

GTP NO- 31 GURANTEED TECHNICAL PARTICULARS of STAY WIRE (7/10 SW G)

| Sl. No. | Name of the Particulars | Desired Value | Bidder's Offer |
|---------|---|---------------|----------------|
| 1 | Nominal diameter of wire | 4.87m m | |
| 2 | Tolerance in diameter | +/- 2.50% | |
| 3 | Sectional Area (In Sq. mm.) | 18.63 | |
| 4 | Tensile strength | 925kgf | |
| 6 | Type of coating Heavy/Medium/Light | Heavy | |
| 8 | Weight of Zinc coating (Gms/ Mtr.) Min. | 3 | |
| 9 | No of dips the coating withstand as 18 ± 20°C 1 min | 3 | |

| | | | |
|------|---|--|--|
| 11 | Tensile test : Tension strength in MPA | 550 TO 900 | |
| 12 | Ductility Test : Condition of wire after wrapping test as per ISS 175/1 961 | When wrapped 8 times round its own diameter and on being straightened the wire shall not split | |
| 13 | Length of wire in each coil in meter | 408 | |
| 13 a | Tolerance% | +/- 5% | |
| 14 | Weight of each coil in Kgs | 70 to 100 | |
| 14 a | Tolerance% | +/- 5% | |
| 15 | Weight of wire in Kg/Km | 146 | |
| 15 a | Tolerance% | +/- 5% | |
| 16 | Standard according to which the solid wire is manufactured and tested | ISS 280/78 | |
| 17 | Details of packing | By G.I Wire | |

GTP NO -32 GURANTEED TECHNICAL PARTICULARS OF TENSION CLAMP

| Sl. No. | Name of the Particulars | Desired Value (Suitable for AAAC 148/100mm²) | Bidders Offer |
|----------------|---|--|----------------------|
| 1 | Type | Compression type tention clamp | |
| 2 | Material | Ext. Al.Alloy/Ext. Al. | |
| 3 | Breaking Strenght | 95% of UTS of Conductor | |
| 4 | Slipping Strenght | 95% of UTS of Conductor | |
| 5 | Galvanising | | |
| a | Ferrous Parts | Hot Dip Galvanised | |
| b | Spring Washers | Electro Galvanised | |
| 6 | Quality of Zinc used | 99.95 % | |
| 7 | Number of dips which the clamp can withstand | 6/ 1 minute dips | |
| 8 | Standard to which Conforming | IS 2633 | |
| 9 | Electrical conductivity | | |
| a. | Results of heating cycle test carried out | T.C. Attached | |
| b. | Electrical resistance | Not more than 75% of equivalent length of conductor | |
| 10 | Reference to type tests and other test reports attached | T.C. Attached | |
| 11 | Make of bolts and Nuts used | | |

GTP NO -33 GURANTEED TECHNICAL PARTICULARS OF SUSPENSION CLAMP

| Sl. No. | Name of the Particulars | Desired Value (Suitable for AAAC 148/100mm²) | Bidders Offer |
|----------------|--|--|----------------------|
| 1 | Type of material used for retaining rod for AGS assembly giving reference of ISS | Aluminum Alloy 6061/Equivalent | |
| 2 | Minimum tensile strength of retaining rod material | 35 Kg/mm ² | |
| 3 | Chemical composition of retaining rod materials | As per IS:733 | |
| 4 | Electrical conductivity of Armour Rod material(In percentage of the conductivity of IACS i.e. International Annealed Copper Standard | Not less than 40 %of IACS | |
| 5 | Slipping strength of cushioned suspension assembly | 8% to 15% of UTS of Conductor | |
| 6 | Breaking strength of suspension Clamp | 6000 Kgf | |
| 7 | Minimum Tensile Strength | 2000 Psi | |
| 8 | Minimum ultimate Elongation | 300 % | |
| 9 | Ageing (guaranteed life of the assembly) | 40 Years | |
| 10 | Hardness | 65 to 80 A | |

GTP NO -34 GURANTEED TECHNICAL PARTICULARS OF BACK CLAMP

| Sl. No. | Name of the Particulars | Unit | Bidder's Offer |
|---------|---|-------------------|----------------|
| 1 | Type of Clamp | | |
| 2 | Grade of steel | | |
| 3 | Steel standard | | |
| 4 | Fabrication Standard | | |
| 5 | Dimensions | Mm | |
| 6 | Steel section utilized | | |
| 7 | Steel tensile strength | N/cm ² | |
| 8 | Working load | Kg | |
| 9 | Details of galvanizing method Utilized and Standard/specification conforming to | | |
| 10 | Weight of back clamp | kg | |
| 11 | Whether drawing has been submitted with the bid | | |

| GTP NO -35 GUARANTEED TECHNICAL PARTICULARS FOR F-CLAMP | | | |
|--|--|----------------------|-----------------------|
| SL No | Name of the Particulars | Desired Value | Bidder's Offer |
| 1 | Type of crossarm | | |
| 2 | Grade of steel | | |
| 3 | Steel standard | | |
| 4 | Fabrication Standard | | |
| 5 | Dimensions | Mm | |
| 6 | Steel section utilized | | |
| 7 | Steel tensile strength | N/cm ² | |
| 8 | Working load | Kg | |
| 9 | Details of galvanizing method utilized and standard/specification conforming to? | | |
| 10 | Weight of cross arm | kg | |
| 11 | Whether drawing has been submitted with the bid | | |

| GTP NO-36 | | GUARANTEED TECHNICAL PARTICULARS OF FLEXIBLE COPPER BOND | |
|-----------|---|--|----------------|
| Sl. No. | Name of the Particulars. | Desired Value | Bidder's Offer |
| 1 | Stranding | 37/ 7/ 0.417 | |
| 2 | Cross sectional area(Sq.mm) | 75.6 | |
| 3 | Minimum copper equivalent area(sq.mm) | 34(each individual wire) | |
| 4 | Length of copper cable(mm) | 500 | |
| 5 | Material Lugs | Tinned copper | |
| 6 | Bolt Size | | |
| | (i) Diameter(mm) | 16 | |
| | (ii) Length(mm) | 40 | |
| 7 | Resistance(ohm) | 0.0004(as per IS.2121) | |
| 8 | Total weight of Fexible copper bond(kg) | 0.45(approx) | |

| GTP NO- 37 GUARENTEED TECHNICAL PARTICULARS OF Earthing Pipe | | | |
|---|---------------------------------|--|-----------------------|
| Sl. No | Name of the Particulars. | Desired Value | Bidder's Offer |
| | | Multiplication Factor to Resistivity | |
| 1 | Length (mm)2000 | 0.21 | |
| | 3000 | 0.15 | |
| 2 | Short Time Current Rating | 25kA | |
| 3 | Inner Diameter | 19mm Rod or 28mm Pipe | |
| 4 | Galvanization Range | Between 80 to 100 micro ohms | |
| 5 | Inner Space Contains | Heterogeneous Rich Crystalline Mixture | |
| 6 | Material | G.I Type | |

GTP NO- 38**GURANTEED TECHNICAL PARTICULARS EARTHING COIL**

| Sl. No. | Name of the Particulars | Desired Value | Bidder's Offer |
|----------------|--------------------------------|--|-----------------------|
| 1 | Nominal diameter of wire | 4.00mm (08 swg) with tolerance +/- 2.5% | |
| 2 | No. of turns | 115nos | |
| 3 | External dia of Coil | 50mm(min) | |
| 4 | Length of Coil | 460mm(min) | |
| 5 | Mass of ^{Zinc} | 280gm/ sq mm (before coiling) & 266 gm/sq mm after coiling | |
| 6 | Total weight of Coil | 1.850kg (min) | |
| 7 | General Tolerance | + / - 2.5 % | |

GTPNO- 39 GUARENTEED TECHNICAL PARTICULARS OF 33kV SINGLE CORE 400 SQMM, XLPE INSULATED, UNARMoured CABLE FOR LINE

| Sl.No | Name of the Particulars | Desired Value | Bidder's Offer |
|--------------|--|---|-----------------------|
| 1 | Type of cable | Aluminium Conductor, XLPE Insulated | |
| 2 | Conductor Details | | |
| a | No of Cores | 1 | |
| b | Normal Cross-Sectional Area | 400mm ² | |
| c | Material and Grade | Aluminium compacted, Stranded as per IS: 8130 with latest amendment | |
| d | Shape of Conductor | Circular | |
| e | Diameter of Conductor | 22.6mm | |
| f | No. of Strands and Diameter of each Strand | as per IS 8130 with latest amendment | |
| 3 | Rated Voltage (U _o /U) | 19/33kV | |
| 4 | Highest System Voltage which the cable can withstand | 36kV(U _m) | |

| | | | |
|----|--|------------------------------|--|
| 5 | Maximum Conductor temperature for continuous operation | 90° C | |
| 6 | a) Maximum conductor temperature during short circuit | 250°C | |
| 7 | Water swellable tape on conductor | semiconducting | |
| 8 | Extruded Conductor Screen | | |
| | Material | Extruded semiconducting XLPE | |
| | Nominal Thickness | 0.30mm | |
| 9 | Insulation | | |
| a | Material | XLPE | |
| b | Nominal Thickness | 8.8mm | |
| c | Vulcanization Process | | |
| i) | Extrusion Method | Triple Extrusion | |

| | | | |
|------|---|--|--|
| ii) | Curing Method | Dry Curing | |
| iii) | Cooling Method | Inert Gas | |
| 10. | Extruded Insulation Screen | | |
| a | Material | SemiConductor XLPE | |
| i) | Semiconductor XLPE Thickness (Nominal/Minimum) | 1.0 mm/ 0.85 mm | |
| 11 | Metallic Sheath | | |
| a | Material | Corrugated Aluminium | |
| b | Thick ness of Metallic | To withstand fault current of 25 kA for 1 sec | |
| c | Diameter of Cable after inner sheath application | Manufacture to Specify | |
| 12 | Thickness of bituminous Tape over corrugated aluminium sheath for adhesion | manufacturer to specify | |

| | | | |
|----|--|---|--|
| 13 | Outer Sheath | HDPE | |
| a | Type | ST 7 as per IEC 60502 | |
| b | Colour | Black | |
| c | Thickness | As per Is 7098 (part 2)/2011 | |
| d | Conductive Coating over outer sheath | Graphite coating | |
| 14 | Nominal Overall Diameter of Cable | Manufacture to Specify | |
| 15 | Nominal Overall Weight of Cable per Metre | Manufacture to Specify | |
| 16 | Standard Drum Length with Tolerance | 500m+5 % | |
| 17 | Minimum Bending Radius allowable during installation | As per Is 1255 / 1983 with latest amendment | |
| 18 | Short Circuit Current Rating for 1 Sec | 37.6kA | |
| 19 | Soil Parameter | | |

| | | | |
|----|--|------------|--|
| a | Soil Temperature | 30°C | |
| b | Ambient Temperature | 50°C | |
| c | Soil Thermal Resistivity | 150°C Cm/W | |
| 20 | Normal current rating in ampere | | |
| a | Ground | 385A | |
| b | Ducts | 330A | |
| c | Air | 570A | |
| 21 | Maximum DC Resistance at 20°C ohm/km | 0.0778 | |
| 22 | Maximum AC Resistance at 90°C ohm/km | 0.1023 | |
| 23 | Reactance of Cable in in ohm/km | 0.117 | |
| 24 | capacitance of cable in micro farad/km | 0.25 | |
| 25 | De rating factor of Cable installed | As per IS | |

GTPNO- 40 GUARENTEED TECHNICAL PARTICULARS OF 33kV SINGLE CORE 300 SQMM AND 400 SQMM, XLPE INSULATED, UNARMoured CABLE FOR SUB-STATION

| | | 300 SQ MM | | 400 SQ MM | |
|--------------|--------------------------------|---|-----------------------|---|-----------------------|
| Sl.No | Name of the Particulars | Desired Value | Bidder's Offer | Desired Value | Bidder's Offer |
| 1 | Type of cable | Aluminium Conductor, XLPE Insulated | | Aluminium Conductor, XLPE Insulated | |
| 2 | Conductor Details | | | | |
| a | No of Cores | 1 | | 1 | |
| b | Normal Cross-Sectional Area | 300mm ² | | 400mm ² | |
| c | Material and Grade | Aluminium compacted, Stranded as per IS: 8130 with latest amendment | | Aluminium compacted, Stranded as per IS: 8130 with latest amendment | |
| d | Shape of Conductor | Circular | | Circular | |
| e | Diameter of Conductor | 19.5 mm | | 22.6mm | |

| | | | | | |
|---|--|--------------------------------------|--|--------------------------------------|--|
| f | No. of Strands and Diameter of each Strand | as per IS 8130 with latest amendment | | as per IS 8130 with latest amendment | |
| 3 | Rated Voltage (U ₀ /U) | 19/33kV | | 19/33kV | |
| 4 | Highest System Voltage which the cable can withstand | 36kV(U _m) | | 36kV(U _m) | |
| 5 | Maximum Conductor temperature for continuous operation | 90 ⁰ C | | 90 ⁰ C | |
| 6 | Maximum conductor temperature during short circuit | 250 ⁰ C | | 250 ⁰ C | |
| 7 | Water swellable tape on conductor | semiconducting | | semiconducting | |
| 8 | Extruded Conductor Screen | | | | |
| | Material | Extruded semiconducting XLPE | | Extruded semiconducting XLPE | |
| | Nominal Thickness | 0.30mm | | 0.30mm | |

| | | | | | |
|------|----------------------------|--------------------|--|--------------------|--|
| 9 | Insulation | | | | |
| a | Material | XLPE | | XLPE | |
| b | Nominal Thickness | 8.8mm | | 8.8mm | |
| c | Vulcanization Process | | | | |
| i) | Extrusion Method | Triple Extrusion | | Triple Extrusion | |
| ii) | Curing Method | Dry Curing | | Dry Curing | |
| iii) | Cooling Method | Inert Gas | | Inert Gas | |
| 10. | Extruded Insulation Screen | | | | |
| a | Material | Semiconductor XLPE | | Semiconductor XLPE | |

| | | | | | |
|----|--|---|--|---|--|
| i) | Semiconductor XLPE Thickness (Nominal/Minimum) | 1.0 mm/ 0.85 mm | | 1.0 mm/ 0.85 mm | |
| 11 | Metallic Sheath | | | | |
| a | Material | Corrugated Aluminium | | Corrugated Aluminium | |
| b | Thick ness of Metallic | To withstand fault current of 25 kA for 1 sec | | To withstand fault current of 25 kA for 1 sec | |
| c | Diameter of Cable after inner sheath application | Manufacture to Specify | | Manufacture to Specify | |
| 12 | Thickness of Bituminous Tape over corrugated aluminium sheath for adhesion | manufacturer to specify | | manufacturer to specify | |
| 13 | Outer Sheath | PVC | | PVC | |

| | | | | | |
|----|--|-----------------------------------|--|-----------------------------------|--|
| a | Type | FR ST 2 as per IS 5831 | | FR ST 2 as per IS 5831 | |
| b | Colour | Black | | Black | |
| c | Thickness | As per Is 7098 (part II) /2011 | | As per Is 7098 (part II) /2011 | |
| d | Conductive Coating over outer sheath | Graphite coating | | Graphite coating | |
| 14 | Nominal Overall Diameter of Cable | Manufacture to Specify | | Manufacture to Specify | |
| 15 | Nominal Overall Weight of Cable per Meter | Manufacture to Specify | | Manufacture to Specify | |
| 16 | Standard with Tolerance | 500m +5 % | | 500m +5 % | |

| | | | | | |
|----|--|---|--|---|--|
| 17 | Minimum during installation | As per Is 1255 / 1983 with latest amendment | | As per Is 1255 / 1983 with latest amendment | |
| 18 | Short Circuit Current Rating for 1 Sec | 28.2 kA | | 37.6 kA | |
| 19 | Soil Parameter | | | | |
| a | Soil Temperature | 30°C | | 30°C | |
| b | Ambient Temperature | 50°C | | 50°C | |
| c | Soil Thermal Resistivity | 150°C Cm/W | | 150°C Cm/W | |
| 20 | Normal current rating in ampere | | | | |
| a | Ground | 345A | | 385A | |

| | | | | | |
|----|--|-----------|--|-----------|--|
| b | Ducts | 300A | | 330A | |
| c | Air | 500A | | 570A | |
| 21 | Maximum DC Resistance at 20°C ohm/km | 0.100 | | 0.0778 | |
| 22 | Maximum AC Resistance at 90°C ohm/km | 0.130 | | 0.1023 | |
| 23 | Reactance of Cable in in ohm/km | 0.122 | | 0.117 | |
| 24 | capacitance of cable in micro farad/km | 0.23 | | 0.25 | |
| 25 | De rating factor of Cable installed | As per IS | | As per IS | |

GTPNO- 41 GUARENTEED TECHNICAL PARTICULARS OF 33 kV THREE CORE ALUMINIUM 50 SQ MM, XLPE INSULATED, ARMOURED CABLE FOR STATION TRANSFORMER

| SI.No | Name of the Particulars | Desired Value | Bidder's Offer |
|--------------|--|---|-----------------------|
| 1 | Type of cable | Aluminium Conductor,XLPE Insulated | |
| 2 | Conductor Details | | |
| a | No of Cores | 3 | |
| b | Normal Cross-Sectional Area | 50 mm ² | |
| c | Material and Grade | Aluminium compacted, Stranded as per IS: 8130 with latest amendment | |
| d | Shape of Conductor | Circular | |
| e | Diameter of Conductor | 8.0 mm | |
| f | No. of Strands and Diameter of each Strand | as per IS 8130 with latest amendment | |

| | | | |
|----|--|------------------------------|--|
| 3 | Rated Voltage (U ₀ /U) | 19/33kV | |
| 4 | Highest System Voltage which the cable can withstand | 36kV(U _m) | |
| 5 | Maximum Conductor temperature for continuous operation | 90 ⁰ C | |
| 6 | Maximum conductor temperature during short circuit | 250 ⁰ C | |
| 7 | Water swellable tape on conductor | Provided | |
| 8 | Extruded Conductor Screen | | |
| a | Material | Extruded semiconducting XLPE | |
| b | Nominal Thickness | 0.30mm | |
| 9. | Insulation | | |
| a | Material | XLPE | |

| | | | |
|----|--|---------------------|--|
| b | Nominal Thickness | 8.8 mm | |
| 10 | Detail of vulcanization process | | |
| a | Extrusion Method | Triple Extrusion | |
| b | Curing Method | Dry Curing | |
| c | Cooling Method | Inert Gas | |
| 11 | Extruded Insulation Screen | | |
| a | Material | Semi Conductor XLPE | |
| b | Semiconductor XLPE Thickness (Nominal/Minimum) | 1.0 mm/ 0.85 mm | |
| 12 | Inner Sheath | | |
| a | Material | PVC, Type ST2 | |

| | | | |
|----|--|---|--|
| b | Thick ness of inner sheath | As per IS 7098 Part 2 | |
| c | Diameter of Cable after inner sheath application | Manufacture to Specify | |
| 13 | Armouring | Galvanized steel flat strips/GI wire to carry short circuit current of 4.7 kA for 1 sec | |
| 14 | Outer Sheath | PVC | |
| a | Type | FR PVC ST2 | |
| b | Colour | Black | |
| c | Thickness (Nom/min) | As per Is 7098 (part 2)/42011 | |
| 15 | Nominal Overall Diameter of Cable | Manufacture to Specify | |
| 16 | Nominal Overall Weight of Cable per Metre | Manufacture to Specify | |

| | | | |
|----|--|---|--|
| 17 | Standard Drum Lengthwith Tolerance | 500m + 5 % | |
| 18 | Minimum BendingRadius allowableduring installation | As per Is 1255 / 1983 with latest amendment | |
| 19 | Short Circuit Current Rating for 1 Sec | 4.7 kA | |
| 20 | Soil Parameter | | |
| a | Soil Temperature | 30°C | |
| b | Ambient Temperature | 50°C | |
| c | Soil Thermal Resistivity | 150°C Cm/W | |
| 21 | System of Bonding | Manufacture To Specify | |
| 21 | Normal current rating in ampere | | |

| | | | |
|----|---|-----------|--|
| a | Ground | 130A | |
| b | Ducts | 115A | |
| c | Air | 155A | |
| 22 | Maximum DC Resistance at 20°C in ohm/km | 0.641 | |
| 23 | Maximum AC Resistance at 90°C in ohm/km | 0.820 | |
| 24 | Reactance in ohm/km | 0.146 | |
| 25 | Capacitance in micro farad/km | 0.12 | |
| 26 | Derating factor of Cable installed | As per IS | |

GTPNO- 41 GUARENTEED TECHNICAL PARTICULARS OF 11KV THREE CORE, 300 SQMM ALUMINIUM, XLPE INSULATED, ARMOURED CABLE FOR LINE

| Sl.No | Name of the Particulars | Desired Value | Bidder's Offer |
|--------------|---|--|-----------------------|
| 1 | Type of cable | Aluminium Conductor, XLPE Insulated | |
| 2 | Conductor Details | | |
| a | No of Cores | 3 | |
| b | Normal Cross-Sectional Area | 300mm ² | |
| c | Material and Grade | Aluminium compacted, Stranded as per IS:7098(Part-A)IS: 8130 | |
| d | Shape of Conductor | Circular | |
| e | Diameter of Conductor | 19.5mm | |
| f | No. of Strands and Diameter of each Strand | as per IS 8130 with latest amendment | |
| 3 | Rated Voltage (U _o /U) | 6.35/11kV | |

| | | | |
|----|--|------------------------------|--|
| 4 | Highest System Voltage which the cable can withstand | 12kV(Um) | |
| 5 | Maximum Conductor temperature for continuous operation | 900 C | |
| 6 | a) Maximum conductor temperature during short circuit | 2500C | |
| 7 | Water swellable tape on conductor | semiconducting | |
| 8 | Extruded Conductor Screen | | |
| a | Material | Extruded semiconducting XLPE | |
| b | Nominal Thickness | 0.30mm | |
| 9 | Insulation | | |
| a | Material | XLPE | |
| b | Nominal Thickness | 3.6 mm | |
| 10 | Detail of vulcanization process | | |

| | | | |
|----|---|------------------------------------|----------|
| a | Extrusion Method | Triple Extrusion | |
| b | Curing Method | Dry Curing | |
| c | Cooling Method | Inert Gas | |
| 11 | Extruded Insulation Screen | | |
| a | Material | Semiconductor XLPE+ Copper Tape | |
| b | Semiconductor XLPE Thickness (Nominal/Minimum) | 1.0 mm/ 0.85 mm | |
| c | Thickness of Copper tape with 10% overlap | 0.04 mm | |
| 12 | Inner Sheath | | |
| a | Material | PVC, Type ST2 | extruded |
| b | Thick ness of inner sheath | As per IS 7098 Part 2 | |

| | | | |
|----|--|--|--|
| c | Diameter of Cable after inner sheath application | Manufacture to Specify | |
| 13 | Armouring | Galvanized steel flat strips/Wires to carry short circuit current of 16 kA for 1 sec | |
| 14 | Outer Sheath | HDPE | |
| a | Type | ST7 as per IEC 60502 | |
| b | Colour | Black | |
| c | Thickness (Nom/min) | As per Is 7098 (part II) with latest amendment | |
| 15 | Nominal Overall Diameter of Cable | Manufacture to Specify | |
| 16 | Nominal Overall Weight of Cable per Metre | Manufacture to Specify | |
| 17 | Standard Drum Length with Tolerance | 500m +5 % | |

| | | | |
|----|--|---|--|
| 18 | Minimum Bending Radius allowable during installation | As per Is 1255 / 1983 with latest amendment | |
| 19 | Short Circuit Current Rating of for 1 Sec | 28.2 kA | |
| 20 | Soil Parameter | | |
| a | Soil Temperature | 30°C | |
| b | Ambient Temperature | 50°C | |
| c | Soil Thermal Resistivity | 150°C Cm/W | |
| 21 | System of Bonding | Manufacture To Specify | |

| | | | |
|----|--|-------------------------|--|
| 22 | Short Time Overload capacity with Duration of cable installed (4 hours) | Manufacturer to specify | |
| a | Ground | 355A | |
| b | Ducts | 310A | |
| c | Air | 450A | |
| 23 | Maximum DC Resistance at 20°C in ohm/km | 0.100 | |
| 24 | Maximum AC Resistance at 90°C in ohm/km | 0.130 | |
| 25 | Reactance in ohm/km | 0.093 | |
| 26 | Capacitance in microfarad/km | 0.46 | |
| 27 | De rating factor of Cable installed | As per IS | |

GTPNO- 40 GUARENTEED TECHNICAL PARTICULARS OF 11KV SINGLE CORE 630 SQMM AND 400 SQMM, XLPE INSULATED, UNARMoured CABLE FOR SUBSTATION

| | | 630 SQ MM | | 400 SQ MM | |
|-------|-----------------------------|---|----------------|---|----------------|
| SI.No | Name of the Particulars | Desired Value | Bidder's Offer | Desired Value | Bidder's Offer |
| 1 | Type of cable | Aluminium Conductor, XLPE Insulated | | Aluminium Conductor, XLPE Insulated | |
| 2 | Conductor Details | | | | |
| a | No of Cores | 1 | | 1 | |
| b | Normal Cross-Sectional Area | 630mm ² | | 400mm ² | |
| c | Material and Grade | Aluminium compacted, Stranded as per IS: 8130 with latest amendment | | Aluminium compacted, Stranded as per IS: 8130 with latest amendment | |
| d | Shape of Conductor | Circular | | Circular | |

| | | | | | |
|---|--|--------------------------------------|--|--------------------------------------|--|
| e | Diameter of Conductor | 28.3 mm | | 22.6mm | |
| f | No. of Strands and Diameter of each Strand | as per IS 8130 with latest amendment | | as per IS 8130 with latest amendment | |
| 3 | Rated Voltage (U ₀ /U _s) | 19/33kV | | 19/33kV | |
| 4 | Highest System Voltage which the cable can withstand | 36kV(U _m) | | 36kV(U _m) | |
| 5 | Maximum Conductor temperature for continuous operation | 900 C | | 900 C | |
| 6 | a) Maximum conductor temperature during short circuit | 2500C | | 2500C | |
| 7 | Water swellable tape on conductor | Yes | | Yes | |
| 8 | Extruded Conductor Screen | | | | |
| | Material | Extruded semiconducting XLPE | | Extruded semiconducting XLPE | |

| | | | | | |
|------|----------------------------|------------------|--|------------------|--|
| | Nominal Thickness | 0.30mm | | 0.30mm | |
| 9. | Insulation | | | | |
| a | Material | XLPE | | XLPE | |
| b | Nominal Thickness | 3.6mm | | 3.6mm | |
| c | Vulcanization Process | | | | |
| i) | Extrusion Method | Triple Extrusion | | Triple Extrusion | |
| ii) | Curing Method | Dry Curing | | Dry Curing | |
| iii) | Cooling Method | Inert Gas | | Inert Gas | |
| 10. | Extruded Insulation Screen | | | | |

| | | | | | |
|-----|--|---|--|--|--|
| a | Material | Semi Conductor XLPE + Copper Tape | | Semi Conductor XLPE + Copper Tape | |
| i) | Semiconductor XLPE Thickness (Nominal/Minimum) | 1.0 mm/ 0.85 mm | | 1.0 mm/ 0.85 mm | |
| ii) | Thickness of Copper tape with 50% overlap | 0.3 mm | | 0.3 mm | |
| 11 | Inner Sheath | | | | |
| a | Material | Corrugated Aluminium | | Corrugated Aluminium | |
| b | Thick ness of inner sheath | To withstand fault current of 59.22kA for 1 sec | | To withstand fault current of 37.6kA for 1 sec | |
| c | Diameter of Cable after inner sheath application | Manufacture to Specify | | Manufacture to Specify | |
| 12 | Thicknes bituminous Tape between corrugated aluminium sheath and outer sheath for adhesion | manufacturer to specify | | manufacturer to specify | |

| | | | | | |
|----|---|--------------------------------|--|--------------------------------|--|
| 13 | Outer Sheath | PVC PVC | | PVC PVC | |
| a | Type | FR ST 2 as per IS 5831 | | FR ST 2 as per IS 5831 | |
| b | Colour | Black | | Black | |
| c | Thickness | As per Is 7098 (part II) /2011 | | As per Is 7098 (part II) /2011 | |
| d | Conductive Coating over outer sheath | Graphite coating | | Graphite coating | |
| 14 | Nominal Overall Diameter of Cable | Manufacture to Specify | | Manufacture to Specify | |
| 15 | Nominal Overall Weight of Cable per Metre | Manufacture to Specify | | Manufacture to Specify | |
| 16 | Standard Drum Length with Tolerance | 500m ± 5 % | | 500m ± 5 % | |

| | | | | | |
|----|--|---|--|---|--|
| 17 | Minimum Bending Radius allowable during installation | As per Is 1255 / 1983 with latest amendment | | As per Is 1255 / 1983 with latest amendment | |
| 18 | Short Circuit Current Rating for 1 Sec | 59.2 kA | | 37.6 kA | |
| 19 | Soil Parameter | | | | |
| a | Soil Temperature | 30°C | | 30°C | |
| b | Ambient Temperature | 50°C | | 50°C | |
| c | Soil Thermal Resistivity | 150°C Cm/W | | 150°C Cm/W | |
| 20 | Normal current rating in ampere | | | | |
| a | Ground | 560A | | 385A | |

| | | | | | |
|----|--|-----------|--|-----------|--|
| b | Ducts | 480A | | 330A | |
| c | Air | 840A | | 570A | |
| 22 | Maximum DC Resistance at 20°C ohm/km | 0.0469 | | 0.0778 | |
| 23 | Maximum AC Resistance at 90°C ohm/km | 0.0648 | | 0.1023 | |
| 24 | Reactance of Cable in in ohm/km | 0.104 | | 0.117 | |
| 25 | capacitance of cable in micro farad/km | 0.66 | | 0.25 | |
| 26 | De rating factor of Cable installed | As per IS | | As per IS | |

GTP- 44**TECHNICAL SPECIFICATION OF LT THREE & HALF CORE XLPE, UNARMED (120SQMM, 95SQMM & 25SQMM CABLES) IN SUB STATION**

| Sl. No | Name of the Particulars | 3x120 + 70 SQMM | Bidder's Offer | 3X95 + 50 sqmm | Bidder's Offer | 3X25 + 16 sqmm | Bidder's Offer |
|---------------|--------------------------------|--|-----------------------|--|-----------------------|--|-----------------------|
| 1 | Type of cable | Aluminium Conductor ,XLPE Insulated | | Aluminium Conductor ,XLPE Insulated | | Aluminium Conductor ,XLPE Insulated | |
| 2 | Conductor Details | | | | | | |
| a | No of Cores | 3 & 1/2 | | 3 & 1/2 | | 3 & 1/2 | |
| b | Normal Cross-Sectional Area | 3x120 + 70 SQMM | | 3X95 + 50 sqmm | | 3X25 + 16 sqmm | |
| c | Material and Grade | Aluminium compacted,Stranded as per IS: 8130 with latest amendment | | Aluminium compacted,S stranded as per IS: 8130 with latest amendment | | Aluminium compacted,Stranded as per IS: 8130 with latest amendment | |
| d | Shape of Conductor | Circular | | Circular | | Circular | |
| e | Diameter of Conductor | 3X12.4 + 9.4 mm | | 3X11.0 + 8.0 mm | | 3X5.6 + 4.5 mm | |

| f | No. of Strands and Diameter of each Strand | as per IS 8130 with latest amendment | | as per IS 8130 with latest amendment | | as per IS 8130 with latest amendment | |
|---|--|--------------------------------------|--|--------------------------------------|--|--------------------------------------|--|
| 3 | Rated Voltage | 1.1 kV | | 1.1 kV | | 1.1 kV | |
| 4 | Maximum Conductor temperature for | 90 ⁰ C | | 90 ⁰ C | | 90 ⁰ C | |
| 5 | Maximum conductor temperature during short circuit | 250 ⁰ C | | 250 ⁰ C | | 250 ⁰ C | |
| 6 | Insulation | | | | | | |
| a | Material | XLPE | | XLPE | | XLPE | |
| b | Nominal Thickness (Phase/ Neutral) | 1.2/ 1.1 mm | | 1.1/ 1.0 mm | | 0.9/ 0.7 mm | |

| | | | | | | | |
|---|--|------------------------|--|------------------------|--|------------------------|--|
| 7 | Vulcanization Process | | | | | | |
| a | Curing Method | Dry Curing | | Dry Curing | | Dry Curing | |
| b | Cooling Method | Inert Gas | | Inert Gas | | Inert Gas | |
| 8 | Inner Sheath | | | | | | |
| a | Material | PVC | | PVC | | PVC | |
| b | Thickness of innersheath (mm) | 0.4 | | 0.3 | | 0.3 | |
| c | Diameter of Cable after inner sheath application | Manufacture to Specify | | Manufacture to Specify | | Manufacture to Specify | |

| | | | | | | | |
|----|--|---|--|------------------------|--|------------------------|--|
| 9 | Outer Sheath | PVC PVC | | PVC PVC | | PVC PVC | |
| a | Type | FR ST 2 as per IS 5831 | | FR ST 2 as per IS 5831 | | FR ST 2 as per IS 5831 | |
| b | Colour | Black | | Black | | Black | |
| c | Thickness | 2.2 | | 2.2 | | 2.0 | |
| 10 | Nominal Overall Diameter of Cable | Manufacture to Specify | | Manufacture to Specify | | Manufacture to Specify | |
| 11 | Nominal Overall Weight of Cable per Metre | Manufacture to Specify | | Manufacture to Specify | | Manufacture to Specify | |
| 12 | Minimum Bending Radius allowed during installation | As per Is 1255 / 1983 with latest amendment | | As per Is 1255 / 1983 | | As per Is 1255 / 1983 | |

| | | | | | | | |
|----|---|------------|--|------------|--|------------|--|
| 13 | Short Circuit Current Rating of for 1 Sec | 11.28 kA | | 8.93 KA | | 2.35 KA | |
| 14 | Soil Parameter | | | | | | |
| a | Soil Temperature | 30°C | | 30°C | | 30°C | |
| b | Ambient Temperature | 50°C | | 50°C | | 50°C | |
| c | Soil Thermal Resistivity | 150°C Cm/W | | 150°C Cm/W | | 150°C Cm/W | |
| 15 | Normal current rating in ampere | | | | | | |
| a | Ground | 225A | | 200A | | 95A | |

| | | | | | | | |
|----|--|-----------|--|-----------|--|-----------|--|
| b | Ducts | 185A | | 165A | | 80A | |
| c | Air | 258A | | 221A | | 99A | |
| 16 | Maximum DC Resistance at 20°C ohm/km | 0.253 | | 0.320 | | 1.20 | |
| 17 | Maximum AC Resistance at 90°C ohm/km | 0.325 | | 0.411 | | 1.54 | |
| 18 | Reactance of Cable in in ohm/km | 0.072 | | 0.074 | | 0.08 | |
| 19 | capacitance of cable in micro farad/km | 0.29 | | 0.29 | | 0.20 | |
| 20 | Derating factor of Cable installed | As per IS | | As per IS | | As per IS | |

GTP- 45**TECHNICAL SPECIFICATION OF LT FOUR CORE XLPE, UNARMoured 16 SQMM CABLE IN SUB STATION**

| Sl. No | Name of the Particulars | 4x16SQMM | Bidder's Offer |
|---------------|--------------------------------|---|-----------------------|
| 1 | Type of cable | Aluminium Conductor, XLPE Insulated | |
| 2 | Conductor Details | | |
| a | No of Cores | 4 | |
| b | Normal Cross-Sectional Area | 4x16SQMM | |
| c | Material and Grade | Aluminium compacted, Stranded as per IS: 8130 with latest amendment | |
| d | Shape of Conductor | Circular | |
| e | Diameter of Conductor | 4X4.5 mm | |

| | | | |
|---|--|--------------------------------------|--|
| f | No. of Strands and Diameter of each Strand | as per IS 8130 with latest amendment | |
| 3 | Rated Voltage | 1.1 kV | |
| 4 | Maximum Conductor temperature for continuous operation | 90 ⁰ C | |
| 5 | Maximum conductor temperature during short circuit | 250 ⁰ C | |
| 6 | Insulation | | |
| a | Material | XLPE | |
| b | Nominal Thickness | 0.7 mm | |

| | | | |
|---|--|------------------------|--|
| 7 | Vulcanization Process | | |
| a | Curing Method | Dry Curing | |
| b | Cooling Method | Inert Gas | |
| 8 | Inner Sheath | | |
| a | Material | PVC | |
| b | Thick ness of inner sheath (mm) | 0.3 | |
| c | Diameter of Cable after inner sheath application | Manufacture to Specify | |

| | | | |
|----|--|---|--|
| g | Outer Sheath | PVC | |
| a | Type | FR ST 2 as per IS 5831 | |
| b | Colour | Black | |
| c | Thickness | 0.3 | |
| 10 | Nominal Overall Diameter of Cable | Manufacture to Specify | |
| 11 | Nominal Overall Weight of Cable per Meter | Manufacture to Specify | |
| 12 | Minimum Bending Radius allowable during installation | As per Is 1255 / 1983 with latest amendment | |

| | | | |
|----|--|------------|--|
| 13 | Short Circuit Current Rating for 1 Sec | 1.5 kA | |
| 14 | Soil Parameter | | |
| a | Soil Temperature | 30°C | |
| b | Ambient Temperature | 50°C | |
| c | Soil Thermal Resistivity | 150°C Cm/W | |
| 15 | Normal current rating in ampere | | |
| a | Ground | 78A | |

| | | | |
|----|--|-----------|--|
| b | Ducts | 61A | |
| c | Air | 70A | |
| 16 | Maximum DC Resistance at 20°C ohm/km | 1.91 | |
| 17 | Maximum AC Resistance at 90°C ohm/km | 2.44 | |
| 18 | Reactance of Cable in in ohm/km | 0.080 | |
| 19 | capacitance of cable in micro farad/km | 0.18 | |
| 20 | De rating factor of Cable installed | As per IS | |

GTP- 46**TECHNICAL SPECIFICATION OF LT TWO CORE XLPE, UNARMoured 16 SQMM CABLE IN SUB STATION**

| Sl. No | Name of the Particulars | 4x16SQMM | Bidder's Offer |
|---------------|--------------------------------|---|-----------------------|
| 1 | Type of cable | Aluminium Conductor, XLPE Insulated | |
| 2 | Conductor Details | | |
| a | No of Cores | 2 | |
| b | Normal Cross-Sectional Area | 2x16SQMM | |
| c | Material and Grade | Aluminium compacted, Stranded as per IS: 8130 with latest amendment | |
| d | Shape of Conductor | Circular | |
| e | Diameter of Conductor | 2X4.5 mm | |

| | | | |
|---|--|--------------------------------------|--|
| f | No. of Strands and Diameter of each Strand | as per IS 8130 with latest amendment | |
| 3 | Rated Voltage | 1.1 kV | |
| 4 | Maximum Conductor temperature for continuous operation | 90 ⁰ C | |
| 5 | Maximum conductor temperature during short circuit | 250 ⁰ C | |
| 6 | Insulation | | |
| a | Material | XLPE | |
| b | Nominal Thickness | 0.7 mm | |

| | | | |
|---|--|------------------------|--|
| 7 | Vulcanization Process | | |
| a | Curing Method | Dry Curing | |
| b | Cooling Method | Inert Gas | |
| 8 | Inner Sheath | | |
| a | Material | PVC | |
| b | Thick ness of inner sheath (mm) | 0.3 | |
| c | Diameter of Cable after inner sheath application | Manufacture to Specify | |
| 9 | Outer Sheath | PVC | |
| a | Type | FR ST 2 as per IS 5831 | |

| | | | |
|----|--|---|--|
| b | Colour | Black | |
| c | Thickness | 1.8 | |
| 10 | Nominal Overall Diameter of Cable | Manufacture to Specify | |
| 11 | Nominal Overall Weight of Cable per Metre | Manufacture to Specify | |
| 12 | Minimum Bending Radius allowable during installation | As per Is 1255 / 1983 with latest amendment | |
| 13 | Short Circuit Current Rating for 1 Sec | 1.5 kA | |
| 14 | Soil Parameter | | |
| a | Soil Temperature | 30°C | |
| b | Ambient Temperature | 50°C | |
| c | Soil Thermal Resistivity | 150°C Cm/W | |
| 15 | Normal current rating in ampere | | |

| | | | |
|----|--|-----------|--|
| a | Ground | 78A | |
| b | Ducts | 61A | |
| c | Air | 70A | |
| 16 | Maximum DC Resistance at 20°C ohm/km | 1.91 | |
| 17 | Maximum AC Resistance at 90°C ohm/km | 2.44 | |
| 18 | Reactance of Cable in ohm/km | 0.080 | |
| 19 | capacitance of cable in micro farad/km | 0.18 | |
| 20 | De rating factor of Cable installed | As per IS | |

| GTP No. 47 Technical particulars of ACSR – ZEBRA | | | |
|---|--|-------------------------|-----------------------|
| A. ACSR – ZEBRA | | | |
| Sl.No. | ACSR CONDUCTOR: | ZEBRA | Bidder's Offer |
| 1 | Size of conductor: | 54/7/3.18 mm | |
| 2 | Stranding and wire diameter | | |
| | Aluminum | 54/3.18 mm | |
| | Steel | 7/3.18 mm | |
| 3 | Sectional area of Aluminum (in mm ²) | 428.9 | |
| 4 | Approximate total mass (in Kgs/KM) | 1622 | |
| 5 | Calculated resistance at 20°C Max.:(in Ohms/Km.) | 0.06868 | |
| 6 | Calculated breaking load of: composite conductor (in KN) | 130.32 KN. | |
| | (U.T.S.) (Min) | | |
| 7 | Lay Rating :- | | |
| | Steel core | Max- 28 | |
| | | Min-13 | |
| | Aluminium Layers | | |
| | 12 Wire Layer | Max-17 | |
| | (Innermost Layer) | Min - 10 | |
| | 18 Wire Layer | Max - 16 | |
| | (Lay immediately beneath outside Layer: | Min - 10 | |
| | 24 wire layer (outside layer) | Max - 14 | |
| | | Min - 10 | |
| 8 | Modulus of elasticity (in Kg / mm ²):0.7036 x 10 ⁶ Kg x CM ² | 8158 | |
| 9 | Co-efficient of linear expansion of conductor per degree centigrade. | 19.3 x 10 ⁻⁶ | |
| 10 | Standard area of Cross Section in Sq. mm of | 484.5 mm ² | |
| 11 | Diameter of complete conductor in | 28.62 mm | |

| B.Steel and Aluminum Wires | | | | |
|-----------------------------------|---|--------|----------------------------------|--|
| | | Steel | Aluminum | |
| 1 | Diameter | | | |
| | Standard (in mm) | 3.18 | 3.18 | |
| | Maximum (in mm) | 3.24 | 3.21 | |
| | Minimum (in mm) | 3.12 | 3.15 | |
| 2 | Cross Sectional Area of nominal Diameter Wire (in mm ²) | 7.942 | 7.942 | |
| 3 | Weight (in Kg/KM) | 61.95 | 21.47 | |
| 4 | Minimum tensile strength:As per relevant ISS | | | |
| 5 | Minimum breaking load before stranding (in KN) | 10.43 | 1.29 | |
| 6 | Minimum breaking load: stranding (in KN) | 9.91 | 1.23 | |
| 7 | Zinc coating of steel strands | | | |
| | Number and duration: | 3 dips | of 1min | |
| | Minimum Weight of (As per IS-4826 – 1979) | 260 | Coating (in gm/ m ²) | |
| 8 | Maximum resistance at: Ohms / KM) | 3.626 | 2.974 20°C of Aluminum strands | |
| 9 | Minim Purity of aluminum rod: | | 99.50% | |

GTP NO- 48 GUARENTEED TECHNICAL PARTICULARS OF 11KV THREE CORE 630 SQMM AND 400 SQMM, XLPE INSULATED, ARMOURED CABLE FOR SUBSTATION

| | | 630 SQ MM | | 400 SQ MM | |
|-------|-----------------------------|---|----------------|--|----------------|
| SI.No | Name of the Particulars | Desired Value | Bidder's Offer | Desired Value | Bidder's Offer |
| 1 | Type of cable | Aluminium Conductor, XLPE Insulated | | Aluminium Conductor, XLPE Insulated | |
| 2 | Conductor Details | | | | |
| a | No of Cores | 3 | | 3 | |
| b | Normal Cross-Sectional Area | 630mm ² | | 400mm ² | |
| c | Material and Grade | Aluminium compacted, Stranded as per IS: 8130 with latest amendment | | Aluminium compacted, Stranded as per IS: 8130 with latest amendment | |
| d | Shape of Conductor | Circular | | Circular | |

| | | | | | |
|---|--|--------------------------------------|--|--------------------------------------|--|
| e | Diameter of Conductor | 28.3 mm | | 22.6mm | |
| f | No. of Strands and Diameter of each Strand | as per IS 8130 with latest amendment | | as per IS 8130 with latest amendment | |
| 3 | Rated Voltage (U ₀ /U) | 6.35/11kV | | 6.35/11kV | |
| 4 | Highest System Voltage which the cable can withstand | 12kV(U _m) | | 12kV(U _m) | |
| 5 | Maximum Conductor temperature for continuous operation | 90 ⁰ C | | 90 ⁰ C | |
| 6 | a) Maximum conductor temperature during short circuit | 250 ⁰ C | | 250 ⁰ C | |
| 7 | Water swellable tape on conductor | Yes | | Yes | |
| 8 | Extruded Conductor Screen | | | | |
| a | Material | Extruded semiconducting XLPE | | Extruded semiconducting XLPE | |

| | | | | | |
|----|----------------------------|------------------|--|------------------|--|
| b | Nominal Thickness | 0.30mm | | 0.30mm | |
| 9. | Insulation | | | | |
| a | Material | XLPE | | XLPE | |
| b | Nominal Thickness | 3.6mm | | 3.6mm | |
| 10 | Vulcanization Process | | | | |
| a | Extrusion Method | Triple Extrusion | | Triple Extrusion | |
| b | Curing Method | Dry Curing | | Dry Curing | |
| c | Cooling Method | Inert Gas | | Inert Gas | |
| 11 | Extruded Insulation Screen | | | | |

| | | | | | |
|----|---|-------------------------------------|--|--------------------------------------|--|
| a | Material | Semi-Conductor XLPE+ Copper Tape | | Semi-Conductor XLPE + Copper Tape | |
| b | Semiconductor XLPE Thickness (Nominal/Minimum) | 1.0 mm/ 0.85 mm | | 1.0 mm/ 0.85 mm | |
| c | Thickness of Copper tape with 10% overlap | 0.04 mm | | 0.04 mm | |
| 12 | Inner Sheath | | | | |
| a | Material | Extruded PVC ST2 | | Extruded PVC ST2 | |
| b | Thick ness of inner sheath | As per IS 7098 Part 2 | | As per IS 7098 Part 2 | |
| c | Diameter of Cable after inner sheath application | Manufacture to Specify | | Manufacture to Specify | |

| | | | | | |
|----|---|---|--|---|--|
| 13 | Armouring | Galvanized steel flat strips (Type A) to carry short circuit current of 16 kA for 1 sec | | Galvanized steel flat strips (Type A) to carry short circuit current of 16 kA for 1 sec | |
| 14 | Outer Sheath | PVC PVC | | PVC PVC | |
| a | Type | FR ST 2 as per IS 5831 | | FR ST 2 as per IS 5831 | |
| b | Colour | Black | | Black | |
| c | Thickness | As per Is 7098 (part II) /2011 | | As per Is 7098 (part II) /2011 | |
| 15 | Nominal Overall Diameter of Cable | Manufacture to Specify | | Manufacture to Specify | |
| 16 | Nominal Overall Weight of Cable per Metre | Manufacture to Specify | | Manufacture to Specify | |

| | | | | | |
|-----|--|---|--|---|--|
| 17 | Standard Drum Length with Tolerance | 500m + 5 % | | 500m + 5 % | |
| 118 | Minimum Bending Radius allowable during installation | As per Is 1255 / 1983 with latest amendment | | As per Is 1255 / 1983 with latest amendment | |
| 19 | Short Circuit Current Rating of for 1 Sec | 59.2 kA | | 37.6 kA | |
| 20 | Soil Parameter | | | | |
| a | Soil Temperature | 30°C | | 30°C | |
| b | Ambient Temperature | 50°C | | 50°C | |
| c | Soil Thermal Resistivity | 150°C Cm/W | | 150°C Cm/W | |
| 21 | Normal current rating in ampere | | | | |

| | | | | | |
|----|---|-----------|--|-----------|--|
| a | Ground | 520A | | 400A | |
| b | Ducts | 440A | | 350A | |
| c | Air | 810A | | 520A | |
| 22 | Maximum DC Resistance at 20°C ohm/km | 0.0469 | | 0.0778 | |
| 23 | Maximum AC Resistance at 90°C ohm/km | 0.0648 | | 0.1023 | |
| 24 | Reactance of Cable in in ohm/km | 0.104 | | 0.117 | |
| 25 | capacitance of cable in micro farad/km | 0.66 | | 0.25 | |
| 26 | De rating factor of Cable installed | As per IS | | As per IS | |

