vol.-II, TS.	<u>Approval Procedure table contents</u> Approval /comments of 1st submission: Within 30 15 days of receipt. Within 24 7 days of receipt including postal time both ways. Within 15 7 days of receipt.	<u>Approval Procedure table contents</u> Approval /comments of 1st submission: Within 15 days of receipt. Within 7 days of receipt including postal time both ways. Within 7 days of receipt.
41.	Clause No. 7.4, Chapter-E2 at Page 19/42 of Vol.-II, TS.	<u>Final as-built drawings</u> After completion of work on site all drawings shall be revised where necessary to show the equipment as installed and three copies submitted duly signed by site-in-charge. Following approval, two reproducible transparencies and twenty prints shall then be provided as required by the Engg. Incharge and shall be of sufficient detail to enable all parts to be identified. The contractor shall also submit, where possible, digitally stored copies of all as-built drawings on disc or CD-ROM in a format compatible with the Owner's drawing system.	<u>Final as-built drawings</u> After completion of work on site all drawings shall be revised where necessary to show the equipment as installed and three copies submitted duly signed by site-in-charge. Following approval twenty prints shall then be provided as required by the Engg. Incharge and shall be of sufficient detail to enable all parts to be identified. The contractor shall also submit, where possible, digitally stored copies of all as-built drawings on disc or CD-ROM (02 nos. CD-ROM i.e. one is readable and other is editable) in a format compatible with the Owner's drawing system.

42.	Clause No. 8.4.4, Chapter-E2 at Page 27/42 of Vol.-II, TS	<u>Labels and plates</u> Colours shall be permanent and free from fading. Labels mounted on black surfaces shall have white lettering. 'Danger' plates shall have red lettering on a white background.	<u>Labels and plates</u> Colours shall be permanent and free from fading. Labels mounted on black surfaces shall have white lettering. 'Danger' plates shall have red lettering on a white background. Please refer drawing no. ODASSP/LINE/15 & Clause No.4.1 of Chapter-E14 for details specifications of the Danger plate.
43.	Clause No.4.1, Chapter-E14 at Page 6/78 of Vol.-II, TS	<u>Danger Boards</u> The vendor shall provide & install danger plates on all 33kv, 11 kV DP structures, H pole structures and towers. The danger plates shall conform to REC specification No. 57/1993.	<u>Danger Boards</u> The vendor shall provide & install danger plates on all 33kV, 11 kV DP structures, Single pole structures and Towers. The dimension of the plate size: Length 250mm X Width 200mm, Thickness (without enameling) - 2mm, Thickness (With enameling) - 2.3mm. Danger Boards shall conform to IS: 2551. For details, Please refer to drawing no. ODASSP/LINE/15
44.	Clause No.10.6, Chapter-E2- General Technical clauses & design at Page 35/42 of Vol.-II, TS	<u>Supply Voltage table contents</u> The table contents of Variation & Frequency HZ or DC columns elsewhere it is mentioned □10% and 50□5%	<u>Supply Voltage table contents</u> In Variation & Frequency HZ or DC columns elsewhere it is mentioned will be as ±10% and 50±5%
45.	Clause No.11.1, Chapter-E2-General Technical clauses & design , Part-B, at Page 7/10 of Vol.-II, TS	<u>TERMINAL CONNECTORS</u> Technical connectors suitable for the AAAC conductor size 150 Sq mm shall be supplied.	<u>TERMINAL CONNECTORS</u> Technical connectors suitable for the AAAC conductor size 148 Sq mm shall be supplied.
46.	Clause No.11.0, Chapter-E5-VI-Surge arrester, at Page 8/17 of Vol.-II, TS & Clause No.12.0, Chapter-E12-IV-Polymer Insulator, at Page 15/16 of Vol.-II, TS	<u>NAME PLATE & else where it is written</u> (a) Name of the DISTCOM (b) Purchase order No & Date 12.0 MARKINGS f) Name of the DISTCOM	<u>NAME PLATE & else where it is written</u> (a) Name of the Owner (b) Contract No & Date 12.0 MARKINGS f) Name of the Owner
47.	Chapter-E5-VI-Surge arrester, at Page 12/17 of Vol.-II, TS & GTP of Chapter-E21	<u>Technical Requirements of Surge arrester & GTP of E21 and elsewhere it is written</u> Rated arrester voltage - 10KV	<u>Technical Requirements of Surge arrester & GTP of E21 and elsewhere it is written</u> Rated arrester voltage - 9KV
48.	Annexure-D of check list Chapter-E5-VI-Surge arrester, at Page 17/17 of Vol.-II, TS	<u>Annexure-D of check list and elsewhere</u> If the type tested surge Arrester does not fulfill the	<u>Annexure-D of check list and elsewhere</u> If the type tested surge Arrester does not fulfill the technical requirements as per this specification, whether the bidder

		technical requirements as per this specification, whether the bidder agrees to conduct the particular type test again at their own cost without any financial liability to CESU in the presence of CESU's representative within the specified delivery period.	agrees to conduct the particular type test again at their own cost without any financial liability to OPTCL in the presence of OPTCL's representative within the specified delivery period.
49.	Clause No.8.1, Chapter-E7-ACDB & DCDB , at Page 13/20 of Vol.-II, TS	<u>General Scheme</u> The DC supply system (50V) shall comprise single battery set and battery charger, a dc distribution board and control gear.	<u>General Scheme</u> The DC supply system (48V) shall comprise four nos. of battery each having 12V and battery charger, a dc distribution board and control gear.
50.	Clause No.1.1, Chapter-E13- Earthing, PART- B , at Page 9/11 of Vol.-II, TS	<u>SCOPE</u> The specification covers design, manufacture, testing for use in earthing of the HT & LT poles.	<u>SCOPE</u> The specification covers design, manufacture, testing for use in earthing of the HT poles.
51.	Clause No.3.2, Chapter-E13-Earthing , at Page 7/11 of Vol.-II, TS	<u>APPLICABLE STANDARD</u> The Earthing Device must be made out of 50 mm (Heavy Gauge- No minus Tolerance is allowed on Wall thickness) Hot Dip G.I. Pipe (as per IS: - 1239,m Part-1, 1990 of reputed Make – i.e. TATA / Jindal) & 3.3 mtrs length tapered finished smooth at one end for a length of 75 mm & Clamp at the other end	<u>APPLICABLE STANDARD</u> The Earthing Device must be made out of 50 mm (Heavy Gauge- No minus Tolerance is allowed on Wall thickness) Hot Dip G.I. Pipe (as per IS: - 1239,m Part-1, 1990 of reputed Make – i.e. SAIL/TATA/ RINL/JINDAL) & 3.3 mtrs length tapered finished smooth at one end for a length of 75 mm & Clamp at the other end
52.	Clause No.1.1, PART - A Chapter-E13-Earthing at Page 4/11 of Vol.-II, TS	<u>GUIDE LINE</u> The size of the chamber shall be 450x400x400mm.	<u>GUIDE LINE</u> The size of the chamber shall be 450x 450x600 mm.
53.	Clause No.10.0, Chapter-E12-V-Hardware fittings at Page 7/11 of Vol.-II, TS	<u>Tension Clamps</u> The Tension Clamps shall be made out of aluminium alloy and of 4 pair bolted (M-16) type suitable for 100 mm ² & 150 mm ² AAC conductor.	<u>Tension Clamps</u> The Tension Clamps shall be made out of aluminium alloy and of 4 pair bolted (M-16) type suitable for 100 mm ² & 148 mm ² AAC conductor.
54.	Clause No. 4.1, Chapter-E12-IV-Polymer Insulator at Page 7/11 of Vol.-II, TS	<u>General Requirements</u> The Composite insulators will be used on lines on which the conductor will be AAC/ACSR of size up to 100 Sq.mm.	<u>General Requirements</u> The Composite insulators will be used on lines on which the conductor will be AAC of size up to 148 Sq.mm.

55.	Clause No. 3.1, Chapter-E12-II-Disc Insulator at Page 11/22 of Vol.-II, TS	<u>DETAILS OF DISC INSULATORS Table contents</u> Sl. No. Size of Disc Insulator Electro-mechanical strength of insulator string fittings (KN) 1 Single suspension 45 2 Double suspension 2X45 3 Single Tension 70 4 Double Tension 2X70	<u>DETAILS OF DISC INSULATORS Table contents</u> Sl. No. Size of Disc Insulator Electro-mechanical strength of insulator string fittings (KN) 1 Single Tension 70 2 Double Tension 2X70 Note: 45KN Disc insulators are deleted if elsewhere is written.																																								
56.	Clause No. 8.0, Chapter-E12-II-Disc Insulator at Page 11/22 of Vol.-II, TS	<u>DIMENSIONAL TOLERANCE OF INSULATOR DISCS</u> a) Diameter of Disc (mm) <table border="1" data-bbox="667 579 1249 683"> <thead> <tr> <th></th> <th>Standard</th> <th>Maximum</th> <th>Minimum</th> </tr> </thead> <tbody> <tr> <td>45 KN Disc</td> <td>255</td> <td>266</td> <td>244</td> </tr> <tr> <td>70 KN Disc</td> <td>255</td> <td>266</td> <td>244</td> </tr> </tbody> </table> b) Ball to Ball spacing Between Discs (mm) <table border="1" data-bbox="667 794 1249 898"> <thead> <tr> <th></th> <th>Standard</th> <th>Maximum</th> <th>Minimum</th> </tr> </thead> <tbody> <tr> <td>45 KN Disc</td> <td>145</td> <td>149</td> <td>141</td> </tr> <tr> <td>70 KN Disc</td> <td>145</td> <td>149</td> <td>141</td> </tr> </tbody> </table>		Standard	Maximum	Minimum	45 KN Disc	255	266	244	70 KN Disc	255	266	244		Standard	Maximum	Minimum	45 KN Disc	145	149	141	70 KN Disc	145	149	141	<u>DIMENSIONAL TOLERANCE OF INSULATOR DISCS</u> a) Diameter of Disc (mm) <table border="1" data-bbox="1364 579 1946 643"> <thead> <tr> <th></th> <th>Standard</th> <th>Maximum</th> <th>Minimum</th> </tr> </thead> <tbody> <tr> <td>70 KN Disc</td> <td>255</td> <td>266</td> <td>244</td> </tr> </tbody> </table> b) Ball to Ball spacing Between Discs (mm) <table border="1" data-bbox="1364 794 1946 858"> <thead> <tr> <th></th> <th>Standard</th> <th>Maximum</th> <th>Minimum</th> </tr> </thead> <tbody> <tr> <td>70 KN Disc</td> <td>145</td> <td>149</td> <td>141</td> </tr> </tbody> </table>		Standard	Maximum	Minimum	70 KN Disc	255	266	244		Standard	Maximum	Minimum	70 KN Disc	145	149	141
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57.	Clause No. 1.0, Chapter-E10-I-RS Joist at Page 3/14 of Vol.-II, TS	<u>SCOPE OF WORK table contents</u> The table contents and Table No. 1 , 2 and 3 1. At Ransinghpur grid 2. At IOCL Depot 3. At Janla S/s	<u>SCOPE OF WORK table contents</u> There will be no table 1 & table 3 All other this of SCOPE OF WORK remain unaltered.																																								

58.	Clause No. 4.0, Chapter-E10-I-RS Joist at Page 3/14 of Vol.-II, TS & Chapter E21 at GTP	<p align="center"><u>Rolled Steel Joist & GTP</u></p> <p align="center">The parameters of Table Contents 150X150mm ISHB</p> <ol style="list-style-type: none"> Length of Joist in Mtr with +100mm/- 0% Tolerance : 11mtr Weight kg/m with±2.5% Tolerance : 30.6 Sectional Area (cm²) : 39.00 Depth(D) of Section (mm) with +3.0mm/ -2.0mm Tolerance as per IS 1852-1985 : 150.00 Width (B)of Flange (mm) with ±2.5mm Tolerance for 116 x 100 mm ISMB & ±4.0mm Tolerance for 150 X150 mm ISHB IS 1852-1985 : 150.00 Thickness of Flange (Tf) (mm) with±1 .5mm : 9.00 Thickness of Web(Tw) (mm) with±1 .0mm Tolerance : 8.40 Corner Radius of fillet or root (R1) (mm) : 8.00 Corner Radius of Tow (R2) (mm) : 4.00 Moment of Inertia I_{xx} (cm⁴) : 1540.00 I_{yy} (cm⁴) : 460.00 Radius of Gyration (cm) R_{xx} : 6.29 R_{yy} : 3.44 Flange Slope(a) in Degree : 94.0 tolerance in dimension : As perIS:1 852 	<p align="center"><u>Rolled Steel Joist & GTP</u></p> <p align="center">The parameters of Table Contents 150X150mm ISHB</p> <ol style="list-style-type: none"> Length of Joist in Mtr with +100mm/- 0% Tolerance : 11mtr Weight kg/m with±2.5% Tolerance : 34.6 Sectional Area (cm²) : 44.1 Depth(D) of Section (mm) with +3.0mm/ -2.0mm Tolerance as per IS 1852-1985 : 150.00 Width (B)of Flange (mm) with ±2.5mm Tolerance for 116 x 100 mm ISMB & ±4.0mm Tolerance for 150X150 mm ISHB IS 1852-1985 : 150.00 Thickness of Flange (Tf) (mm) with±1 .5mm Tolerance : 9.00 Thickness of Web(Tw) (mm) with±1 .0mm Tolerance: : 11.8 Corner Radius of fillet or root (R1) (mm) : 8.0 Corner Radius of Tow (R2) (mm) : 4.00 Moment of Inertia I_{xx} (cm⁴) : 1640.00 I_{yy} (cm⁴) : 495.00 Radius of Gyration (cm) R_{xx} : 6.09 R_{yy} : 3.35 Flange Slope(a) in Degree : 94.0 tolerance in dimension : As perIS:1 852
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59.	Clause No. 5.3, Chapter-E10-I-RS Joist & PSC Pole , PART - B at Page 11/14 of Vol.-II, TS	<u>Dimensions and Reinforcements</u> Suspension type H1/W fittings in all tangent locations and Four pair bolted type tension H/W fittings should be used in all new 33&11 kV lines.45 KN & 70 KN normal B&S insulators will be used in suspension & tension locations respectively.	<u>Dimensions and Reinforcements</u> Suspension type H/W fittings in all tangent locations and Four pair bolted type tension H/W fittings should be used in all new 33 &11 kV lines 70 KN normal B&S insulators will be used in suspension & tension locations respectively.
60.	Clause No. 14.0, Chapter-E10-I-RS Joist & PSC Pole , PART - B at Page 13/14 of Vol.-II, TS	<u>Earthing of Support</u> Each pole shall be earthed with coil type earthing as per REC Construction Standard J-1. All DP & Four pole structures & the poles on both sides of railway crossing shall be earthed by providing two nos. pipeearthing as per Drawing provided by CESU. Note: All the poles shall be provided with a RCC block base or MS base plate having dimensions as mentioned at 5.0.2 © as per the site requirement to be decided by Engineer in Charge. The decision of Engineer in Charge will be Final.	<u>Earthing of Support</u> Each pole shall be earthed with coil type earthing as per REC Construction Standard J-1. All DP & Four pole structures & the poles on both sides of railway crossing shall be earthed by providing two nos. pipeearthing as per Drawing provided by OPTCL.
61.	Clause No. 1.0, Chapter-E10-II- V- Crossarm at Page 3/7 of Vol.-II, TS	<u>Qualification Criteria of manufacturer</u> b) The 33 KV & 11 KV ' V ' Cross arm shall be made out of 100x 50x5.6. mm MS Channel of (9.56 kg/mtr weight) . The Back Clamp for both 33 KV & 11 KV shall be made out of 75 x 10 MS Flat and shall be suitably designed to fit PSC Pole 9 Mtr x 300 Kg , 8 Mtr x 200 Kg.and 9 mtrx415kg c)The Pole Top Bracket (F Clamp) shall be made out of75 x 10 MS Flat suitably designed to fit PSC Pole 9 Mtr x 300 Kg ,10X Mtr x 425 Kg.& 9mtrx415 kg for both 33 KV & 11 KV.	<u>Qualification Criteria of manufacturer</u> b) The 33 KV & 11 KV ' V ' Cross arm shall be made out of 100x 50x6 mm MS Channel of (9.56 kg/mtr weight) . The Back Clamp for both 33 KV & 11 KV shall be made out of 75 x 10 MS Flat and shall be suitably designed to fit PSC Pole 10 Mtr x 300 Kg and 10 Mtr x 400 Kg. c)The Pole Top Bracket (F Clamp) shall be made out of 75 x 10 MS Flat suitably designed to fit PSC Pole 10 Mtr x 300 Kg and 10X Mtr x 400 Kg
62.	Clause No. 14.0, Chapter-E19-Testing & Office Equipment at Page 10/10 of Vol.-II, TS	<u>Office Furniture</u> Supply and installations of the furnitures for office & customer care center are in the scope of this contract. All the furniture shall be of Godrej make. Details of the scope of supply are as indicated below:	<u>Office Furniture</u> Supply and installations of the furnitures for office & customer care center are in the scope of this contract. All the furniture shall be of Godrej make. Details of the scope of supply are as indicated below:

			Sl. No.	Item	Unit	Office	Customercare
			1	5ftX3ft table with Drawer both sides	Nos.	1	1
			2	Computer table suitable keeping monitor,CPU,UPS and printer with two nos revolving arm chair suitable for computer use.	Set	1	—
			3	Revolving , Adjustable(height) Chairs with arm	Nos.	1	1
			4.a	"S" type steel chairs with arm	Nos.	4	—
			4.b	"S" type steel chair Fixed by GI Pipe (5nos. in one line)	Set.	—	2 (1x5 in one set)
			5	6ft height steel almirah (only with selves) for keeping records and other valuable items	Nos.	1	—
			6	4ft steel rack (Five selves) for keeping the files and other items	Nos.	1	—
63.	Clause No. 4.0, Chapter-E5-IX- Substation Structure at Page 3/6 of Vol.-II, TS	The beams shall be fabricated from galvanized 125 x 65 x 5.3mm channels as per the drawings / field requirements.	The T2 column shall be fabricated from galvanized 175 x 75 x 6mm channels as per the drawings / field requirements.				

66.	CI No. -1.5, Chapter E2- General Technical & Design, Page 4/42, Vol-II TS.	<u>Clause No. – 1.5</u> For all items covered under the scope, the manufacturer should have production facility in India for atleast three years from the date of bid opening.	<u>Clause No. – 1.5</u> All items except GIS equipment and Containisered GIS equipment shall be manufactured in India. For containisered GIS Sub-station, the the experience and performance in any country is acceptable. For GIS Equipment, the following criteria are to be fulfilled.
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For GIS Equipment, the following criteria are to be fulfilled

- I. The SF6 Gas Insulated Switchgear (GIS) equipment (33 kV or higher voltage class) should have been manufactured from its manufacturing base in INDIA.
- II. The manufacturer must have been installed at least Two (02) nos. of GIS substations (33 kV or higher voltage class SF6 Gas Insulated switchgear with minimum 3 bays in each substation) in India and the same must be in satisfactory operation for a minimum period of one (01) year, reckoned from the date of bid opening.
- III. The Manufacturer shall have to furnish type test report of SF6 gas insulated sub-station equipment duly Designed, Manufactured, Tested (as per IEC standard) which, shall not be older than **Ten (10) years**, as on date of bid opening.

Type Test should have been conducted at any of the following internationally reputed testing laboratories,

- (a) KEMA (Holland)
 - (b) CESI (Italy)
 - (c) CERDA (France)
 - (d) PHELA (Germany)
 - (e) KERI (S.Korea).
- IV. A manufacturer **who** does not meet the requirement as specified in serial **(II & III)** above , but has established production **line in India** for manufacturing of SF6 Gas Insulated switchgear (GIS) based on technological support of **its parent company (Holding Company)** can also be considered provided that they (Parent company) have manufactured, type tested (as per IEC standard) of such equipment & with the following stipulation :-
 - (a) **The manufacturer's parent company (Holding Company) has** manufactured, type tested (as per IEC standard).
 - (b) The **parent company (Holding Company)** meets qualifying requirements stipulated under serial **II** and **III** above.
 - (c) The manufacturer shall furnish followings,
 - (1) An undertaking (jointly with the parent company (Holding company) to guarantee quality, timely supply, performance and warranty obligations for a period of **five (05) years** as specified for the equipment(s) in the **parent company's (Holding Company)** letter head, which is required to be submitted at the time of signing/execution of the contract agreement.
 - (2) **Such manufacturer should submit valid collaboration agreement for technology transfer / license to design, manufacture, test and supply GIS equipment(s) in India at the time of bidding.**
 - V. The manufacturer shall submit a list of its past supply experience or of the parent company (Holding company) for last **Five (05) years &** Owner's certificate regarding the satisfactory operation/performance for at least **one year** for the number of substations and bays at SI II as mentioned above of 33 kV or above voltage class GIS equipment in India.