Technical Data Sheets

Volume – III

Contents

Schedule – 1

Bidder's name……..……..

Specification no. …….……..

Sl. no.	Description	Valued guaranteed by the bidder
1	132kV towers	Furnished
2	Bidder's experience as per annexure-B (SCC), Vol.-IA	Yes/ No
3	<u>Stringing Procedure:</u> The details of the stringing procedure proposed details all other necessary tools and plants the bidder wishes to deploy for timely completion of the work	
4	Standard to which fabrication, galvanising etc. will conform	
5	Quality of zinc used for galvanising (purity) (%)	
6	Cement consumption in for different type of concrete mixture (applicable for normal foundation)	
	(a) For M 20 concrete (1:1.5:3 nominal, mix.) (kg/m^3)	
	(b) For M 15 concrete (1 :2:4 nominal mix) (kg/m^3)	
	(c) For M 10 concrete (1 :3:6 nominal mix) (kg/m^3)	
	(d) For 1:5 random rubble stone masonry (kg/m^3)	

(Signature) …….....

Date: (Printed name) …….……

Place: (Designation)…….…...

(Common seal) ..……..

Schedule – 2

Bidder's name……..……..

Specification no. …….……..

GUARANTEED TECHNICAL PARTICULARS OF SUSPENSION HARDWARE FITTINGS FOR ACSR PANTHER CONDUCTOR

Sl. no.	Description	Unit	Valued guaranteed by the bidder
1	Name of manufacturer		
2	Address of manufacturer		
3	Maximum magnetic power loss of suspension assembly at conductor current of 350 amperes	Watt/Ass	
4	Slipping strength of suspension assembly (clamp torque Vs slip curve shall be enclosed)	kN	
5	Particulars of standard/AGS Standard/AGS preformed armour rod set for suspension assembly		
	(a) No. of rods per set	No.	
	(b) Direction of lay		
	(c) Overall length after fitting on conductor	mm	
	(d) Actual length of each rod along its helix	mm	
	(e) Diameter of each rod	mm	
	(f) Tolerance in		
	(i) Diameter of each rod	±mm	
	(ii) Length of each rod	±mm	
	(iii) Difference of length between the longest and shortest rod in a set	±mm	
	(g) Type of aluminium alloy used for manufacture of PA rod set		
	(h) UTS of each rod	Kg/mm^2	
6	Particulars of elastomer (for AGS clamp only)		
	(a) Supplier of elastomer		
	(b) Type of elastomer		
	(c) Shore hardness of elastomer		
	(d) Temperature range for which elastomer is designed		
	(e) Moulded on insert	Yes/No	
7	UTS of hardware component indicated in the drawings enclosed with the bid	Yes/No	
8	Purity of zinc used for galvanising	%	
9	Minimum no. of dips in standard Preece test the ferrous parts can withstand	no.	

(Signature) ……....

Date: (Printed name) ……..

Place: (Designation)..……..…..

(Common seal) ..……..

Schedule – 3

Bidder's name……..……..

Specification no. …….……..

GUARANTEED TECHNICAL PARTICULARS OF TENSION HARDWARE FITTINGS FOR ACSR PANTHER CONDUCTOR

Sl. no.	Description	Unit	Valued guaranteed by the bidder
1	Name of manufacturer		
2	Address of manufacturer		
3	Dimensioned drawing of insulator strings (with disc insulators) enclosed	Yes/ No	
4	Detailed dimensioned drawings of all hardware components enclosed	Yes/ No	
5	Material of component enclosed in the drawings	Yes/ No	
6	Electrical resistance of dead end assembly as a percentage of equivalent length of conductor	%	
7	Slip strength of dead end assembly	kN	
8	Total weight of tension assembly		
	(a) Single tension	kg	
	(b) Double tension	kg	
9	UTS of hardware components indicated in the drawing enclosed with the bid		
	(a) Single tension	Yes/ No	
	(b) Double tension	Yes/ No	
10	Purity of zinc used for galvanising	%	
11	Minimum no. of dips in standard Preece test the ferrous parts can withstand.	nos.	
12	Design calculation of yoke plates and sag adjustment plate enclosed.	Yes/ No	

(Signature) ……....

Date: (Printed name) ……..

Place: (Designation)..……..…..

(Common seal) ……....

Schedule – 4

Bidder's name……..……..

Specification no. …….……..

GUARANTEED TECHNICAL PARTICULARS OF MID SPAN COMPRESSION JOINT FOR ACSR PANTHER CONDUCTOR

Sl. no.	Description	Unit	Valued guaranteed by the bidder	
1	Name & address of manufacturer			
2	Drawing enclosed		Yes/ No	
3	Suitable for conductor size	mm		
4	Purity of aluminium used for aluminium sleeve	%		
5	Material for steel sleeve			
	(a) Type of material with chemical composition			
	(b) Range of hardness of material (Brinnel hardness)	BHN	From …… to ……	
	(c) Weight of zinc coating	gm/m^2		
6	Outside diameter of sleeve before compression	mm	Alumimium	Steel
7	Inside diameter of sleeve before compression	mm		
8	Length of sleeve before compression			
9	Dimensions of sleeve after compression		Corner to corner	Surface to surface
	(a) Aluminium			
	(b) Steel			
10	Length of sleeve after compression		Aluminium	Steel
11	Weight of sleeve			
	(a) Aluminium	kg		
	(b) Steel	kg		
	(c) Total	kg		
12	Slip strength	kN		
13	Resistance of the compressed unit expressed, as percentage of the resistivity of equivalent length of bare conductor.	%		

(Signature) ……....

Date: (Printed name) ……..

Place: (Designation).……..…..

(Common seal) ….……..

Schedule – 5

Bidder's name……..……..

Specification no. …….……..

GUARANTEED TECHNICAL PARTICULARS OF MID SPAN COMPRESSION JOINT FOR 7/3.15mm GALVANISED STEEL EARTHWIRE

Sl. no.	Description	Unit	Valued guaranteed by the bidder	
1	Name & address of manufacturer			
2	Drawing enclosed	Yes/ No		
3	Material of joint			
	(i) Type of material with chemical composition			
	(ii) Range of hardness of material (Brinnel hardness)	BHN	From ……. to …….	
4	Diameter of sleeve before compression		Inside dia	Outside dia
	(a) Steel sleeve	mm		
	(b) Aluminium sleeve	mm		
	(c) Aluminium filler sleeve	mm		
5	Outside dimensions of sleeve after compression		Steel sleeve	Aluminium sleeve
	(a) Corner to corner	mm		
	(b) Surface to surface	mm		
6	Length of sleeve		Aluminium	Steel
	(a) Before compression	mm		
	(b) After compression	mm		
7	Weight of sleeve			
	(a) Steel sleeve	kg		
	(b) Aluminium sleeve	kg		
	(c) Aluminium filler sleeve	kg		
8	Slip strength	kN		
9	Resistance of the compressed unit expressed, as percentage of the resistivity of equivalent length of bare conductor.	%		

Note: Tolerance, wherever applicable, shall also be specified.

(Signature) ……....

Date: (Printed name) ……..

Place: (Designation)…..……..…..

(Common seal) …..……..

Schedule – 6

Bidder's name……..……..

Specification no. …….……..

GUARANTEED TECHNICAL PARTICULARS OF REPAIR SLEEVE FOR ACSR PANTHER CONDUCTOR

Sl. no.	Description	Unit	Valued guaranteed by the bidder	
1	Name & address of manufacturer			
2	Drawing enclosed	Yes/ No		
3	Suitable for conductor size	mm		
4	Purity of aluminium used for aluminium / aluminium alloy type	%		
5	Inside diameter of sleeve before compression	mm		
6	Outside diameter of sleeve		Corner to corner	Surface to surface
	(a) Diameter before compression	mm		
	(b) After compression	mm		
7	Length of sleeve	mm	Before compression	After compression
8	Weight of sleeve	kg		

Note: Tolerance, wherever applicable, shall also be specified.

(Signature) ……....

Date: (Printed name) ……..

Place: (Designation)…..……..…..

(Common seal) …..……..

Schedule – 7

Bidder's name……..……..

Specification no. …….……..

GUARANTEED TECHNICAL PARTICULARS OF FLEXIBLE COPPER BONDS FOR 7/3.15 mm GALVANISED STEEL EARTH WIRE

Sl. no.	Description	Unit	Valued guaranteed by the bidder
1	Name & address of manufacturer		
2	Drawing enclosed	Yes/ No	
3	Stranding		
4	Cross-sectional area	Sqmm.	
5	Minimum copper equivalent area	Sqmm.	
6	Length of copper cable	%	
7	Material of lugs	kN	
8	Bolt size		
	(a) Diameter	mm	
	(b) Length	mm	
9	Resistance	ohm	
10	Total weight of flexible copper bond	kg	

Note: Tolerance, wherever applicable, shall also be specified.

(Signature) ……....

Date: (Printed name) ……..

Place: (Designation)…..……..…..

(Common seal) …..…….

Schedule – 8

Bidder's name……..……..

Specification no. …….……..

GUARANTEED TECHNICAL PARTICULARS OF VIBRATION DAMPER FOR ACSR PANTHER CONDUCTOR

Sl. no.	Description	Unit	Valued guaranteed by the bidder	
1	Name & address of manufacturer			
2	Drawing enclosed			
	(a) Design drawing	Yes/ No		
	(b) Placement chart	Yes/ No		
3	Suitable for conductor size	mm		
4	Total weight of one damper	kg		
5	Diameter of each damper mass	mm	Right	Left
6	Length of each damper mass	mm		
7	Weight of each damper mass	kg		
8	Material of damper masses			
9	Material of clamp			
10	Material of the stranded messenger cable			
11	Number of strands in stranded messenger cable			
12	Lay ratio of stranded messenger cable			
13	Minimum ultimate tensile strength of stranded messenger cable	kg/mm^2		
14	Slip strength of stranded messenger cable (mass pull off)	kN		
15	Resonance frequencies		Right	Left
	(a) First frequency	Hz		
	(b) Second frequency	Hz		
16	Designed clamping torque	kg-m		
17	Slipping strength of damper clamp			
	(a) Before fatigue test	kN		
	(b) After fatigue test	kN		
18	Magnetic power loss per vibration damper watts for 350 amps, 50 Hz alternating current	watt		
19	Percentage variation in reactance after fatigue test in comparison with that . before fatigue test	%		
20	Percentage variation in power dissipation after fatigue test in comparison with that before fatigue test	%		

Note: Tolerance, wherever applicable, shall also be specified.

(Signature) ……...

Date: (Printed name) ……..

Place: (Designation)…..……..…..

(Common seal) …..……..

Schedule – 9

Bidder's name……..……..

Specification no. …….……..

GUARANTEED TECHNICAL PARTICULARS OF VIBRATION DAMPER FOR 7/3.15mm GALVANISED STEEL EARTHWIRE

Sl. no.	Description	Unit	Valued guaranteed by the bidder	
1	Name & address of manufacturer			
2	Drawing enclosed			
	(a) Design drawing	Yes/ No		
	(b) Placement chart	Yes/ No		
3	Suitable for earth wire size	mm		
4	Total weight of one damper	kg		
5	Diameter of each damper mass	mm	Right	Left
6	Length of each damper mass	mm		
7	Weight of each damper mass	kg		
8	Material of damper masses			
9	Material of clamp			
10	Material of the stranded messenger cable			
11	Number of strands in stranded messenger cable			
12	Lay ratio of stranded messenger cable			
13	Minimum ultimate tensile strength of stranded messenger cable	kg/mm^2		
14	Slip strength of stranded messenger cable (mass pull off)	kN		
15	Resonance frequencies		Right	Left
	(a) First frequency	Hz		
	(b) Second frequency	Hz		
16	Designed clamping torque	kg-m		
17	Slipping strength of damper clamp			
	(a) Before fatigue test	kN		
	(b) After fatigue test	kN		
18	Percentage variation in reactance after fatigue test in comparison with that . before fatigue test	%		
19	Percentage variation in power dissipation after fatigue test in comparison with that before fatigue test	%		

Note: Tolerance, wherever applicable, shall also be specified.

(Signature) ……....

Date: (Printed name) ……..

Place: (Designation)…..……..…..

(Common seal) …..……..

Schedule – 10

Bidder's name……..……..

Specification no. …….……..

GUARANTEED TECHNICAL PARTICULARS OF TENSION CLAMP FOR 7/3.15mm GALVANISED STEEL EARTHWIRE

Sl. no.	Description	Unit	Valued guaranteed by the bidder	
1	Name & address of manufacturer			
2	Drawing enclosed	Yes/ No		
3	Material			
	(a) Shackle			
	(b) Compression clamp			
	(c) Range of hardness of the steel sleeve(Brinnel hardness)	BHN	From …. To……..	
4	Diameter of sleeve before compression		Inside dia	Outside dia
	(a) Steel sleeve	mm		
	(b) Aluminium sleeve	mm		
	(c) Aluminium filler sleeve	mm		
5	Outside dimensions of sleeve after compression		Steel sleeve	Aluminium sleeve
	(a) Corner to corner	mm		
	(b) Surface to surface	mm		
6	Length of steel sleeve		Before compression	After compression
		mm		
7	Length of aluminium sleeve	mm		
8	Weight of sleeve	kg		
9	Slip strength	kN		
10	Compression pressure	Tonne		
11	Minimum breaking strength of assembly (excluding clamp)	%		

Note: Tolerance, wherever applicable, shall also be specified.

(Signature) ……...

Date: (Printed name) ……..

Place: (Designation)…..……..…..

(Common seal) …..……..

Schedule – 11

Bidder's name……..……..

Specification no. …….……..

GUARANTEED TECHNICAL PARTICULARS OF SUSPENSION CLAMP FOR 7/3.15mm GALVANISED STEEL EARTHWIRE

Sl. no.	Description	Unit	Valued guaranteed by the bidder
1	Name & address of manufacturer		
2	Drawing enclosed	Yes/ No	
3	Material		
	(a) Shackle		
	(b) Clamp body & keeper		
	(c) U- bolt		
4	Total drop(maximum)	mm	
5	Weight	kg	
6	Breaking strength(minimum)	kN	
7	Slipping strength	kN	
8	Tightening torque	kg-m	

Note: Tolerance, wherever applicable, shall also be specified.

(Signature) ……....

Date: (Printed name) ……..

Place: (Designation)….……..…..

(Common seal) …..……..

Schedule – 12

Bidder's name……..……..

Specification no. …….……..

GUARANTEED TECHNICAL PARTICULARS OF ACSR PANTHER CONDUCTOR

Sl. no.	Description	Unit	Valued guaranteed by the bidder
1	Name & address of manufacturer		
2	Particulars of raw materials		
	(a) Aluminium		
	(i) Minimum purity of aluminium	%	
	(ii) Maximum copper content	%	
	(b) Steel wires/rods		
	(i) Carbon	%	
	(ii) Manganese	%	
	(iii) Phosphorous	%	
	(iv) Sulphur	%	
	(v) Silicon	%	
	(c) Zinc		
	(i) Minimum purity of zinc	%	
3	**Aluminium strands after stranding**		
	(a) Diameter		
	(i) Nominal	mm	
	(ii) Maximum	mm	
	(iii) Minimum	mm	
	(b) Minimum breaking load of strand		
	(i) Before stranding	kN	
	(ii) After stranding	kN	
	(c) Maximum resistance of 1m length of strand at 20^0 C.	ohm	
4	**Steel strands after stranding**		
	(a) Diameter		
	(i) Nominal	mm	
	(ii) Maximum	mm	
	(iii) Minimum	mm	
	(b) Minimum breaking load of strand		
	(i) Before stranding	kN	
	(ii) After stranding	kN	
	(c) Galvanising		
	(i) Minimum mass of zinc coating per sqm. Of uncoated wire surface.	gm	
	(ii) Minimum number of one minute dips that the galvanized strand can withstand in the standard Preece test	no.	
	(iii) Minimum no. of twists in a gauge length equal to 100times dia of wire which the strand can withstand in the torsion test.	no.	

5	**ACSR conductor**		
	(a) UTS of conductor	kN	
	(b) Lay ratio of conductor		
	(i) Outer steel layer		
	(ii) 12 wires aluminium layer		
	(iii)18 wire aluminium layer		
	(c) Maximum DC resistance of conductor at 20^{o}C	ohm/km	
	(d) Standard length of conductor	m	
	(e) Maximum length of conductor that can be offered as single length	m	
	(f) Tolerance on standard length of conductor	%	
	(g Direction of lay for outside layer		
	(h) Linear mass of the conductor		
	(i) Standard	kg/m	
	(ii) Minimum	kg/m	
	(iii) Maximum	kg/m	
6	Drum is as per specification	no.	
7	No. of cold pressure butt welding equipment available at works		

Note: Tolerance, wherever applicable, shall also be specified.

(Signature) …….

Date: (Printed name) ……...

Place: (Designation)…..……..…...

(Common seal) …..……..…..

Schedule – 13

Bidder's name……..……..

Specification no. …….……..

GUARANTEED TECHNICAL PARTICULARS OF 7/3.15mm GALVANISED STEEL WIRE

Sl. no.	Description	Unit	Valued guaranteed by the bidder
1	Name & address of manufacturer		
2	Particulars of raw materials		
	(a) Steel wires/rods		
	(i) Carbon	%	
	(ii) Manganese	%	
	(iii) Phosphorous	%	
	(iv) Sulphur	%	
	(v) Silicon	%	
	(b) Zinc		
	(i) Minimum purity of zinc	%	
3	**Steel strands after stranding**		
	(a) Diameter		
	(i) Nominal	mm	
	(ii) Maximum	mm	
	(iii) Minimum	mm	
	(b) Minimum breaking load of strand	kN	
	(c) Galvanising		
	(i) Minimum mass of zinc coating per sqm. of uncoated wire surface.	gm	
	(ii) Minimum number of one minute dips that the galvanized strand can withstand in the standard Preece test	no.	
	(iii) Minimum no. of twists in a gauge length equal to 100times dia of wire which the strand can withstand in the torsion test.	no.	
4	**Stranded earthwire**		
	(a) UTS of earthwire	kN	
	(b) Lay length of outer steel layer	mm	
	(c) DC resistance of earthwire at 20^{o}C	ohm/km	
	(d) Standard length of earthwire	m	
	(e) Tolerance on standard length		
	(f) Direction of lay for outer layer		
	(g) Linear mass of earthwire		
	(i) Standard	kg/m	
	(ii) Minimum	kg/m	
	(iii) Maximum	kg/m	
5	Drum is as per specification	no.	

Note: Tolerance, wherever applicable, shall also be specified.

(Signature) ……....

Date: (Printed name) ……..

Place: (Designation)…..……..…..

(Common seal) …..……..

Schedule – 14

Bidder's name……..……..

Specification no. …….……..

GUARANTEED TECHNICAL PARTICULARS OF DISC INSULATOR UNIT

Sl. no.	Description	Unit	Valued guaranteed by the bidder	
			90 kN Disc insulator	120kN Disc insulator
1	Name & address of manufacturer			
2	Weight of single disc	kg		
3	Size and designation of pin ball shank	mm		
4	Diameter of disc	mm		
5	Tolerance on diameter	mm		
6	Ball to ball spacing between disc	mm		
7	Tolerance on spacing	mm		
8	Minimum nominal creepage distance of single disc	mm		
9	Tolerance on creepage distance	mm		
10	Electromechanical strength of disc	kN		
11	Material of shell(porcelain/toughened glass)			
12	Head thickness of shell	mm		
13	Power frequency flashover voltage of single disc			
	(a) Dry	kV(rms)		
	(b) Wet	kV(rms)		
14	Power frequency withstand voltage of single disc			
	(a) Dry	kV(rms)		
	(b) Wet	kV(rms)		
15	Power frequency puncture voltage of single disc	kV(rms)		
16	Impulse flashover voltage of single disc (dry)			
	(a) Positive	kV(peak)		
	(b) Negative	kV(peak)		
17	Impulse withstand voltage of single disc (dry)			
	(a) Positive	kV(peak)		
	(b) Negative	kV(peak)		
18	Steepness of impulse voltage which the disc insulators can withstand in steep wave front test	kV/ microsec		
19	Visible discharge voltage of single disc (dry)	kV(rms)		
20	Maximum RIV at 1 MHZ and 10kV AC (RMS) voltage of single disc	micro-volts		
21	Purity of zinc used for galvanizing	%		
22	No. of dips in standard preece test			
	a) Socket			
	b) Ball pin			
23	Axial and radial run out (according to IEC)			
	a) As per pointer A	mm		
	b) As per pointer B	mm		
24	Drawings enclosed	Yes/ No		

Note: Tolerance, wherever applicable, shall also be specified.

(Signature) ……....

Date: (Printed name) ……..

Place: (Designation)…..……..…..

(Common seal) …..……..

Schedule – 14A

Bidder's name……..……..

Specification no. …….……..

GUARANTEED TECHNICAL PARTICULARS OF INSULATOR STRINGS (DISC INSULATORS) WITH HARDWARE FITTINGS

Sl. no.	Description	Unit	Valued guaranteed by the bidder	
			Single 'I' suspension string (1 x 9)	Single tension string (1 x 10)
1	Power frequency withstand voltage of string with arcing horns, corona control rings/ grading rings under wet condition	kV(rms)		
2	Impulse withstand voltage (dry)			
	(a) Positive	kV(peak)		
	(b) Negative	kV(peak)		
3	Impulse flashover voltage (dry)			
	(a) Positive	kV(peak)		
	(b) Negative	kV(peak)		
4	Mechanical strength of complete insulator string alongwith hardware fittings	kN		
5	Maximum voltage distribution across any disc of line to earth voltage	%		
6	Dimensioned drawings of insulator strings enclosed.	Yes/ No		

Note: Tolerance, wherever applicable, shall also be specified.

(Signature) ……....

Date: (Printed name) ……...

Place: (Designation)…..……..…...

(Common seal) …..……...