

एसजेवीएन अरूण-3 पावर डवलपमेंट कंपनी प्रा. लि.
SJVN Arun-3 Power Development Company Pvt. Ltd.

(एसजेवीएन की पूर्ण स्वामित्व वाली अधीनस्थ कंपनी)

(A wholly owned subsidiary of SJVN)

900 मेगावाट अरूण-3 जलविद्युत परियोजना
900 MW Arun-3 Hydro Power Project

Regd. No.: 111808/69/070



Ref. No.: SAPDC/P&C/Arun-3HEP/CD03/2023-128

Dated: 03.03.2023

Amendment No. III

Sub: CD03/2023:“Conductor Package(CD03) for Supply of ACSR MOOSE Conductor for part of Diding – Dhalkebar – Bathnaha Transmission Line corresponding to Tower Package-TW02; associated with Arun-3 HEP in Nepal.

NIT/IFB No. SAPDC/P&C/Arun-3HEP/CD03/2023-81 dated 06.02.2023

Specification No. : SAPDC/P&C/Arun-3HEP/CD03/2023

Following amendments are hereby authorized in the Tender documents of the subject cited tender uploaded on websites (www.sapdc.com.np, www.sjvn.nic.in and www.eprocure.gov.in) and e-Portal (on <https://sjvn.nic.in>) w.e.f. 06.02.2023:

Sr. No	Clause Ref.	To be read/modified as
1.	Volume-II (Section-III): MANUFACTURING QUALITY PLAN(MQP):(Ref Page 254 of 337 to 266 of 337 of Tender Document)	Enclosed as Annexure-I

All other terms & conditions shall remain unchanged.

For & on the behalf of SAPDC

Sd/-

Chief Engineer (P&C)
SAPDC, Arun-3 HEP

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STANDARD MANUFACTURING QUALITY PLAN(MQP) FOR MULTISTRAND ACSR CONDUCTOR

(Manufacturing Quality Plan (MQP)(Ref Volume-II(Section-III)) under Amendment No. III dated 03.03.2023)

Code 1	Indicates place where testing is planned to be performed i.e. Inspection location.		Code 2	Indicates who has to perform the tests i.e. Testing Agency
A	At conductor manufacturer's works		J	The Conductor Manufacturer
B	At Component manufacturer's works		K	The Component Manufacturer
C	At authorized distributors place		L	The Third Party
D	At independent Lab.		M	The Turn key Contractor
E	At turn key contractor's location			
F	Not Specified			
Code 3	Indicates who shall witness the tests i.e. Witnessing Agency		Code 4	Review of Test Reports/Certificates
P	Component Manufacturer itself		W	By conductor Manufacturer
Q	Component Manufacturer and conductor Manufacturer		X	By Contractor during product/process inspection
R	Component Manufacturer, Conductor Manufacturer and Contractor		Y	By SAPDC/POWERGRID during product/process inspection.
S	Conductor Manufacturer itself		Z	By Contractor and /or SAPDC/POWERGRID during product/process inspection.
T	Conductor Manufacturer and Contractor			
U	Conductor Manufacturer, and/or Contractor and SAPDC/POWERGRID			
V	Third Party			
Code 5	Whether specific approval of sub-vendor / component make envisaged?		Code 6	Whether test records required to be submitted after final inspection for issuance of CIP/MICC
E	Envisaged		Y	Yes
N	Not Envisaged		N	No

Component Manufacturer- Aluminium ingot/wire rod and galvanized steel wire supplier

Power Grid Corporation of India Limited(POWERGRID)

NOTES :

- 1 Proper co-relation of materials with test certificates from Raw Material stage to finished conductor shall be maintained.
- 2 The Aluminium Ingots/aluminium wire rods shall be procured from SAPDC/POWERGRID approved sources / LME registered manufacturers. Aluminium ingot to aluminium wire rod conversion from any conversion agent/ conductor manufacturer's own facility needs to be approved by SAPDC/POWERGRID. The record shall be reviewed as per their plan standard by SAPDC/POWERGRID during product inspection/process audits.
- 3 The conductor manufacturer shall furnish the test certificates of aluminium ingot/ wire rod for review by SAPDC/POWERGRID.
- 4 Galvanized Steel Wire to be procured from SAPDC/POWERGRID approved sources and the conductor manufacturer shall furnish the following test certificates from steel wire manufacturer for review by SAPDC/POWERGRID :
 - Chemical Test Certificate of Steel Wire Rod issued by its Manufacturer
 - Test Certificate of Zinc issued by its Manufacturer
 - Test certificates of the tests carried out by steel wire manufacturer on finished steel wire.The Conductor manufacturer shall obtain steel wire manufacturer's test certificates for galvanized steel wire for at least 20% of the coils and conductor manufacturer shall carry out tests on 10% of coils on receipt of steel wire.
- 5 The conductor manufacturer will carry out the acceptance test on aluminium and steel strands on 20% of the drums offered for inspection and will submit the records at the time of SAPDC/POWERGRID inspection.
- 6 Adequate care shall be taken to avoid damages to galvanised coating, during pre forming and post forming operations. Special care should be taken to keep away dirt, grit, etc during stranding.
- 7 Valid calibration certificates of various testing and measuring instrument / equipments by NABL accredited as per agencies and standard resistance for verification of resistance bridges shall be available at conductor manufacturer works. Conductor manufacturer shall inform SAPDC/POWERGRID office regarding the date of calibration and SAPDC/POWERGRID shall physically present during the calibration of the testing equipments and after calibration the testing equipments shall be sealed properly.
- 8 The area where conductor is to be manufactured (stranding m/c & rewinding m/c) shall be covered with rubber mat/ coir mat/ Wooden floor, etc.
- 9 All guides, rollers, pulleys etc. used for manufacturing conductor shall be of Nylon/ Hylum/ Teflon or other soft material instead of steel.
- 10 Finished conductor shall be checked for length verification and surface finish on separate rewinding machine at variable speed from 8 to 16 mtr/ minute. The rewinding facilities shall have appropriate clutch system and shall be free from vibration and jerks etc. with traverse laying facilities. If conductor length is found less than the declared length during rewinding, then two drums from the same lot shall be verified for declared length. In case any of these drums is found having lesser length, the lot will be rejected and if these two drums length matching the declared length, whole lot shall be accepted after deduction of length as observed for first case in rest of the drums. In case of defects in surface finish, additional two drums shall be taken for rewinding & if same problem is observed, the entire lot shall be rejected.
- 11 The conductor manufacturer shall maintain records of the joints in inner layer of the conductor for all the drums and shall submit the records to SAPDC/POWERGRID for review at the time of Inspection.
- 12 Conductor sealing shall be as per approved sealing procedure. The conductor ends are required to be sealed with heat shrinkable sleeves and shall be properly secured with the drum by "U" clamps (nail). after covering the conductor with PVC adhesive tape to avoid loosening of conductor layers during transit and handling.
- 13 The drums shall be suitable for wheel mounting and letting off the conductor under minimum controlled tension of the order of 5 KN.
- 14 The inner check of the flanges and drum barrels surface shall be painted with bitumen based paint.; Before reeling thick bituminized water proof bamboo paper shall be secured on the drum barrel and inside of the flanges of the drum. After reeling the conductor, the exposed surface of the outer layer of the conductor shall be wrapped with water proof thick bituminized bamboo paper than transparent plastic sheet.
- 15 The wood used in the drum shall preferably be neutral (non- corrosive) with pH (aqueous extract) 5.5 - 7.5 and the wood preservative copper used compound shall be avoided.
- 16 The manufacturer may supply the conductor in returnable/non-returnable (as per TS) painted steel drums. After preparation of steel surface according to IS 9954, synthetic enamel paint shall be applied after one coat of primer.
- 17 Conductor manufacturer has to ensure marking of CIP/ MICC no. on all drums before dispatch and a copy of CIP/ MICC along with the test reports should be sent to the site along with the dispatches.
- 18 The Lay ratio of any Aluminium layer shall not be greater than the lay ratio of Aluminium layer immediately beneath it.
- 19 The MQP should be read in conjunction with the applicable technical specification against which the conductor is being manufactured.
- 20 In case of any contradiction between MQP and SAPDC/POWERGRID Technical specification, the Technical specifications of respective project shall have precedence over this MQP.
- 21 The conductor manufacturer shall carry out process audits on quarterly basis at galvanized steel wire manufacturer works as per approved MQP of steel wire. The audit report shall be made available for SAPDC/POWERGRID review during product inspection/process audits.
- 22 IS-398 part 2 is for below 400kV line and it is used for manufacturing ACSR Zebra, ACSR Panther and ACSR Dog etc.

IS-398 part 5 for 400kV and above line, it is used for manufacturing ACSR Moose, ACSR Snowbud, ACSR Betsimis, ACSR Lapwing, etc.

23 Standard length & random length of conductor shall be governed as specified in SAPDC/POWERGRID technical specification.

24 Rejection & retests shall be as per IS 398 part 5.

In case of rejection of the offered lot of conductor/earthwire after testing as per MQP/Technical Specification/IS, the rejected material and the samples already tested shall be scrapped and strictly disposed off as follows:

- a) The rejected lot/tested samples shall be clearly identified and stored separately to avoid any mix up with any in-process/finished lot till the same is disposed off.
- b) The supplier shall arrange for cutting of the rejected conductor/earthwire lot in bits & pieces which shall be sold as scrap.
- c) In case supplier intends to dispose off rejected material through any other mode, the same shall be done with approval of SAPDC/POWERGRID.
- d) Necessary supporting documents in regard to (b) and (c) above, shall be submitted for verification of SAPDC/POWERGRID and record shall be maintained at manufacturer's works.

25 The size & acceptance test criteria for different types of conductor shall be as per approved GTP.

26 Following points are to be strictly adhered to if the lot is sales return drum (returned drum after damage during transit):

- i) Conductor manufacturer shall specifically intimate SAPDC/POWERGRID, at the time of inspection, that the lot is for replenishment.
- ii) No repaired conductor or sales return drum shall be offered to SAPDC/POWERGRID after re-layering
- iii) Sales return drums shall be kept in manufacturer's works with different colour coding and shall not be disposed off until corresponding replenished new drums are cleared by SAPDC/POWERGRID.
- iv) Conductor of these sales return drum shall be scrapped/cut into non standard length in presence of POWERGRID. In case of any difficulty or deviation, approval shall be taken from SAPDC/POWERGRID before disposal.

Sr. No.	Components/ Operations & Description of Test	Type of Check	Quantum of Check/ Sampling with basis	Reference document for Testing	Acceptance Norms	Format of Record	Applicable Codes						Remarks
							1	2	3	4	5	6	
A. Section: RAW MATERIAL INSPECTION													
1.1 Aluminium Ingot													
1.1.1	Chemical Composition	Spectro Analysis	1 sample per heat of 9 MT or furnace capacity and part thereof One sample/lot of 100 MT or part thereof per supplier shall be tested	Suppliers TC IS 4026 and SAPDC/POWERGRID Spec.	AL 99.5 % (min) Cu 0.04 % (max) Other elements as per GTP	Suppliers TC/ Manufacturer format of record (MFOR)	B A	K J	P S	W Z	E N	N N	
1.2 Aluminium Wire Rod													
1.2.1	Chemical Composition	Spectro Analysis	1 sample per heat of 9 MT or furnace capacity and part thereof One sample/lot of 100 MT or part thereof per supplier shall be tested	Suppliers TC IS 4026 and SAPDC/POWERGRID Spec.	AL 99.5% (min) Cu 0.04 % (max) Other elements as per GTP	Suppliers TC/ Manufacturer format of record (MFOR)/TPL	B A/D	K J/L	P S/V	W Z	E N	N N	
1.2.2	Diameter	Dimensional	1 sample from each coil.	IS 5484 and SAPDC/POWERGRID Spec.	Min. 9.00 mm, Nom. 9.50mm Max. 10.00 mm	Supplier TC & MFOR	A/B	J/K	S/P	Z	-	N	
1.2.3	Tensile Strength	Mechanical	1 sample from each coil.	IS 5484 and SAPDC/POWERGRID Spec.	Min. 10.50 to 12 Kg/mm ² for Al strands dia less than 4 mm and 11.5 kg/mm ² min for strands dia ≥4 mm	Supplier TC & MFOR	A/B	J/K	S/P	Z	-	N	
1.2.4	Elongation at break	Mechanical	1 sample from each coil.	IS 5484, IEC 888 and SAPDC/POWERGRID Spec.	Min. 8 % at 250 mm gauge length	Supplier TC & MFOR	A/B	J/K	S/P	Z	-	N	
1.2.5	Resistivity and Conductivity	Electrical	1 sample from each coil.	IS 5484, IEC 8898 and SAPDC/POWERGRID Spec.	Maximum resistivity 0.028264 ohm mm ² /metre at 20°C. Min. Conductivity 61.0 % of IACS.	Supplier TC & MFOR	A/B	J/K	S/P	Z	-	N	

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							1	2	3	4	5	6	
1.2.6	Cleanliness and surface smoothness	Visual	100% on each coil	SAPDC/POWERGRID Spec.	The wire rod shall be free from pipes, laps, cracks, kinks, twists, seams & other injurious defects within the limits of good commercial practices.	Supplier TC & MFOR	A/B	J/K	S/P	Z	-	N	
2.1	High Tensile Galvanized Steel Wire												
2.1.1	Chemical Analysis	Chemical	One sample/lot of 100 MT or part thereof per supplier to be tested on receipt by conductor manufacturer	SAPDC/POWERGRID Spec	C 0.50 to 0.85 % Mn 0.50 to 1.10 % Si 0.10 to 0.35 % P 0.035 % (max) S 0.045 % (max)	Supplier TC	B	K	P	W	E	N	
						TPL report	D	L	V	Z	-	N	
2.1.2	Diameter	Dimensional	20 % Coils per lot	IS 398 PT-2,PT-5, IEC 888 &	As per Approved Technical specification	Suppliers TC	B	K	P	Z	-	N	
			10% Coils per lot	SAPDC/POWERGRID Spec.		MFOR	A	J	S	Z	-	N	
2.1.3	Tensile Strength/ Breaking Load	Mechanical	20 % Coils per lot	IS 398 PT-2,PT-5, IEC 888 &	As per Approved Technical specification	Suppliers TC	B	K	P	Z	-	N	
			10% Coils per lot	SAPDC/POWERGRID Spec.		MFOR	A	J	S	Z	-	N	
2.1.4	Elongation at break	Mechanical	20 % Coils per lot	IS 398 PT-2,PT-5, IEC 888 &	Min.4.0 % at 250 mm gauge length.	Suppliers TC	B	K	P	Z	-	N	
			10% Coils per lot	SAPDC/POWERGRID Spec.		MFOR	A	J	S	Z	-	N	
2.1.5	Torsion Test	Mechanical	20 % Coils per lot	IS 398 PT-2,PT-5, IEC 888 &	Min.18 twist on a gauge length of 100xdiameter of wire	Suppliers TC	B	K	P	Z	-	N	
			10% Coils per lot	SAPDC/POWERGRID Spec.		MFOR	A	J	S	Z	-	N	
2.1.6	Wrapping Test	Mechanical	20 % Coils per lot	IS 398 PT-2,PT-5, IEC 888 &	Wrap-8,unwrap-6 & wrap-6 On a mandrel having diameter equal to 4 x diameter of wire. The wire shall not break.	Suppliers TC	B	K	P	Z	-	N	
			10% Coils per lot	SAPDC/POWERGRID Spec.		MFOR	A	J	S	Z	-	N	

Sr. No.	Components/ Operations & Description of Test	Type of Check	Quantum of Check/ Sampling with basis	Reference document for Testing	Acceptance Norms	Format of Record	Applicable Codes						Remarks
							1	2	3	4	5	6	
2.1.7	Adhesion Test	Mechanical	20 % Coils per lot	IS 4826 and SAPDC/POWERGRID Spec.	The Zinc coating shall remain adherent to the steel wire when wound 10 turns on a mandrel having diameter equal to 4 x The diameter of wire	Suppliers TC	B	K	P	Z	-	N	
			10% Coils per lot			MFOR	A	J	S	Z		N	
2.1.8	Preece Test (Dip Test)	Chemical	20 % Coils per lot	IS 4826 and SAPDC/POWERGRID Spec.	As per Approved Technical specification	Suppliers TC	B	K	P	Z	-	N	
			10% Coils per lot			MFOR	A	J	S	Z		N	
2.1.9	Mass of Zinc coating	Chemical	20 % Coils per lot	IS 4826, IS 6745 and SAPDC/POWERGRID Spec.	As per Approved Technical specification	Suppliers TC	B	K	P	Z	-	N	
			10% Coils per lot			MFOR	A	J	S	Z		N	
2.1.10	Surface finish of GS Wire coils	Visual	100 % Coils per lot	IS 398, PT-2, PT-5, IEC 888 & SAPDC/POWERGRID Spec.	The Wires shall be smooth, uniform and free from imperfections such as spills, splits, scale inclusion, die marks, scratches, abrasion, blow holes etc.	Suppliers TC	B	K	P	Z	-	N	
			100 % Coils per lot			MFOR	A	J	S	Z		N	
2.1.11	Check for Joints	Visual	100 % Coils per lot	IS 398, PT-2, PT-5, IEC 888 & SAPDC/POWERGRID Spec.	There shall be NO JOINT	Suppliers TC	B	K	P	Z	-	N	
			100 % Coils per lot			MFOR	A	J	S	Z		N	
2.1.12	Purity of Zinc	Chemical	1 sample for every lot of 100 MT or part thereof	IS 209, IEC 888/1987 and SAPDC/POWERGRID Spec.	Min. Purity of Zinc 99.95 %	Suppliers TC	D	L	V	Z	-	N	

Sr. No.	Components/ Operations & Description of Test	Type of Check	Quantum of Check/ Sampling with basis	Reference document for Testing	Acceptance Norms	Format of Record	Applicable Codes						Remarks
							1	2	3	4	5	6	
B.	SECTION:IN PROCESS INSPECTION												
3.0	Aluminium Drawn Wire												
3.1	Diameter of Drawn Aluminium Wire	Dimensional	one sample from first, middle & last drawn wire coil from each wire rod	IS 398-P-2 & 5 and SAPDC/POWERGRID Spec.	As per Approved Technical specification	MFOR	A	J	S	W	-	N	
3.2	Breaking Load/ Tensile strength	Mechanical	one sample from first, middle & last drawn wire coil from each wire rod	IS 398-P-2 & 5 and SAPDC/POWERGRID Spec.	As per Approved Technical specification	MFOR	A	J	S	W	-	N	
3.3	Resistance	Electrical	one sample from first, middle & last drawn wire coil from each wire rod	IS 398-P-2 & 5 and SAPDC/POWERGRID Spec.	As per Approved Technical specification	MFOR	A	J	S	W	-	N	
3.4	Wrapping Test	Mechanical	one sample from first, middle & last drawn wire coil from each wire rod	IS 398-P-2 & 5 and SAPDC/POWERGRID Spec.	Wrap-8,unwrap-6 & wrap-6 turns on the wire itself. The wire shall not break.	MFOR	A	J	S	W	-	N	
4.0	Steel Stranding Process												
4.1	Lay Ratio/ Direction & Compactness	Measurement and Visual	At the beginning of Each set up	IS 398-P-2 & 5 and SAPDC/POWERGRID Spec.	As per Approved Technical specification	MFOR	A	J	S	W	-	N	
4.2	Pre-forming and post forming of Steel core	Visual	One sample from each length	IS 398-P-2 & 5 and SAPDC/POWERGRID Spec.	No Spreading of strands when composite core wire is cut	MFOR	A	J	S	W	-	N	
4.3	Check for Joints	Visual	100 % on each drum	IS 398-P-2 & 5 and SAPDC/POWERGRID Spec.	There shall be NO JOINT	MFOR	A	J	S	W	-	N	
4.4	Surface smoothness	Visual	100 % on each drum	IS 398-P-2 & 5 and SAPDC/POWERGRID Spec.	The wire shall be free from defects	MFOR	A	J	S	W	-	N	

Sr. No.	Components/ Operations & Description of Test	Type of Check	Quantum of Check/ Sampling with basis	Reference document for Testing	Acceptance Norms	Format of Record	Applicable Codes						Remarks
							1	2	3	4	5	6	
5.0	Final Conductor Stranding Process												
5.1	Lay Ratio/ Direction & Compactness	Physical	At the beginning of Each set up	IS 398-P-2 & 5 and SAPDC/POWERGRID Spec.	As per Approved Technical specification	MFOR	A	J	S	W	-	Y	
5.2	Check for Joints	Visual	100 % on each drum	IS 398-P-2 & 5 and SAPDC/POWERGRID Spec.	There shall be NO JOINT in the outermost layer. Joints are allowed in inner layers but no two such joints shall be less than 15 meters apart in completed conductor.	MFOR	A	J	S	W	-	N	
5.3	Surface smoothness of Strands and stranded conductor	Visual	100%	IS 398-P-2 & 5 and SAPDC/POWERGRID Spec.	The finished conductor shall be smooth, compact, uniform and free from all imperfections including kinks (protrusion of wires), wires cross over, over riding, looseness (wire being dislocated by finger/hand pressure and or unusual bangle noise on tapping), material inclusions, white rust, powder formation or black spot, dirt, grit, etc.	MFOR	A	J	S	W	-	N	

Sr. No.	Components/ Operations & Description of Test	Type of Check	Quantum of Check/ Sampling with basis	Reference document for Testing	Acceptance Norms	Format of Record	Applicable Codes						Remarks
							1	2	3	4	5	6	
5.4	Conductor Packing (in process)	Visual	100%	IS 398-P-2 & 5 and SAPDC/POWERGRID Spec.	Medium grade Kraft/crepe paper shall be used in between the layers of conductor. After reeling the conductor, the exposed surface of the outermost layer of conductor shall be wrapped with water proof thick bituminized paper.	MFOR	A	J	S	W	-	N	
C. Section: FINAL TESTING													
6.0	Routine Test on Finished Conductor												
6.1.	All acceptance tests	-	20 % of the drums	IS 398-P-2 & 5 and SAPDC/POWERGRID Spec.	Shall pass all the requirements.	MFOR	A	J	S	Z	-	N	
6.2	Check for Joints, Surface condition of strands and stranded conductor.	-	100 % on each drum	IS 398-P-2 & 5 and SAPDC/POWERGRID Spec.	Shall pass all the requirements.	MFOR	A	J	S	Z	-	N	
7.0	Acceptance Tests on Finished Conductor.												
7.1	Lay Ratio / Direction & Compactness	Physical	One sample from every 10 Drums or part thereof	IS 398-P-2 & 5 and SAPDC/POWERGRID Spec.	As per Approved Technical specification	Inspection test report	A	J	U	Y	-	Y	CIP

Sr. No.	Components/ Operations & Description of Test	Type of Check	Quantum of Check/ Sampling with basis	Reference document for Testing	Acceptance Norms	Format of Record	Applicable Codes						Remarks
							1	2	3	4	5	6	
7.2	Acceptance Tests on Aluminum Strands of Finished Conductor.												
7.2.1	Diameter of Aluminium strands	Dimensional	One sample from every 10 Drums or part thereof	IS 398-P-2 & 5 and SAPDC/POWERGRID Spec.	As per Approved Technical specification	Inspection test report	A	J	U	Y	-	Y	CIP
7.2.2	Breaking Load/ Tensile strength	Mechanical	One sample from every 10 Drums or part thereof	IS 398-P-2 & 5 and SAPDC/POWERGRID Spec.	As per Approved Technical specification	Inspection test report	A	J	U	Y	-	Y	CIP
7.2.3	Resistance	Electrical	One sample from every 10 Drums or part thereof	IS 398-P-2 & 5 and SAPDC/POWERGRID Spec.	As per Approved Technical specification	Inspection test report	A	J	U	Y	-	Y	CIP
7.2.4	Wrapping Test	Mechanical	One sample from every 10 Drums or part thereof	IS 398-P-2 & 5 and SAPDC/POWERGRID Spec.	As per Approved Technical specification/relevant standard	Inspection test report	A	J	U	Y	-	Y	CIP
7.2.5	UTS test on welded joints of Aluminium strands by cold pressure butt welding machine	Mechanical	5 specimen against each lot	IS 398-P-2 & 5 and SAPDC/POWERGRID Spec.	The minimum breaking load shall be not less than the specified value in Data Sheet	Inspection test report	A	J	U	Y	-	Y	CIP
7.3	Acceptance Tests on Galvanised Steel strands of Finished Conductor												
7.3.1	Diameter	Dimensional	One sample from every 10 Drums or part thereof	IS 398-P-2 ,5 IEC-888 and SAPDC/POWERGRID Spec.	As per Approved Technical specification	Inspection test report	A	J	U	Y	-	Y	CIP
7.3.2	Tensile Strength/ Breaking Load	Mechanical	One sample from every 10 Drums or part thereof	IS 398-P-2 ,5 IEC-888 and SAPDC/POWERGRID Spec.	As per Approved Technical specification	Inspection test report	A	J	U	Y	-	Y	CIP
7.3.3	Elongation at break	Mechanical	One sample from every 10 Drums or part thereof	IS 398-P-2 ,5 IEC-888 and SAPDC/POWERGRID Spec.	As per Approved Technical specification	Inspection test report	A	J	U	Y	-	Y	CIP
7.3.4	Torsion Test	Mechanical	One sample from every 10 Drums or part thereof	IS 398-P-2 ,5 IEC-888 and SAPDC/POWERGRID Spec.	As per Approved Technical specification	Inspection test report	A	J	U	Y	-	Y	CIP
7.3.5	Wrapping Test	Mechanical	One sample from every 10 Drums or part thereof	IS 398-P-2 ,5 IEC-888 and SAPDC/POWERGRID Spec.	Wrap-8,unwrap-6 & wrap-6 On a mandrel having diameter equal to 4 x diameter of wire. The wire shall not break.	Inspection test report	A	J	U	Y	-	Y	CIP

Sr. No.	Components/ Operations & Description of Test	Type of Check	Quantum of Check/ Sampling with basis	Reference document for Testing	Acceptance Norms	Format of Record	Applicable Codes						Remarks
							1	2	3	4	5	6	
7.3.6	Adhesion Test	Mechanical	One sample from every 10 Drums or part thereof	IS 398-P-2 ,5 IEC-888 and SAPDC/POWERGRID Spec.	The Zinc coating shall remain adherent to the steel wire when wound 10 turns on a mandrel having dia. 4xdia. of wire	Inspection test report	A	J	U	Y	-	Y	CIP
7.3.7	Preece Test (Dip Test)	Chemical	One sample from every 10 Drums or part thereof	IS 398-P-2 ,5 IS 4826, IEC 888 and SAPDC/POWERGRID Spec.	As per Approved Technical specification	Inspection test report	A	J	U	Y	-	Y	CIP
7.3.8	Mass of Zinc coating	Chemical	One sample from every 10 Drums or part thereof	IS 398-P-2 ,5 IS 4826, IEC 888 and SAPDC/POWERGRID Spec.	As per Approved Technical specification	Inspection test report	A	J	U	Y	-	Y	CIP
7.4	Length measurement of Finished Conductor												
7.4.1	Check for joints, surface finish and length measurement by rewinding	Visual & Measurement	One sample from every 10 Drums or part thereof	IS 398-P-2 & 5 and SAPDC/POWERGRID Spec.	No scale on the surface and the surface shall be free from any imperfections. No joint on the outermost layer. The conductor length should be as per the offered packing list & drums as per approved drawing.	Inspection test report	A	J	U	Y	-	Y	CIP
8.0	Wooden Drums and packing materials												
8.1	Dimensional check of wooden drums	Dimensional	10% of offered drums	IS 1778 and SAPDC/POWERGRID approved Drum drawing	SAPDC/POWERGRID approved drum drawing	Inspection test report	A	J	U	Y	-	Y	CIP

Sr. No.	Components/ Operations & Description of Test	Type of Check	Quantum of Check/ Sampling with basis	Reference document for Testing	Acceptance Norms	Format of Record	Applicable Codes						Remarks
							1	2	3	4	5	6	
8.2	Barrel Batten Test	Mechanical	One sample from every 10 Drums or part thereof	IS 1778	Barrel Baten strength Min. 300 Kgf.	Inspection test report	A	J	U	Y	-	Y	CIP
8.3	Chemical Test on water proof bituminised bamboo paper	Chemical	One sample per batch of paper	-	Chloride - 0.05 % max., Sulphate- 0.25 % max., Copper - 0.01 % Max., pH- 5.5 to 7.5	TPL report	D	L	V	Y	-	N	
8.4	Visual check of wooden drums	Visual	100% drums	IS 1778 and SAPDC/POWERGRID approved Drum drawing	The inner check of the flanges & drum barrels surface shall be painted with bitumen based paint. Before relling cardboard or double corrugated or thick bituminized water proof bamboo paper shall be secured to the drum barrel and inside of the flanges of drum.	Inspn. Report	A	J	U	Y	-	Y	CIP
9.0	Packing, Marking and Dispatch												
9.1	Application of bituminised bamboo paper	Visual	100%	SAPDC/POWERGRID Spec..	SAPDC/POWERGRID specs.	Joint Inspn. Report	A	J	S/U*	Y	-	N	
9.2	Distance between outermost layer and inner surface of protective laggings	Visual	100%	SAPDC/POWERGRID Spec..	SAPDC/POWERGRID Spec. (Min 75 mm)	Packing List	A	J	S/U*	Y	-	N	
9.3	Number of turns in outer most layer	Visual	100%	SAPDC/POWERGRID Spec..	SAPDC/POWERGRID specs.	Packing List	A	J	S/U*	Y	-	N	
9.4	Contract/ Award Letter no.	Visual	100%	SAPDC/POWERGRID Spec..	SAPDC/POWERGRID Spec.	Packing List	A	J	S/U*	Y	-	N	
9.5	Manufacturer's Name and Address	Visual	100%	SAPDC/POWERGRID Spec..	SAPDC/POWERGRID Spec..	Packing List	A	J	S/U*	Y	-	N	*100 % by Conductor manufacturer & 10 % by SAPDC/POWERGRID
9.6	Drum No.	Visual	100%	SAPDC/POWERGRID Spec..	SAPDC/POWERGRID Spec..	Packing List	A	J	S/U*	Y	-	N	
9.7	Size and Code Name of Conductor	Visual	100%	SAPDC/POWERGRID Spec..	SAPDC/POWERGRID Spec..	Packing List	A	J	S/U*	Y	-	N	

Sr. No.	Components/ Operations & Description of Test	Type of Check	Quantum of Check/ Sampling with basis	Reference document for Testing	Acceptance Norms	Format of Record	Applicable Codes						Remarks
							1	2	3	4	5	6	
9.8	Length of Conductor	Visual	100%	SAPDC/POWERGRID Spec..	SAPDC/POWERGRID Spec..	Packing List	A	J	S/U*	Y	-	N	
9.9	Gross weight of the drum after lagging	Visual	100%	SAPDC/POWERGRID Spec..	SAPDC/POWERGRID Spec..	Packing List	A	J	S/U*	Y	-	N	
9.10	Tare weight with lagging	Visual	100%	SAPDC/POWERGRID Spec..	SAPDC/POWERGRID Spec..	Packing List	A	J	S/U*	Y	-	N	
9.11	Net weight of the conductor in the Drum without	Visual	100%	SAPDC/POWERGRID Spec..	SAPDC/POWERGRID Spec..	Packing List	A	J	S/U*	Y	-	N	
9.12	Arrow marking for rolling the conductor drum	Visual	100%	SAPDC/POWERGRID Spec..	SAPDC/POWERGRID Spec..	Packing List	A	J	S/U*	Y	-	N	
9.13	Sealing of Drums 100% as per SAPDC/POWERGRID approved sealing procedure	Visual	100%	SAPDC/POWERGRID Spec..	SAPDC/POWERGRID Spec..		A	J	U	Y	-	Y	CIP 100% by SAPDC/POWERGRID
9.14	Tack welding on Nuts on the barrel and Hub Plates.	Visual	100%	SAPDC/POWERGRID Spec..	SAPDC/POWERGRID Spec..		A	J	S/U*	W	-	N	
9.15	Name of Address of Consignee	Visual	100%	SAPDC/POWERGRID Spec..	SAPDC/POWERGRID Spec..		A	J	S/U*	Y	-	N	*100 % by Conductor manufacturer & 10 % by SAPDC/POWERGRID