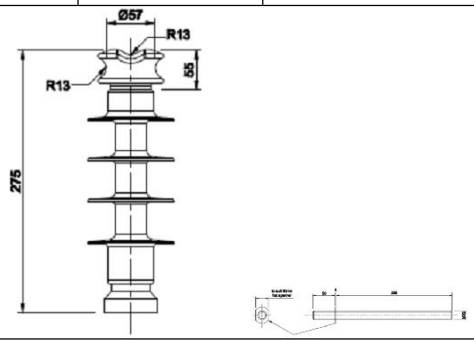
	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 3**
	33kV LINE POST TYPE SILICON INSULATOR COMPLETE WITH SPINDLE	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDERS OFFER
1	Type	33kV Silicon Rubber Line Post Insulator with bottom metal fittings complete with spindle, washer, nut & lock nut for Horizontal Mounting.		
2	Nominal Voltage	kV	33	
3	Highest System Voltage	kV	36	
4	Nominal Specific Creepage Distance	mm/kV	25	
5	Spindle Dimensions	Mm	M20 x 250	
6	Failing load (bend) P_0	kN	10	
7	Failing load (Torsion)	Nm	2.5	
8	Power frequency wet withstand voltage	$kV_{r.m.s}$ - 1 minute	70	
9	Lightning Impulse withstand voltage (peak)	kV	170	
10	Max Nominal Diameter of Insulating Part	Mm	245	
11	Material of insulating part	High Temperature Vulcanised Silicon rubber		
12	Material of metal parts	Hot Dip Galvanised Steel		
13	Applicable Standards	BS 137, IEC 61109, IEC61952, IEC60815-3		
14	Altitude above sea level		1400	
15	Operating ambient temperature	^{0}C	-1 to 40	
16	Relative humidity	%	85	
17	Previous type test report/ certificates to be provided with bid	Yes/No	No	
18	Routine test results/certificates to be provided on delivery	Yes/No	Yes	
19	Drawings showing dimensions of insulators offered to be provided with bid	Yes/No	Yes	

20	Tenderer shall provide previous 5000 hours ageing test certificate/results according to IEC 61109, with the bid	Yes/No	Yes	
21	Quality Assurance Certification to be provided with bid	Yes/No	Yes	
				

OTHER REQUIREMENTS

Markings

- Insulators shall be marked with the specified Electro-mechanical or mechanical failing load e.g. U70 BL.
- Insulators shall have indelible manufacturer's trademark and date of manufacture.

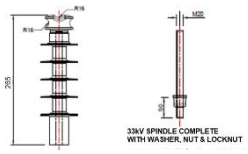
Special Clause

Tenderers may submit alternative offers which may be of financial or technical benefit to REA.

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 2**
	INSULATOR SILICON 33kV PIN TYPE COMPLETE WITH LARGE HEAD SPINDLE	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER OFFER
1	Type	33kV silicon composite pin insulator for mounting on steel cross arms complete with spindle, washer, nut and lock nut as per drawing below		
2	Nominal Voltage	kV	33	
3	Highest System Voltage	kV	36	
4	Nominal Specific Creepage Distance	mm/kV	25	
5	Min. Failing load	kN	10	
6	Power frequency wet withstand voltage (one minute)	$kV_{r.m.s}$	70	
7	Lightning Impulse withstand voltage (peak)	kV_{peak}	170	
8	Material of insulating part	High temperature vulcanized silicon rubber		
9	Colour of insulating material	Grey		
10	Material of metal parts	Hot Dip Galvanised Steel		
11	Spindle diameter	Mm	20	
12	Altitude above sea level	M	1400	
13	Operating ambient temperature	^0C	-1 to 40	
14	Relative humidity	%	85	
15	Previous type test report/ certificates to be provided with bid	Yes/No	No	
16	Routine test certificate/results to be provided on delivery of insulators	Yes/No	Yes	
17	Quality Assurance Certification to be provided with bid	Yes/No	Yes	
18	Drawings showing dimensions of Insulators offered to be provided with bid	Yes/No	Yes	
19	Applicable standard(s)	IEC61109, BS 3288-2		

Figure 1.0: 33kV PORCELAIN BROWN/GREY GLAZED PIN INSULATOR DRAWINGS



All dimensions are in mm.

OTHER REQUIREMENTS

Markings

- Insulators shall be marked with the specified Electro-mechanical or mechanical failing load e.g. U70 BL.
- Insulators shall have indelible manufacturer's trademark and date of manufacture.

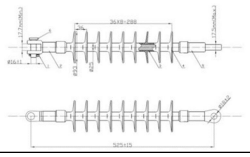
Special Clause

Tenderers may submit alternative offers which may be of financial or technical benefit to REA

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 2**
	33kV STRAIN SILLICON (LONG-ROD) INSULATOR	

ITEM	TECHNICAL DESCRIPTION		UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Type		Strain 33kV **Clevis and Tongue** high temperature vulcanised silicon rubber insulator to IEC61109		
2	Nominal Voltage		kV	33	
3	Highest System Voltage		kV	36	
4	Required section length of composite insulators (Equivalent to 3-disc insulators with nominal spacing of 146mm)		mm	438	
5	Minimum Lightning Impulse Withstand voltage		kV	170	
6	Required Minimum Power frequency (1 minute) Withstand Voltage, wet		kV	70	
7	Min failing load (kN)-Mechanical test		kN	70	
8	End fitting design (ball and socket size) as per IEC 60120		mm	16	
9	Nominal specific creepage Distance		mm/kV	25	
10	Insulating material		High Temperature Vulcanised Silicon rubber		
11	Material for the rod		Epoxy resin fibre reinforced		
12	End fittings design		Clevis and Tongue, Steel, Hot-Dip Galvanised		
13	Altitude above sea level			1400	
14	Operating ambient temperature		^{0}C	-1 to 40	
15	Relative humidity		%	85	
16	Applicable Standards			IEC 61109	
17	Quality Assurance Certification to be provided with bid		Yes/No	Yes	
18	Routine test certificate to be provided on delivery of insulators	Yes/No	Yes	Yes	

19	Previous type test	Type tests certificate/results to be provided with bid	Yes/No	No	
		Previous 5000 hours ageing test certificate/results according to IEC 61109 to be provided upon client request.	Yes/No	Yes	
20	Drawings showing dimensions and tolerances of Insulators offered to be provided with bid		Yes/No	Yes	
	DRAWING				



Markings

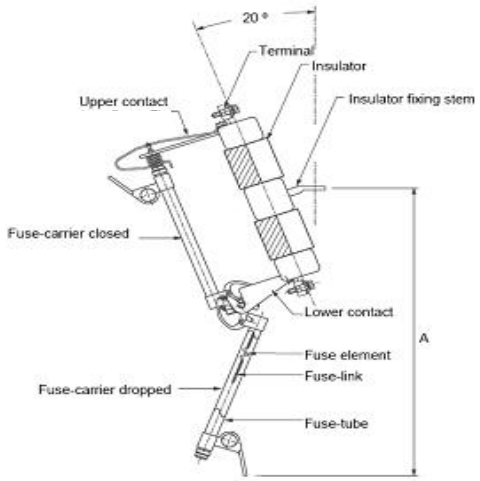
- Insulators shall be marked with the specified Electro-mechanical or mechanical failing load e.g., U70 BL.
- Insulators shall have indelible manufacturer's trademark and date of manufacture.

Special Clause

Tenderers may submit alternative offers which may be of financial or technical benefit to REA

	TECHNICAL SP ECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 3**
	DROP OUT FUSE LINK 33kV ASSEMBLY COMPLETE WITH FUSE CARRIER	

ITEM	TECHNICAL DESCRIPTION		UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description		33kV Fuse link assembly complete with fuse carrier rated at 100A and NEMA Mounting Bracket to PIESA 002		
2	**System Conditions of service**				
	Nominal Voltage (Un) r.m.s		kV	33	
	Maximum System Voltage (Um) r.m.s		kV	36	
	Earth		Effective & Non-effective		
	Frequency		Hz	50	
3	**Site Conditions Of Service**				
	Altitude		m	1400	
	Operating Ambient Temperature		^{0}C	-1 to 40	
	Humidity		%	85	
4	**Rating**				
	Nominal Voltage		kV	33	
	Rated Current	Fuse Carrier	A	100	
		Cut Out Base	A	200	
		Fuse Element	A	5	
5	**Electrical Conditions**				
	Insulation Material Specification		Porcelain		
	Dielectric Strength				
	Lightning impulse withstand (1.2/50)		kV	170	
	Power frequency wet withstand voltage r.m.s		kV	70	
6	Nominal specific Creepage Distance		mm/kV	25	
7	Previous Type test report/certificate on complete fuse link assembly to be provided with bid		Yes/No	No	
8	Routine tests (acceptance tests on sample Product) to be provided on delivery		Yes/No	Yes	

9	**General information to be provided with bid:**			
	Drawings and/or brochures showing outline and general arrangement and Detailed drawings of all items showing critical tolerances to be provided with bid			
10	Applicable standards	PIESA 002, NRS 035 SABS IEC 60282-2, SABS IEC 60186, BS 137-part 2		
				

MARKING AND IDENTIFICATION

- Markings to conform to **SABS IEC 60282-2**
- Insulators shall be marked with the specified Electro-mechanical or mechanical failing load e.g., U70 BL.
- Insulators shall have indelible manufacturer's trademark and date of manufacture.

OTHER REQUIREMENTS

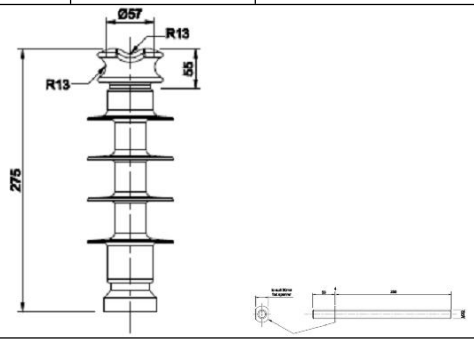
- There shall be no rivets in the parts that form the current path
- Water shall not be able to accumulate on any part of the equipment nor shall any feature introduce moisture into any component.
- The design shall incorporate all reasonable precautions and provisions for the safety of personnel concerned with the operation and maintenance of the same.
- The current path shall be such that load current shall only flow through high conductive materials such as copper and its alloys. Load current shall not be permitted to flow through ferrous components, springs, or spring-loaded mechanisms.
- All load current paths shall be so designed that the relevant parts of the assembly are capable of carrying the specified rated current without exceeding the permitted temperature rise in **SABS IEC 60282-2**
- Contacts shall be based on the line contact principle and there shall be no welds on the contact parts. The construction of the Drop out fuse base and the fuse link shall ensure their mutual alignment during closure.
- The solid link should have an eye and an operating tongue.

SUPPLIMENTARY NOTES

- Suppliers should give sufficient information including drawings (which must be brief, clear and to the point) on how their drop out fuse designs addresses the provided requirements. Suppliers can offer better alternatives that are of cost and technical benefits to the organisations without compromising on the quality.
- The drawings to be submitted by the tenderer must:
    - Show details of the insulator, the fuse carrier, the solid link, the upper contact, the lower contact, the cut-out base, and the bracket for fixing to either wooden or steel cross arm.
    - Provided critical tolerances
- All tolerances should be as per PIESA 002: 1 2000
- Insulator fixing stem galvanized in accordance with **SABS 763**.
- The gusset below the tongue is require for strength, but should not limit the usable length of the torque
- The current path, shown only functionally, shall be continuous up to the terminal connector.
  Galvanized in accordance with **SABS 736**

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 3**
	11kV LINE POST TYPE SILICON INSULATOR COMPLETE WITH SPINDLE	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER OFFER
1	Type	11kV Silicon Rubber Line Post Insulator with bottom metal fittings complete with spindle, washer, nut and lock nut for Horizontal Mounting.		
2	Nominal Voltage	kV	11	
3	Highest System Voltage	kV	12	
4	Nominal Specific Creepage Distance	mm/kV	25	
5	Spindle Dimensions	mm	M20 x 250	
6	Failing load (bend) P_0	kN	10	
7	Failing load (Torsion)	Nm	1.2	
8	Power frequency wet withstand voltage	$kV_{r.m.s}$ - 1 minute	28	
9	Lightning impulse withstand voltage (peak)	kV	95	
10	Max Nominal Diameter of Insulating Part	mm	210	
11	Material of insulating part	High Temperature Vulcanised Silicon rubber		
12	Material of metal parts	Hot Dip Galvanised Steel		
13	Applicable Standards	BS 137, IEC 61109, IEC61952, IEC60815-3		
14	Altitude above sea level		1400	
15	Operating ambient temperature	^0C	-1 to 40	
16	Relative humidity	%	85	
17	Previous type test certificates and results to be provided with bid	Yes/No	No	
18	Routine test results/certificates to be provided on delivery	Yes/No	Yes	
19	Drawings showing dimensions of insulators offered to be provided with bid	Yes/No	Yes	

20	Tenderer shall provide previous 5000 hours ageing test certificate/results according to IEC 61109, with the bid	Yes/No	Yes	
21	Quality Assurance Certification to be provided with bid	Yes/No	Yes	
				

OTHER REQUIREMENTS

Markings

- Insulators shall be marked with the specified Electro-mechanical or mechanical failing load e.g., U70 BL.
- Insulators shall have indelible manufacturer's trademark and date of manufacture.

Drawings, Test Certificate/Results and Quality Documents

- Tenderer shall provide previous type test certificate/results with bid
- Tenderer shall provide routine test results/ certificate on delivery of insulators
- Tenderer shall provide manufacturers' quality manual /ISO 9000 Certification
- Tenderers shall provide drawings showing the dimensions of Insulators offered.
- Tenderer shall provide previous 5000 hours ageing test certificate/results according to IEC 61109, with the bid

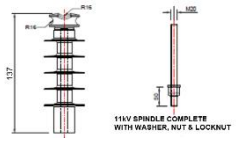
Special Clause

Tenderers may submit alternative offers which may be of financial or technical benefit to REA.

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 2**
	INSULATOR SILICON 11kV PIN TYPE COMPLETE WITH LARGE HEAD SPINDLE	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDERS OFFER
1	Type	11kV silicon composite pin insulator for mounting on steel cross arms complete with spindle, washer, nut and lock nut as per drawing below		
2	Nominal Voltage	kV	11	
3	Highest System Voltage	kV	12	
4	Nominal Specific Creepage Distance	mm/kV	25	
5	Min. Failing load	kN	10	
6	Power frequency wet withstand voltage (one minute)	$kV_{r.m.s}$	28	
7	Lightning Impulse withstand voltage (peak)	kV_{peak}	95	
8	Material of insulating part	High temperature vulcanized silicon rubber		
9	Colour of insulating material	Grey		
10	Material of metal parts	Hot dip Galvanised steel		
11	Spindle diameter	mm	20	
12	Altitude above sea level	m	1400	
13	Operating ambient temperature	^0C	-1 to 40	
14	Relative humidity	%	85	
15	Previous type test certificates and results to be provided with bid	Yes/No	No	
16	Routine test certificate/results to be provided on delivery of insulators	Yes/No	Yes	
17	Manufacturer's quality manual/ 9000 Certification to be provided with bid	Yes/No	Yes	
18	Drawings showing dimensions of Insulators offered to be provided with bid	Yes/No	Yes	
19	Applicable standard(s)	IEC61109, BS 3288-2		

Figure 1.0: 33kV PORCELAIN BROWN/GREY GLAZED PIN INSULATOR DRAWINGS



All dimensions are in mm.

OTHER REQUIREMENTS

Markings

- Insulators shall be marked with the specified Electro-mechanical or mechanical failing load e.g. U70 BL.
- Insulators shall have indelible manufacturer's trademark and date of manufacture.

Drawings, Test Certificate/Results and Quality Documents

- Tenderer shall provide previous type test certificate/results with bid
- Tenderer shall provide routine test results/ certificate on delivery of insulators
- Tenderers shall provide drawings showing the dimensions of Insulators offered.
- Tenderer shall provide previous 5000 hours ageing test certificate/results according to IEC 61109, with the bid

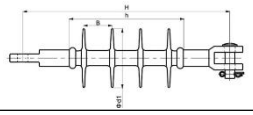
Special Clause

Tenderers may submit alternative offers which may be of financial or technical benefit to REA

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 2**
	11kV STRAIN SILLICON (LONG-ROD) INSULATOR	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Type	Strain 11kV **Clevis and Tongue** high temperature vulcanised silicon rubber insulator to IEC61109		
2	Nominal Voltage	kV	11	
3	Highest System Voltage	kV	12	
4	Required section length of composite insulators (Equivalent to 3-disc insulators with nominal spacing of 146mm)	mm	292	
5	Minimum Lightning Impulse Withstand Voltage	kV	95	
6	Required Minimum Power frequency (1 minute) Withstand Voltage, wet	kV	28	
7	Min failing load (kN)-Mechanical test	kN	70	
8	End fitting design (ball and socket size) as per IEC 60120	mm	16	
9	Nominal specific creepage Distance	mm/kV	25	
10	Insulating material	High Temperature Vulcanised Silicon rubber		
11	Material for the rod	Epoxy resin fibre reinforced		
12	End fittings design	Clevis and Tongue, Steel, Hot-Dip Galvanised		
13	Altitude above sea level	m	1400	
14	Operating ambient temperature	^{0}C	-1 to 40	
15	Relative humidity	%	85	
16	Applicable Standards	IEC 61109		
17	Routine test certificate to be provided on delivery of insulators	Yes/No	Yes	

18	Previous type test	Type tests certificate/results to be provided with bid	Yes/No	No	
		Previous 5000 hours ageing test certificate/results according to IEC 61109 to be provided upon client request.	Yes/No	Yes	
19	Quality Assurance Certification to be provided with bid		Yes/No	Yes	
20	Drawings showing dimensions and tolerances of Insulators offered to be provided with bid		Yes/No	Yes	
	DRAWING				



Markings

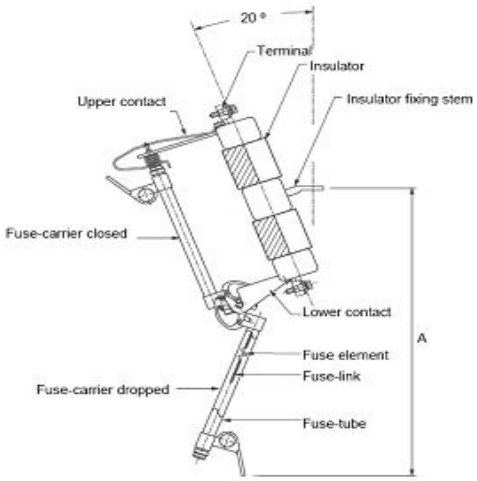
- Insulators shall be marked with the specified Electro-mechanical or mechanical failing load e.g., U70 BL.
- Insulators shall have indelible manufacturer's trademark and date of manufacture.

Special Clause

Tenderers may submit alternative offers which may be of financial or technical benefit to REA.

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 3**
	DROP OUT FUSE LINK 11kV ASSEMBLY COMPLETE WITH FUSE CARRIER	

ITEM	TECHNICAL DESCRIPTION		UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description		11kV Fuse link assembly complete with fuse carrier rated at 100A and NEMA mounting bracket to PIESA 002.		
2	**System Conditions of service**				
	Nominal Voltage (Un) r.m.s		kV	11	
	Maximum System Voltage (Um) r.m.s		kV	12	
	Earth		Effective & Non-effective		
	Frequency		Hz	50	
3	**Site Conditions Of Service**				
	Altitude		m	1400	
	Operating Ambient Temperature		^{0}C	-1 to 40	
	Humidity		%	85	
4	**Rating**				
	Nominal Voltage		kV	11	
	Rated Current	Fuse Carrier	A	100	
		Cut Out Base	A	200	
		Fuse Element	A	5	
5	**Electrical Conditions**				
	Insulation Material Specification		Porcelain		
	Dielectric Strength				
	Lightning Impulse withstand (1.2/50)		kV	95	
	Power frequency wet withstand voltage r.m.s		kV	28	
6	Nominal specific Creepage Distance		mm/kV	25	
7	Creepage Distance		mm	481	
8	Previous Type test report/certificate on complete fuse link assembly to be provided with bid		Yes/No	No	

9	**General information to be provided with bid:**			
	Drawings and brochures showing outline and general arrangement	Yes/No	Yes	
	Detailed drawings of all items showing critical tolerances to be provided with bid	Yes/No	Yes	
10	Routine tests (acceptance tests on sample Product) to be provided on delivery	Yes/No	Yes	
11	Applicable standards	PIESA 002, NRS 035 SABS IEC 60282-2 SABS IEC 60186 BS 137-part 2		
				

MARKING AND IDENTIFICATION

- Markings to conform to **SABS IEC 60282-2**
- Insulators shall be marked with the specified Electro-mechanical or mechanical failing load e.g. U70 BL.
- Insulators shall have indelible manufacturer's trademark and date of manufacture.

OTHER REQUIREMENTS

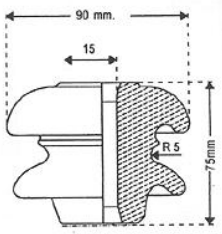
- There shall be no rivets in the parts that form the current path
- Water shall not be able to accumulate on any part of the equipment nor shall any feature introduce moisture into any component.
- The design shall incorporate all reasonable precautions and provisions for the safety of personnel concerned with the operation and maintenance of the same.
- The current path shall be such that load current shall only flow through high conductive materials such as copper and its alloys. Load current shall not be permitted to flow through ferrous components, springs, or spring-loaded mechanisms.
- All load current paths shall be so designed that the relevant parts of the assembly can carry the specified rated current without exceeding the permitted temperature rise in **SABS IEC 60282-2**
- Contacts shall be based on the line contact principle and there shall be no welds on the contact parts. The construction of the Drop out fuse base and the fuse link shall ensure their mutual alignment during closure.
- The solid link should have an eye and an operating tongue.

SUPPLIMENTARY NOTES

- Suppliers should give sufficient information including drawings (which must be brief, clear and to the point) on how their drop out fuse designs addresses the provided requirements. Suppliers can offer better alternatives that are of cost and technical benefits to the organisations without compromising on the quality.
- The drawings to be submitted by the tenderer must:
    - Show details of the insulator, the fuse carrier, the solid link, the upper contact, the lower contact, the cut-out base and the bracket for fixing to either wooden or steel cross arm.
    - Provided critical tolerances
- All tolerances should be as per PIESA 002: 1 2000
- Insulator fixing stem galvanized in accordance with **SABS 763**.
- The gusset below the tongue is require for strength, but should not limit the usable length of the torque
- The current path, shown only functionally, shall be continuous up to the terminal connector.
- Galvanized in accordance with **SABS 736**

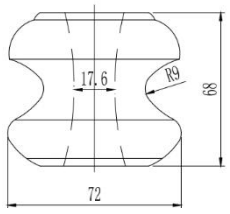
	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 1**
	SHACKLE INSULATOR	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description		Low Voltage Shackle Insulator	
2	Nominal system voltage	V	400	
3	System maximum voltage	V	400	
4	Power frequency	Hz	50	
5	Can be used in contamination environment	Yes/No	Yes	
6	Material	Porcelain		
7	Porcelain shall be sound, glazed and smooth	Yes/No	Yes	
8	Operating Temperature	^{0}C	-1 to 40	
9	Altitude above Sea Level	m	1400	
10	Maximum humidity	%	85	
11	Previous Type Tests certificate/results to be provided with bid	Yes/No	No	
12	Routine Tests Certificates/results to be provided on delivery	Yes/No	Yes	
13	Quality Assurance Certification to be provided with bid	Yes/No	Yes	
14	Drawings/brochures submitted with the bid	Yes/No	Yes	



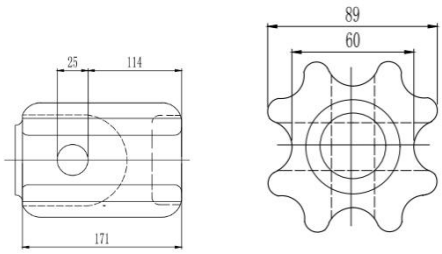
	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 1**
	REEL INSULATOR	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	Low Voltage Reel Insulator		
2	Nominal system voltage	V	400	
3	System maximum voltage	V	400	
4	Power frequency	Hz	50	
5	Can be used in contamination environment	Yes/No	Yes	
6	Material	Porcelain		
7	Porcelain shall be sound, glazed and smooth	Yes/No	Yes	
8	Operating Temperature	^{0}C	-1 to 40	
9	Altitude above Sea Level	m	1400	
10	Maximum humidity	%	85	
11	Previous Type Tests certificate/results to be provided with bid	Yes/No	No	
12	Routine Tests Certificates/results to be provided on delivery	Yes/No	Yes	
13	Quality Assurance Certification to be Provided with Bid	Yes/No	Yes	
14	Drawings/brochures submitted with the bid	Yes/No	Yes	



	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 1**
	STAY PORCELAIN INSULATOR	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	Porcelain Stay Insulator		
2	Leakage Distance	mm	65	
3	Power Frequency withstand voltage (Wet)	kV	30	
4	Dry Flash Over	kV	35	
5	Wet Flash Over	kV	30	
6	Ultimate Breaking Strength	kN	70	
7	Can be used in contamination environment	Yes/No	Yes	
8	Material	High Grade Glazed Porcelain		
9	Porcelain shall be sound, glazed and smooth	Yes/No	Yes	
10	Operating Temperature	^{0}C	-1 to 40	
11	Altitude above Sea Level	m	1400	
12	Maximum humidity	%	85	
13	Previous Type Tests certificate/results to be provided with bid	Yes/No	No	
14	Routine Tests Certificates/results to be provided on delivery	Yes/No	Yes	
15	Quality assurance ISO certification to be provided with bid	Yes/No	Yes	
16	Drawings/brochures submitted with the bid	Yes/No	Yes	



	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 3**
	CABLE MV CU/PVC/PVC/SWA/PVC 4 CORE COPPER 35 MILLIMETRE SQUARED 600/1000V	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	35mm^2 4 core CU/PVC/PVC/SWA/ PVC 600/1000V Cable		
2	Conductor Size	mm^2	5	
3	Current Rating (Ground/Air)	A	143/135	
4	Ground Temperature	^{0}C	25	
5	Ground Thermal Resistivity	K.m/W	1.2	
6	Depth of Laying	mm	800	
7	Operating Temperature	^{0}C	-1 to 40	
8	Method of Installation	Both in air and direct burial u/g		
9	Material of conductor	Stranded Annealed Copper		
10	Number of cores	No.	4	
11	Core identification (Phases and Neutral)	Red, Yellow, Blue & Black		
12	Rated Voltage ac (Uo/U)	V	600/1000	
13	Highest System Voltage	V	1100	
14	Maximum sustained conductor temperature	^{0}C	70	
15	Single layer steel armour	Yes/No	Yes	
16	Armour Diameter	As Per PIESA003-1, BS6346 or SANS1507		
17	Packaging/type of drum	Treated wooden		
18	Type of Outer Sheath	Ultraviolet stabilize PVC		
19	Length per drum	m	500	
20	Possible Exposure to sunlight	Yes/No	Yes	
21	Insulation material		PVC	
22	Bedding material	As per PIESA003-1, BS6346 or SANS1507		
23	Altitude	m	1400	
24	Ambient Air Temperature	^{0}C	30	
25	Relative humidity	%	85	

26	Previous Type Tests Report/Certificate to be provided with bid	Yes/No	No	
27	Routine Tests Report/Certificates to be provided on delivery	Yes/No	Yes	
28	Quality Assurance certification to be provided with bid	Yes/No	Yes	
29	Drawing showing Dimensions and Construction of the Cable to be submitted with bid	Yes/No	Yes	
30	Applicable Standards	PIESA003-1, BS6346 or SANS1507		

Notes:

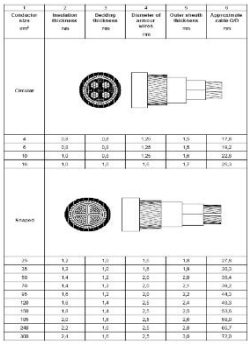
- **Marking**
  - The external surface of the cable shall be legibly embossed with the following information on two lines running parallel to the length of the cable, approximately equally spaced around the circumference of the cable.

    Rural Electrification Authority (REA), Electric Cable 600/1000V
    Manufacturer's Name 4x35mm2 CU/PVC/PVC/SWA/PVC

  - The bedding material is not included in the CU/PVC/PVC/SWA/PVC naming convention
  - In addition, the cable shall be sequentially marked, by indelible printing, indenting or other suitable means, at 1m intervals, to indicate the approximate length of cable remaining on the drum. The numbers shall start with 001, 1m from the inner end of the cable and continue every metre to the outer end. The start and finish lengths of sequential markings (if not 0 to 500m) shall be indicated on the cable drum
  - Any material used on the cable should not be hygroscopic.
  - Suppliers to submit manufacturers' complete cable technical specification with bid. Values of parameters to be given for both in air and direct burial underground

CODE:	DESCRIPTION OF MATERIAL:	Page 3 of 3
	CABLE MV CU/PVC/PVC/SWA/PVC 4 CORE COPPER 35 MILLIMETRE SQUARED 600/1000V	

Fig 1: 4-core 600/1000V Cables with circular or shaped stranded copper conductors, PVC insulation, galvanized steel wire armour and PVC outer sheath.



	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 3**
	CABLE MV CU/PVC/PVC/SWA/PVC 4 CORE COPPER 70 MILLIMETRE SQUARED 600/1000V	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	70mm^2 4 core CU/PVC/PVC/SWA/ PVC 600/1000V Cable		
2	Conductor Size	mm^2	70	
3	Current Rating (Ground/Air)	A	210/207	
4	Ground Temperature	^{0}C	25	
5	Ground Thermal Resistivity	K.m/W	1.2	
6	Depth of Laying	mm	800	
7	Operating Temperature	^{0}C	-1 to 40	
8	Method of Installation	Both in air and direct burial u/g		
9	Material of conductor	Stranded Annealed Copper		
10	Number of cores	No.	4	
11	Core identification (Phases and Neutral)	Red, Yellow, Blue & Black		
12	Rated Voltage ac (Uo/U)	V	600/1000	
13	Highest System Voltage	V	1100	
14	Maximum sustained conductor temperature	^{0}C	70	
15	Single layer steel armour	Yes/No	Yes	
16	Armour Diameter	As Per PIESA003-1, BS6346 or SANS1507		
17	Packaging/type of drum	mm	Treated wooden	
18	Type of Outer Sheath	Ultraviolet stabilize PVC		
19	Length per drum	M	500	
20	Possible Exposure to sunlight	Yes/No	Yes	
21	Insulation material		PVC	
22	Bedding material	As per PIESA003-1, BS6346 or SANS1507		
23	Altitude	m	1400	
24	Ambient Air Temperature	^{0}C	30	
25	Relative humidity	%	85	

26	Previous Type Tests Report/ Certificate to be provided with bid	Yes/No	No	
27	Routine Tests Report/Certificates to be provided on delivery	Yes/No	Yes	
28	Quality Assurance certification to be provided with bid	Yes/No	Yes	
29	Drawing showing Dimensions and Construction of the Cable to be submitted with bid	Yes/No	Yes	
30	Applicable Standards	PIESA003-1, BS6346 or SANS1507		

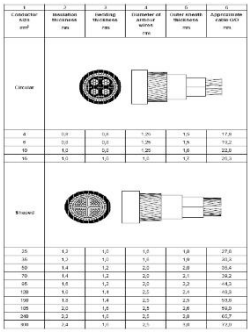
Notes:

- **Marking**
  - The external surface of the cable shall be legibly embossed with the following information on two lines running parallel to the length of the cable, approximately equally spaced around the circumference of the cable.

    Rural Electrification Authority (REA), Electric Cable 600/1000V
    Manufacturer's Name 4x70mm2 CU/PVC/PVC/SWA/PVC

  - The bedding material is not included in the CU/PVC/PVC/SWA/PVC naming convention
  - In addition, the cable shall be sequentially marked, by indelible printing, indenting or other suitable means, at 1m intervals, to indicate the approximate length of cable remaining on the drum. The numbers shall start with 001, 1m from the inner end of the cable and continue every metre to the outer end. The start and finish lengths of sequential markings (if not 0 to 500m) shall be indicated on the cable drum
  - Any material used on the cable should not be hygroscopic.
  - Suppliers to submit manufacturers' complete cable technical specification with bid. Values of parameters to be given for both in air and direct burial underground

Fig 1: 4-core 600/1000V Cables with circular or shaped stranded copper conductors, PVC insulation, galvanized steel wire armour and PVC outer sheath.



	TECHNICAL SPECIFICATION	Doc Number: Version: 1

CODE:	DESCRIPTION OF MATERIAL:	Page 1 of 1
	INSULATED CONDUCTOR COPPER 70 MILLIMETRE SQUARED	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	70mm^2 stranded Insulated copper Conductor single core		
2	Cross section area	mm^2	70	
3	Rated Voltage ac (Uo/U)	V	600/1000	
4	Highest System Voltage	V	1100	
5	Maximum sustained conductor temperature	^{0}C	70	
6	Colour of Insulation	Green/Yellow		
7	Material of Conductor	Annealed hard drawn copper		
8	Maximum conductor resistance @ 20^{0}C	Ohm/km	0.25	
9	Type	Stranded		
10	Insulation Material	PVC		
11	Operating Temperature	^{0}C	-1 to 40	
12	Altitude above sea level	m	1400	
13	Maximum Humidity	%	85	
14	Packaging/type of drum	Treated wooden drums		
15	Possible Exposure to sunlight	Yes/No	Yes	
16	Previous Type Tests Report/ Certificate to be provided upon client request	Yes/No	Yes	
17	Routine Tests Report/Certificates to be provided on delivery	Yes/No	Yes	
18	Quality Assurance certification to be provided with bid	Yes/No	Yes	
19	Drawing showing Dimensions of the Cable to be submitted with bid	Yes/No	Yes	
20	Applicable Standards	PIESA003-1, BS6346 or SANS1507		

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 1**
	CONDUCTOR HDC BARE COPPER 70 MILLIMETRE SQUARED	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	70mm^2 stranded bare copper Conductor		
2	Cross section area	mm^2	70	
3	Material of Conductor	Annealed hard drawn copper		
4	Maximum conductor resistance @ 20^{0}C	Ohm/km	0.25	
5	Type	Stranded		
6	Operating Temperature	^{0}C	-1 to 40	
7	Altitude above sea level	m	1400	
8	Maximum Humidity	%	85	
9	Packaging/type of drum	Treated wooden drums		
10	Previous Type Tests Report/ Certificate to be provided upon client request	Yes/No	Yes	
11	Routine Tests Report/Certificates to be provided on delivery	Yes/No	Yes	
12	Quality Assurance certification to be provided with bid	Yes/No	Yes	
13	Applicable Standards	PIESA003-1, BS6346 or SANS1507		

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 1**
	STAY WIRE STRANDED 7/4 MILLIMETRES	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	7/4mm Galvanised Steel Stay Wire		
2	Material	Galvanised Steel		
3	Stranding	No/mm	7/4	
4	Breaking Strength of Wire	kN	8.534	
6	Minimum Breaking Load for conductor	kN	62.00	
7	Operating Temperature	^{0}C	-1 to 40	
8	Altitude above sea level	m	1400	
9	Maximum Humidity	%	85	
10	Packaging/type of drum	Treated wooden drums		
11	Length per drum	mm	5000	
12	Quality Assurance Certificate to be provided with bid	Yes/No	Yes	
13	Routine test Report/Certificate to be provided on delivery	Yes/No	Yes	
14	Applicable Standards	BS 183		

Notes:

- Earth-wires are in accordance with the following standards:
  - IEC 888 – Zinc Coated Steel Wires for Stranded Conductors
  - IEC 1089 – Round wire concentric lay overhead electrical stranded conductors
  - BS 183 – Specification for General Purpose Galvanised Steel Wire Strand
  - BS 443 – Galvanised Coating on Wire

	TECHNICAL SPECIFICATION	Doc Number: Version: 1

CODE:	DESCRIPTION OF MATERIAL:	Page 1 of 1
	STAY WIRE/ AERIAL EARTH WIRE STRANDED 7/2.6 MILLIMETRES	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	7/2.6mm Galvanised steel earth wire		
2	Material	Galvanised Steel		
3	Stranding	No/mm	7/2.6	
4	Minimum Breaking Load for conductor	kN	43.60	
5	Nominal Tensile Grade Of the aerial earth wire	Nm/mm^2	1100	
6	Operating Temperature	^0C	-1 to 40	
7	Altitude above sea level	m	1400	
8	Maximum Humidity	%	85	
9	Packaging/type of drum	Treated wooden drums		
10	Length per drum	mm	5000	
11	Modulus of elasticity	MPa	75500	
12	Coefficient of linear expansion	mm/C^0	$11.5x10^{-6}$	
13	Nominal mass – Bare	kg/km	300	
14	Quality Assurance Certificate to be provided with bid	Yes/No	Yes	
15	Routine test Report/Certificate to be provided on delivery	Yes/No	Yes	
16	Applicable Standards	BS 183		

Notes:

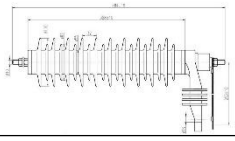
- Earth-wires are in accordance with the following standards:
  - IEC 888 – Zinc Coated Steel Wires for Stranded Conductors
  - IEC 1089 – Round wire concentric lay overhead electrical stranded conductors
  - BS 183 – Specification for General Purpose Galvanized Steel Wire Strand
  - BS 443 – Galvanized Coating on Wire

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 1**
	400V POLE-MOUNTED CUT-OUT (BS88 J-TYPE FUSES)	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	Pole Mounted Low Voltage Fused Cut-Out complete with carrier and 200A fuse		
2	Rated Voltage	V	415	
3	Rated Current	A	400	
4	Supply Frequency	Hz	50	
5	Material for Body and Cover	Weather and UV-Resistant PBT (polybutylene terephthalate) and ASA (Acrylic Styrene Acrylonitrile) blended material, Glass filled		
6	Material for Phase Busbars	Electro-Tin-Plated Copper		
7	Material fir Fuse Wedge Contacts	Brass		
8	Material for Cable Sealing Glands	Polyurethane Foam		
9	Exposure Rating (cover in place)	IP43		
10	Flammability Rating	UL94 V2, self-extinguishing 30 seconds at 960°C		
11	Size of Fixed Studs for Cable Lug	mm	12	
12	Maximum Size of Incoming Cable	mm^2	300	
13	Operating Ambient Temperature	°C	1-40	
14	Relative Humidity	%	85	
15	Altitude	m	1400	
16	Exposure to Sunlight	Yes/No	Yes	
Other requirements				
17	Drawings showing dimensions to be provided with the bid	Yes/No	Yes	
18	Previous Type Tests Report/ Certificate to be provided upon client request	Yes/No	Yes	
19	Routine Tests Report/Certificates to be provided on delivery	Yes/No	Yes	
20	Applicable standard(s)	BS 7656:1993 (Carrier); BS 88 (Fuse); BS EN 60529 (IP Rating)		
	 			

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 2**
	ARRESTOR LIGHTNING 33kV 10kA LINE TYPE METAL OXIDE GAPLESS	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Type	33kV Gapless Type Metal Oxide Surge Arrester – Distribution Class		
2	Nominal Voltage	kV	33	
3	Highest System Voltage	kV	36	
4	Power frequency	Hz	50	
5	Basic Insulation Level (BIL)	kV	170	
	Ratings and type of surge arrester			
6	Rated voltage of surge arrester	kV	29	
7	Nominal, 8/20 µs, discharge current rating of surge arrester	kA	10	
8	Maximum continuous operating voltage of surge arrester	kV	22	
9	Gapless or gapped type metal-oxide surge arrester	Gapless		
10	Insulation Materials	High temperature vulcanised Silicon Rubber		
11	Cantilever strength of surge arrester	Nm	300	
12	Rated Frequency of Surge Arrester	Hz	50	
13	Design altitude of surge arrester (above sea level)	m	1400	
14	Design ambient temperature of surge Arrester	^{0}C	-1 to 40	
15	Minimum phase-to-ground specific creepage distance of surge arrester	mm/kV	25	
	Automatic earth lead disconnectors requirements			
16	Automatic earth lead disconnectors fitted	Yes/No	Yes	
17	Is the automatic earth lead disconnector tested in accordance with IEC 60099-4?	Yes/No	Yes	
18	Corrosion protection of metal and alloy parts: galvanising specification and/or stainless-steel grad.	To SABS 763, 316		

19	Minimum one-minute wet power frequency withstand voltage of external insulation of surge arrester housing	kV	70	
20	Maximum steep current impulse residual voltage for a 10 kA, 1/20 µs, discharge current	kV	99.7	
21	Maximum lightning impulse residual voltage for a 10 kA, 8/20 µs, discharge current	kV	91.8	
22	Lightning, 1,2/50 µs, impulse withstand level of external insulation of surge arrester housing	kV	170	
23	Line discharge class rating	Class	1	
24	Long duration current, 2 000 µs, impulse withstand	A	250	
25	High current, 4/10 µs, impulse withstand	kA	100	
26	Previous Type Test reports/certificate to be provided with bid	Yes/No	Yes	
27	Routine test results/certificate to be provided on delivery	Yes/No	Yes	
28	Drawing showing dimensions of the arrestor to be provided with the bid	Yes/No	Yes	
29	Applicable Standards	IEC 60099		
				

Special Clause

Tenderers may submit alternative offers which may be of financial or technical benefit to REA.

	TECHNICAL SPECIFICATION	Doc Number: Version: 1

CODE:	DESCRIPTION OF MATERIAL:	Page 1 of 2
	ARRESTOR LIGHTNING 11kV 10kA LINE TYPE METAL OXIDE GAPLESS	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Type	11kV gapless type metal oxide surge arrester – Distribution class		
2	Nominal Voltage	kV	11	
3	Highest System Voltage	kV	12	
4	Power frequency	Hz	50	
5	Basic Insulation Level (BIL)	kV	95	
	Ratings and type of surge arrester			
6	Rated voltage of surge arrester	kV	10	
7	Nominal, 8/20 µs, discharge current rating of surge arrester	kA	10	
8	Maximum continuous operating voltage of surge arrester	kV	7.3	
9	Gapless or gapped type metal-oxide surge arrester	Gapless		
10	Insulation Materials	High temperature vulcanised Silicon Rubber		
11	Cantilever strength of surge arrester	Nm	300	
12	Rated Frequency of Surge Arrester	Hz	50	
13	Design altitude of surge arrester (above sea level)	m	1400	
14	Design ambient temperature of surge Arrester	^{0}C	-1 to 40	
15	Minimum phase-to-ground specific creepage distance of surge Arrester	mm/kV	25	
	Automatic earth lead disconnectors requirements			
16	Automatic earth lead disconnectors fitted	Yes/No	Yes	
17	Is the automatic earth lead disconnector tested in accordance with IEC 60099-4?	Yes/No	Yes	
18	Corrosion protection of metal and alloy parts: galvanising specification and/or stainless-steel grad.	To SABS 763, 316		

19	Minimum one-minute wet power frequency withstand voltage of external insulation of surge arrester housing	kV	28	
20	Maximum steep current impulse residual voltage for a 10 kA, 1/20 µs, discharge current	kV	50	
21	Maximum lightning impulse residual voltage for a 10 kA, 8/20 µs, discharge current	kV	40	
22	Lightning, 1,2/50 µs, impulse withstand level of external insulation of surge arrester housing	kV	95	
23	Line discharge class rating	Class	1	
24	Long duration current, 2 000 µs, impulse withstand	A	250	
25	High current, 4/10 µs, impulse withstand	kA	100	
26	Previous Type Test Report/Certificate to be provided with bid	Yes/No	Yes	
27	Routine test Report/Certificate to be provided on delivery	Yes/No	Yes	
28	Drawing showing dimensions of the arrestor to be provided with the bid	Yes/No	Yes	
29	Applicable Standards	IEC 60099, SABS 763, 316		

Special Clause

Tenderers may submit alternative offers which may be of financial or technical benefit to REA.

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	DESCRIPTION OF MATERIAL:	Page 1 of 3
	STAY ASSEMBLY 2.5 METRES COMPLETE WITH BASE PLATE, 3 GUY GRIPS AND 1 TOP MAKE-OFF	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	Adjustable Stay assembly complete with stay rod, bow, thimble, base plate, 3 Guy Grips and 1 top make-off		
2	Material		Mild steel, Hot Dip Galvanised	
3	Grade of Steel		300W	
4	Corrosion protection		Galvanised to SABS 763	
6	Base Plate Dimensions	mm	450 x 450 x 6mm	
7	Stay Rod Dimensions		M20x2.5m	
8	Thimble	To take 7/4mm stay wire		
9	Minimum ultimate tensile strength of complete stay assembly	kN	34	
10	Ambient operating temperature	^{o}C	-1 to 40	
11	Minimum Humidity	%	85	
12	Previous type test certificate/results/reports to be provide upon client request	Yes/No	Yes	
13	Detailed drawings of stay rod, anchor rod type, stay base plate and thimble to be provided with the bid	Yes/No	Yes	
14	Quality assurance certificate/manuals to be provided with the bid.	Yes/No	Yes	
15	Route test results/certificate to be provide on delivery	Yes/No	Yes	
16	Applicable standard		PIESA 1007	

Notes:

- The guy grips and top make off shall be suitable for use with stay strand (stay wire) to BS 183 and of the following characteristics.
  - Size of stay wire: 7/4mm SWG
  - Minimum Breaking Load of stay wire: 62KN

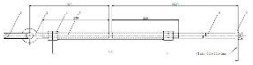
- The guy grip and top make off shall be manufactured from galvanized steel wire of such quality that when applied to the specified stay wire, they hold full rated breaking strength of the stay wire.

- The guy grips and top make off shall be capable of being removed and reapplied to their original position on the stay wire up to three (3) times for the purpose of stay adjustment during line construction procedures.

- Stay wires are in accordance with the following standards:
  - IEC 888 – Zinc Coated Steel Wires for Stranded Conductors
  - IEC 1089 – Round wire concentric lay overhead electrical stranded conductors
  - BS 183 – Specification for General Purpose Galvanised Steel Wire Strand
  - BS 443 – Galvanised Coating on Wire

DRAWINGS

1. **Stay Assembly**

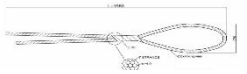


No.	Description	Material	QTY
1	Stay thimble	Hot Dipped galvanized Steel	1
2	eye bolt	Hot Dipped galvanized Steel	1
3	Nut	Hot Dipped galvanized Steel	4
4	Nut	Hot Dipped galvanized Steel	1
5	Nut	Hot Dipped galvanized Steel	1
6	Rod	Hot Dipped galvanized Steel	1
7	Stay plate	Hot Dipped galvanized Steel	1

2. **Guy Grip**



3. **Pole Top Make-off**



	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 1**
	BARBED WIRE – TRADITIONAL TWIST	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	Barbed Wire		
2	Wire type	Two twisted		
3	Number of spikes	No.	4	
4	Spikes space at distance	mm	75 – 100	
5	Horizontal wire barbed wire diameter	mm	1.7mm – 2.5mm	
6	Spike wire diameter	mm	1.5mm – 2.0mm	
7	Strength of horizontal line wire	N/mm^2	1150	
8	Strength of barb wire	N/mm^2	700/ 900	
9	Stranded wire breaking load	N(min)	4230	
10	Material treatment	Steel (Hot dipped galvanized)		
11	Barb length	mm	16	

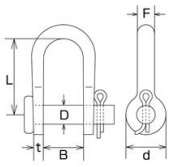
	TECHNICAL SPECIFICATION	Doc Number: Version: 1

CODE:	DESCRIPTION OF MATERIAL:	Page 1 of 1
	SUSPENSION CLAMP	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	Suspension Clamp		
2	Minimum Failing Load	kN	70	
3	Material for Body	Aluminum Alloy		
4	Material for Bolts & Nuts	Grade 8.8, Hot-Dip Galvanised Steel		
5	Material for Pin	Stainless Steel		
6	Applicable to Conductor Size (ACSR)	mm^2	100	
7	Quality Assurance Certificate	Yes/No	Yes	
8	Operating Ambient Temperature	^oC	1-40	
9	Relative Humidity	%	85	
10	Altitude	m	1400	
	Drawing			

	TECHNICAL SPECIFICATION	Doc Number: Version: 1

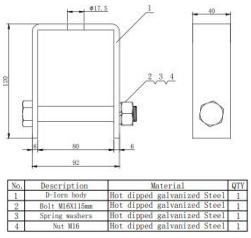
CODE:	DESCRIPTION OF MATERIAL:	Page 1 of 1
	D-SHACKLE	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	D-Shackle		
2	Minimum Failing Load	kN	70	
3	Material for Body	Grade 8.8, Hot-Dip Galvanised Steel		
4	Material for Bolts & Nuts	Grade 8.8, Hot-Dip Galvanised Steel		
5	Material for Pin	Stainless Steel		
6	Quality Assurance Certificate	Yes/No	Yes	
7	Operating Ambient Temperature	°C	1-40	
8	Relative Humidity	%	85	
9	Altitude	m	1400	
	Drawing			

NOTE:
D≥8mm, L≥33mm, F≥7.5mm, d≥17mm, B≥17mm

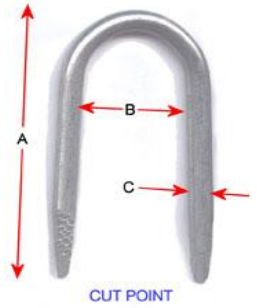
	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 1**
	LOW VOLTAGE D-IRON	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	Low voltage D-Iron		
2	Nominal system voltage	V	400	
3	System maximum voltage	V	400	
4	Power frequency	Hz	50	
5	Temperature range	^{0}C	-40^{0}C to +40^{0}C	
6	Failing load	%	85	
7	Minimum flashover voltage power frequency dry	kV	16	
8	Minimum flashover voltage power frequency wet	kV	7	
9	Weight	kg	0	
10	Material	Steel (Hot dipped galvanized)		
11	Quality Assurance Certification to be provided with bid	Yes/No	Yes	
12	Drawings/brochures submitted with the bid	Yes/No	Yes	

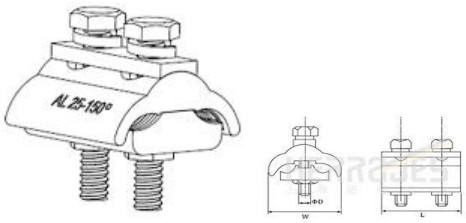


	TECHNICAL SPECIFICATION	Doc Number: Version: 1

CODE:	DESCRIPTION OF MATERIAL:	Page 1 of 1
	WOODEN POLE STAPLE	

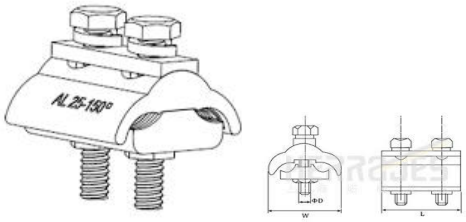
ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	Hot Dip Galvanized Diamond Point Staples		
2	Wire Dia. (C)	mm	4	
3	Overall Length (A)	mm	50	
4	Inside Spread (B)	mm	12	
5	Material	Steel (Hot-Dip Galvanized)		
6	Drawing			

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 1**
	PARALLEL GROOVE (PG) CLAMP 50 MILLIMETRE SQUARED	

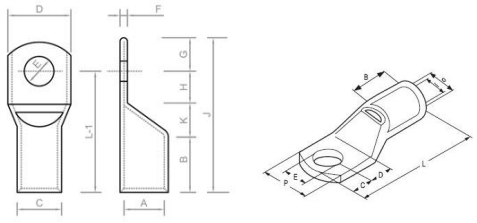
ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	Parallel Groove (PG) Clamp		
2	Size of Galvanized Bolts & Nuts	mm	M8	
3	Minimum Number of Bolts & Nuts c/w with flat & spring washers	No.	2	
4	Material for Bolts & Nuts	Grade 8.8, Hot-Dip Galvanised		
5	Material for Body	High Strength, Corrosion-Resistant, Aluminum 99.5		
6	Material for Pressure Pad	Aluminum Alloy		
7	Applicable to Conductor Size (ACSR)	mm^2	50	
8	Drawings			

	TECHNICAL SPECIFICATION	Doc Number: Version: 1

CODE:	DESCRIPTION OF MATERIAL:	Page 1 of 1
	PARALLEL GROOVE (PG) CLAMP 100 MILLIMETRE SQUARED	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	Parallel Groove (PG) Clamp		
2	Size of Galvanized Bolts & Nuts	mm	M8	
3	Minimum Number of Bolts & Nuts c/w with flat & spring washers	No.	2	
4	Material for Bolts & Nuts	Grade 8.8, Hot-Dip Galvanised		
5	Material for Body	High Strength, Corrosion-Resistant, Aluminum 99.5		
6	Material for Pressure Pad	Aluminum Alloy		
7	Applicable to Conductor Size (ACSR)	mm^2	100	
8	Drawings			

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 2**
	35MM X 16MM CABLE LUG,	

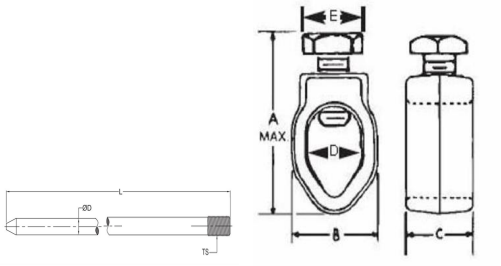
ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	Mechanical Connector, Tinned Copper Cable Lug, 35/16mm		
2	Conductor Size	mm^2	35	
3	Palm Hole Size	mm	To take M16 Bolt	
4	Maximum System Voltage	kV	36	
5	Material	Tinned Copper		
6	Class	A		
7	Markings	As per Manufacturer's mark and serial number, conductor range, palm hole size		
8	Grooved internal surface of conductor hole	Yes/No	Yes	
9	Lengthwise striated inserts for at least16mm2 conductor to be provided	Yes/No	Yes	
10	Operating Ambient Temperature	°C	1-40	
11	Relative Humidity	%	85	
12	Altitude	m	1400	
13	Exposure to Sunlight	Yes/No	Yes	
14	Quality Assurance Certification to be provided with bid	Yes/No	Yes	
17	Applicable standard(s)	BS 4579 or Equivalent		
				

	TECHNICAL SPECIFICATION	Doc Number: Version: 1

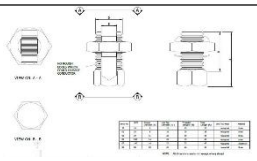
CODE:	DESCRIPTION OF MATERIAL:	Page 1 of 1
	PREFORMED BIDDERS	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	Preformed Binder		
2	Overall Length	mm	685	
3	Number of Wire	No.	4	
4	Cross section area of wire	mm^2		
5	Material	Aluminum Alloy		
6	Applicable to Conductor Size (ACSR)	mm^2	50	
7	Drawing			

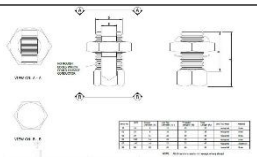
	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	DESCRIPTION OF MATERIAL:	Page 1 of 1
	COPPER CLAD STEEL EARTH ROD	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	Copper Clad Steel Earth Rod c/w Rod to Cable Clamp		
2	Type	Threaded M16x2		
3	Material	Copper		
4	Purity of Copper	%	99.9	
5	Steel Tensile Strength	MPa	550-700	
6	Thickness of Copper	mm	0.254	
7	Rod Diameter	mm	16	
8	Length	m	2.5	
9	Grade	Oxygen Free, ETP, Phosphorised		
10	Ends	Chamfered and Pointed		
11	Quality Assurance Certification to be provided with bid	Yes/No	Yes	
12	Drawings/brochures submitted with the bid	Yes/No	Yes	
	DRAWING  **NOTE:** L=2400mm			

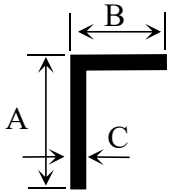
	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 1**
	BRASS LINE TAP 100MILLIMETRE	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	100mm^2 Brass line tap		
2	Conductor cross section area	mm	100	
3	Material	Brass As Per BS 249		
4	Corrosion protection		Tin platted	
5	Dimensions	As per Drawing below		
Other requirements				
6	Drawings showing dimensions to be provided with the bid	Yes/No	Yes	
7	Quality Assurance certification to be provided with bid	Yes/No	Yes	
8	Applicable standard(s)	IEC Standards		
9	Drawing			

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 1**
	BRASS LINE TAP 50MILLIMETRE	

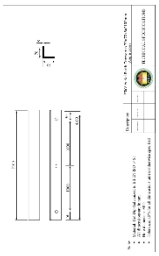
ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	$50mm^2$ Brass line tap		
2	Conductor cross section area	mm	50	
3	Material	Brass As Per BS 249		
4	Corrosion protection		Tin platted	
5	Dimensions	As per Drawing below		
Other requirements				
6	Drawings showing dimensions to be provided with the bid	Yes/No	Yes	
7	Quality Assurance certification to be provided with bid	Yes/No	Yes	
8	Applicable standard(s)	IEC Standards		
9	Drawing			

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 2**
	GALVANISED STEEL CROSSARMS 33kV AERIAL EARTH 70x70x8x2100 MILLIMETRES	

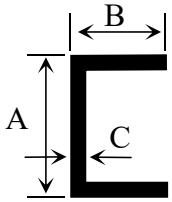
ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	33kV Aerial Earth Galvanized Steel Crossarm (70x70x8x2100mm)		
2	Channel Height (A)	mm	70	
	Flange Width (B)	mm	70	
3	Web Thickness (C)	mm	8	
4	Overall Length	mm	2100	
5	Material	Hot dip galvanized Steel as per ISO1461		
6	Grade of Steel	S355		
7	Position of Holes	As per provided detailed drawing on next page		
Other requirements				
8	Drawings showing dimensions to be provided with the bid	Yes/No	Yes	
9	Previous type test of steel to be provided upon client request	Yes/No	Yes	
10	Quality assurance certificate to be provided with the bid	Yes/No	Yes	
11	Applicable standard(s)	IEC Standards		
12	Drawing			

	TECHNICAL SPECIFICATION	Doc Number: Version: 1

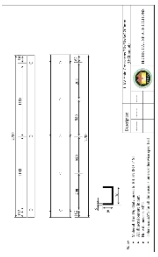
CODE:	DESCRIPTION OF MATERIAL:	Page 2 of 2
	GALVANISED STEEL CROSSARMS 33kV AERIAL EARTH 70x70x8x2100 MILLIMETRES	



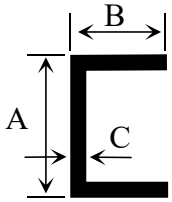
	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 2**
	GALVANISED STEEL CROSSARMS 11kV MAIN 70x50x6x2700 MILLIMETRES	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	11kV Main Galvanized Steel Crossarm (70x50x6x2700mm)		
2	Channel Height (A)	mm	70	
	Flange Width (B)	mm	50	
3	Web Thickness (C)	mm	6	
4	Overall Length	mm	2700	
5	Material	Hot dip galvanized Steel as per ISO1461		
6	Grade of Steel	S355		
7	Position of Holes	As per provided detailed drawing on next page		
Other requirements				
8	Drawings showing dimensions to be provided with the bid	Yes/No	Yes	
9	Previous type test of steel to be provided upon client request	Yes/No	Yes	
10	Quality assurance certificate to be provided with the bid	Yes/No	Yes	
11	Applicable standard(s)	IEC Standards		
12	Drawing			

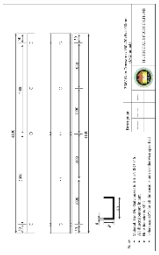
	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 2 of 2**
	GALVANISED STEEL CROSSARMS 11kV MAIN 70x50x6x2700 MILLIMETRES	



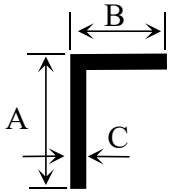
	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 2**
	GALVANISED STEEL CROSSARMS 33kV MAIN 180x70x8x4100 MILLIMETRES	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	33kV Main Galvanized Steel Crossarm (180x70x8x4100mm)		
2	Channel Height (A)	mm	180	
	Flange Width (B)	mm	70	
3	Web Thickness (C)	mm	8	
4	Overall Length	mm	4100	
5	Material	Hot dip galvanized Steel as per ISO1461		
6	Grade of Steel	S355		
7	Position of Holes	As per provided detailed drawing on next page		
Other requirements				
8	Drawings showing dimensions to be provided with the bid	Yes/No	Yes	
9	Previous type test of steel to be provided upon client request	Yes/No	Yes	
10	Quality assurance certificate to be provided with the bid	Yes/No	Yes	
11	Applicable standard(s)	IEC Standards		
12	Drawing			

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 2 of 2**
	GALVANISED STEEL CROSSARMS 33kV MAIN 180x70x8x4100 MILLIMETRES	

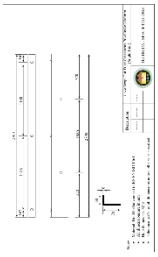


	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 2**
	GALVANISED STEEL CROSSARMS 11kV DROP-OUT FUSE 70x60x6x2700 MILLIMETRES	

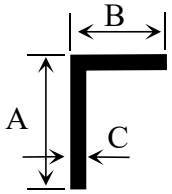
ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	11kV Drop-Out Fuse/Solid Link Galvanized Steel Crossarm (70x60x6x2700mm)		
2	Channel Height (A)	mm	70	
	Flange Width (B)	mm	60	
3	Web Thickness (C)	mm	6	
4	Overall Length	mm	2700	
5	Material	Hot dip galvanized Steel as per ISO1461		
6	Grade of Steel	S355		
7	Position of Holes	As per provided detailed drawing on next page		
Other requirements				
8	Drawings showing dimensions and position of holes to be provided with the bid	Yes/No	Yes	
9	Previous type test Report/Certificate for the steel to be provided upon client request	Yes/No	Yes	
10	Quality Assurance ISO certification to be provided with bid	Yes/No	Yes	
11	Applicable standard(s)	IEC Standards		
12	Drawing			

	TECHNICAL SPECIFICATION	Doc Number: Version: 1

CODE:	DESCRIPTION OF MATERIAL:	Page 2 of 2
	GALVANISED STEEL CROSSARMS 11kV DROP-OUT FUSE 70x60x6x2700 MILLIMETRES	

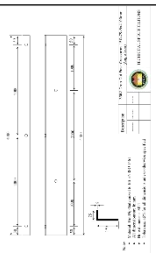


	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 2**
	GALVANISED STEEL CROSSARMS 33kV DROP-OUT FUSE 150x75x8x4100 MILLIMETRES	

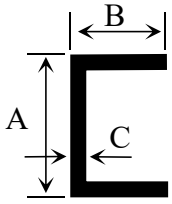
ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	33kV Drop-Out Fuse/Solid Link Galvanized Steel Crossarm (150x75x8x4100mm)		
2	Channel Height (A)	mm	150	
	Flange Width (B)	mm	75	
3	Web Thickness (C)	mm	8	
4	Overall Length	mm	4100	
5	Material	Hot dip galvanized Steel as per ISO1461		
6	Grade of Steel	S355		
7	Position of Holes	As per provided detailed drawing on next page		
Other requirements				
8	Drawings showing dimensions to be provided with the bid	Yes/No	Yes	
9	Previous type test of steel to be provided upon client request	Yes/No	Yes	
10	Quality assurance certificate to be provided with the bid	Yes/No	Yes	
11	Applicable standard(s)	IEC Standards		
12	Drawing			

	TECHNICAL SPECIFICATION	Doc Number: Version: 1

CODE:	DESCRIPTION OF MATERIAL:	Page 2 of 2
	GALVANISED STEEL CROSSARMS 33kV DROP-OUT FUSE 150x75x8x4100 MILLIMETRES	

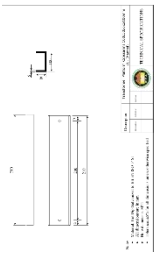


	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	DESCRIPTION OF MATERIAL:	Page 1 of 2
	GALVANISED STEEL CROSSARMS TRANSFORM PLATFORM 100x50x6x2100 MILLIMETRES	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	Transformer Platform Galvanized Steel Crossarm (100x50x6x2100mm)		
2	Channel Height (A)	mm	100	
	Flange Width (B)	mm	50	
3	Web Thickness (C)	mm	6	
4	Overall Length	mm	2100	
5	Material	Hot dip galvanized Steel as per ISO1461		
6	Grade of Steel	S355		
7	Position of Holes	As per provided detailed drawing on next page		
Other requirements				
8	Drawings showing dimensions to be provided with the bid	Yes/No	Yes	
9	Previous type test of steel to be provided upon client request	Yes/No	Yes	
10	Quality Assurance Certification to be provided with bid	Yes/No	Yes	
11	Applicable standard(s)	IEC Standards		
12	Drawing			

	TECHNICAL SPECIFICATION	Doc Number: Version: 1

CODE:	DESCRIPTION OF MATERIAL:	Page 2 of 2
	GALVANISED STEEL CROSSARMS TRANSFORM PLATFORM 100x50x6x2100 MILLIMETRES	



	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 2**
	SUSPENSION CLAMP FOR AERIAL BUNDLED CABLE (ABC) 25-95 MILLIMETRE	

ITEM	TECHNICAL DESCRIPTION		UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description		Suspension Clamp for Aerial Bundled Cable (ABC) 16-35mm		
2	Rated Voltage		kV	0.6	
3	Minimum Breaking Load		kN	4.5	
4	Number of Cores		No.	01	
5	Applicable to Conductor Size		mm	25-95	
6	Materials for Non-Metallic parts of Fitting		Ultraviolet stabilized and fire retardant materials		
7	Materials for Ferrous parts of fitting		Hot Dip Galvanized		
8	Colour of Fitting Insulating Parts		Black		
9	Operating Ambient Temperature		°C	1-40	
10	Relative Humidity		%	85	
11	Altitude		m	1400	
12	Previous type Tests results/certificate to be provided upon client request:	Dielectric of fitting mounted on cable	Yes/No	Yes	
		Accelerated weathering test	Yes/No	Yes	
		Tensile Test	Yes/No	Yes	
13	Drawings showing design details to be provided with the bid		Yes/No	Yes	
14	Quality assurance certificate to be provided with the bid		Yes/No	Yes	
15	Routine tests to be provided on delivery		Yes/No	Yes	
16	Applicable Standards		PIESA 1018-4		



NOTES:

- The clamp shall be designed to hang LV–ABC cable with insulated neutral conductor. The neutral conductor shall be fixed by an adjustable grip device. A movable link shall allow longitudinal and transversal movement of the clamp body.
- The clamp shall be designed to be easily fixed to the poles by eye hook.
- The clamp shall have a moveable (articulated) connecting link to allow a degree of movement and flexibility between the suspension clamp and the support.
- The clamps and the movable links shall be made of weather and Ultraviolet resistant glass fiber reinforced polymer of at least 1.5mm thick and shall provide an additional insulation between the cable and the pole.
- Locking mechanism shall be wedge type self-locking. Wedges shall be made of high strength, climatic resistance Engineering Plastic with glass fibre.
- The clamp shall sustain a maximum angle of deviation of 60° of the conductors and shall hold the supporting conductor without any slippage to within 5% of the specified breaking force of the supporting conductor.

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 2**
	STRAIN CLAMP FOR AERIAL BUNDLED CABLE (ABC) 25-95 MILLIMETRE	

ITEM	TECHNICAL DESCRIPTION		UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description		Strain Clamp for Aerial Bundled Cable (ABC) 25-95mm		
2	Rated Voltage		kV	0.6	
3	Minimum Breaking Load		kN	10	
4	Number of Cores		No.	01	
5	Applicable to Conductor Size		mm	25-95	
6	Materials for Non-Metallic parts of Fitting		Ultraviolet stabilized and fire retardant materials		
7	Materials for Ferrous parts of fitting		Hot Dip Galvanized		
8	Colour of Fitting Insulating Parts		Black		
9	Operating Ambient Temperature		°C	1-40	
10	Relative Humidity		%	85	
11	Altitude		m	1400	
12	Previous type Tests results/ certificate to be provided upon client request:	Dielectric of fitting mounted on cable	Yes/No	Yes	
		Accelerated weathering test	Yes/No	Yes	
		Tensile Test	Yes/No	Yes	
13	Drawings showing design details to be provided with the bid		Yes/No	Yes	
14	Quality assurance certificate to be provided with the bid		Yes/No	Yes	
15	Routine tests to be provided on delivery		Yes/No	Yes	
16	Applicable Standards		BS EN 50483: Part 2 & 3 and PIESA 1018-4		

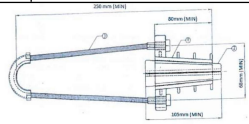


Fig. 1: Typical Strain Clamp complete with bracket

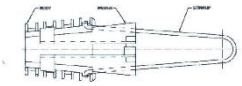
Key:
1. Body 2 Wedge 3. Ball Assembly

NOTES:

- The clamp shall be designed to anchor LV-ABC cable with insulated conductor and suitable for use at the terminal poles, section poles and at road crossings to carry the tension at the end of the line.
- The clamp shall consist of an aluminium alloy corrosion resistant castled body, bail of stainless steel and self-adjusting plastic wedges which shall anchor/hold the neutral conductor without damaging the insulation and shall be of weather and Ultra-Violet resistant polymer.
- The clamp shall be designed to be easily fixed to the poles eye hook.
- The clamp shall be supplied with a stainless-steel flexible Rope to connect the Clamp to the support.
- A wear resistant moveable saddle shall be un-loosely fitted on the Rope to prevent abrasion at the point of fitting into the support.
- Locking mechanism shall be wedge type self-locking. Wedges shall be made of high strength, climatic resistance Engineering Plastic with glass fibre.

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 2**
	SERVICE CLAMP FOR AERIAL BUNDLED CABLE (ABC) 4-10 MILLIMETRE	

ITEM	TECHNICAL DESCRIPTION		UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description		Service Clamp for Aerial Bundled Cable (ABC) 4-10mm		
2	Rated Voltage		kV	0.6	
3	Number of Cores		No.	02	
4	Applicable to Conductor Size	Phase Conductor	mm^2	4-10	
		Neutral Conductor	mm^2	4-10	
5	Materials for Non-Metallic parts of Fitting		Ultraviolet stabilized and fire retardant materials		
6	Materials for Ferrous parts of fitting		Hot Dip Galvanized		
7	Colour of Fitting Insulating Parts		Black		
8	Operating Ambient Temperature		°C	1-40	
9	Minimum Breaking Load		kN	2.5	
10	Relative Humidity		%	85	
11	Altitude		m^2	1400	
12	Previous type Tests results/ certificate to be provided upon client request:	Dielectric of fitting mounted on cable	Yes/No	Yes	
		Accelerated weathering test	Yes/No	Yes	
		Tensile Test	Yes/No	Yes	
13	Drawings showing design details to be provided with the bid		Yes/No	Yes	
14	Quality assurance certificate to be provided with the bid		Yes/No	Yes	
15	Routine tests to be provided on delivery		Yes/No	Yes	
16	Applicable Standards		PIESA 1018-4		



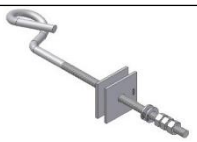
	TECHNICAL SPECIFICATION	Doc Number: Version: 1

CODE:	DESCRIPTION OF MATERIAL:	Page 2 of 2
	SERVICE CLAMP FOR AERIAL BUNDLED CABLE (ABC) 4-10 MILLIMETRE	

NOTES:

- The clamp shall be designed to anchor insulated service cable, XLPE insulated, armoured/unarmoured PVC sheathed for tensioning the service cable on poles to ensure the proper installation of service cables and connectors.
- The clamp shall be designed to be easily fixed to the poles by eye hook.
- The clamp shall be supplied with a stainless-steel flexible Rope to connect the Clamp to the support.
- The design shall be such that the parts do not separate when the fittings are being installed on the service cable. Any wedges used shall be attached to the clamp body.
- Locking mechanism shall be wedge type self-locking. Wedges shall be made of high strength, climatic resistance Engineering Plastic with glass fibre.

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 2**
	PIGTAIL BOLT M10x250 MILLIMETRES	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	M10x250mm Pigtail Bolt c/w with 2 nuts, 2 round washers and 2 square curved washers		
2	Bolt Diameter	mm	M10	
3	Bolt length excluding the eye hook	mm	250	
4	Thread length	mm	100	
5	Unthreaded Length	mm	150	
6	Ultimate Tensile Strength (UTS)	kN	20	
7	Material	Mild Steel; Steel Grade to BS 4360		
8	Corrosion protection	Hot Dip Galvanized		
9	Dimensions and Tolerances	To BS 4190		
10	Thickness of washers	mm	5	
11	Operating Ambient Temperature	°C	1-40	
12	Relative Humidity	%	85	
13	Altitude	m	1400	
Other requirements				
14	Drawings showing dimensions to be provided with the bid	Yes/No	Yes	
15	Previous type test of steel to be provided upon client request	Yes/No	Yes	
16	Quality assurance certificate to be provided with the bid	Yes/No	Yes	
17	Applicable standard(s)	ISO 898-1		
				

NOTES:

- It is recommended that for applications generally the thread length should be at least one third the bolt length as per the dimensions indicated above.
- Pigtail eye hooks bolts shall be suitable for mounting through wood poles (by single bolt) and attachment to pre-stressed round concrete poles by use of universal pole clamps.
- Pigtail eye hooks bolts shall be designed as to hold both suspension clamps and strain (dead-end) clamps and shall be of wood type or concrete type as per figure below
- Pigtail eye hooks bolts shall be made of forged hot dip galvanized steel. The manufacture shall not involve cold bending or welding (or both).
- Pigtail eye hooks bolts shall be manufactured from grade 4.8 material in accordance with ISO 898-1 whereas nuts shall be manufactured from grade 5 material in accordance with ISO 898-1.

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 1**
	PIGTAIL SCOTCH SCREW M10	

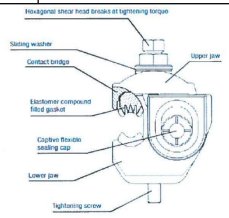
ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	M10 Pigtail Scotch Screw with wood threads		
2	Screw Diameter	mm	M10	
3	Length	mm	170	
4	Thread length	mm	90	
5	Ultimate Tensile Strength (UTS)	kN	20	
6	Material	Mild Steel; Steel Grade to BS 4360		
7	Corrosion protection	Hot Dip Galvanized to BS 729		
8	Dimensions and Tolerances	To BS 4190		
9	Operating Ambient Temperature	°C	1-40	
10	Relative Humidity	%	85	
11	Altitude	m	1400	
Other requirements				
12	Drawings showing dimensions to be provided with the bid	Yes/No	Yes	
13	Previous type test of steel to be provided upon client request	Yes/No	Yes	
14	Quality assurance certificate to be provided with the bid	Yes/No	Yes	
15	Applicable standard(s)	ISO 898-1		
				

NOTES:

- Pigtail Scotch screw shall be suitable for screwing directly into wooden pole and for securing into brick wall when used with P16 plastic wall plug.
- The screws shall have adequately adjusted threads that shall withstand a high pull-out resistance and optimum conditions for the specific field of application.
  The screws shall be made from hot dip galvanized steel with minimum tensile strengths conforming to those of the ABC cables.

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 2**
	INSULATION PIECING CONNECTOR (IPC) FOR AERIAL BUNDLED CABLE (ABC) 25-95/25-95 MILLIMETRE	

ITEM	TECHNICAL DESCRIPTION		UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description		Insulation Piecing Connector (IPC) for Aerial Bundled Cable (ABC) 25-95/25-95mm		
2	Rated Voltage		kV	0.6	
3	Applicable to Main Core Size		mm	25-95	
4	Applicable to Branch Core Size		mm	25-95	
5	Materials for Non-Metallic parts of Fitting		Ultraviolet stabilized and fire retardant materials		
6	Materials for Contact Plates of fitting		Tinned Copper		
7	Colour of Fitting Insulating Parts		Black		
8	Operating Ambient Temperature		ºC	1-40	
9	Relative Humidity		%	85	
10	Altitude		m	1400	
11	Exposure to Sunlight		Yes/No	Yes	
12	Previous type Tests results/ certificate to be provided upon client request:	Dielectric and Water Tightness	Yes/No	Yes	
		Electrical Ageing	Yes/No	Yes	
		Tensile Test	Yes/No	Yes	
13	Drawings showing design details to be provided with the bid		Yes/No	Yes	
14	Quality assurance certificate to be provided with the bid		Yes/No	Yes	
15	Routine tests to be provided on delivery		Yes/No	Yes	
16	Applicable Standards		BS EN 50483-1&4 PIESA 1018-5		

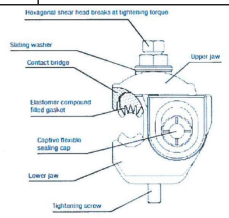


NOTES

- The IPC must perform piercing and connection on Main and Branch cable simultaneously.
- The IPC shall have a rigid removable end cap which can be slide fitted onto the Main connector body on either right or left by the installer (depending on site requirement) for sealing the cut end of the branch cable. Once the connector is fitted, it should not be possible to remove the cap without removing the connector as per figure below.
- All the metallic parts of the IPC should be corrosion resistant and there should not be any appreciable change in contact resistance & temperature after overloads & load cycling.
- The housing shall be made entirely of mechanical and weather resistant plastic insulation material and no metallic part outside the housing is acceptable except for the tightening bolt.
- The connectors shall be totally insulated with no loose parts. They shall be totally weather and moisture proof so that no water or moisture can enter through the pierced holes on the cable insulation.

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 2**
	INSULATION PIECING CONNECTOR (IPC) FOR AERIAL BUNDLED CABLE (ABC) 16-95/1.5-10 MILLIMETRE	

ITEM	TECHNICAL DESCRIPTION		UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description		Insulation Piecing Connector (IPC) for Aerial Bundled Cable (ABC) 16-95/1.5-10mm		
2	Rated Voltage		kV	0.6	
3	Applicable to Main Core Size		mm	16-95	
4	Applicable to Branch Core Size		mm	1.5-10	
5	Materials for Non-Metallic parts of Fitting		Ultraviolet stabilized and fire retardant materials		
6	Materials for Contact Plates of fitting		Tinned Copper		
7	Colour of Fitting Insulating Parts		Black		
8	Operating Ambient Temperature		°C	1-40	
9	Relative Humidity		%	85	
10	Altitude		m	1400	
11	Exposure to Sunlight		Yes/No	Yes	
12	Previous type Tests results/ certificate to be provided upon client request:	Dielectric and Water Tightness	Yes/No	Yes	
		Electrical Ageing	Yes/No	Yes	
		Tensile Test	Yes/No	Yes	
13	Drawings showing design details to be provided with the bid		Yes/No	Yes	
14	Quality assurance certificate to be provided with the bid		Yes/No	Yes	
15	Routine tests to be provided on delivery		Yes/No	Yes	
16	Applicable Standards		BS EN 50483-1&4 PIESA 1018-5		



NOTES

- The IPC must perform piercing and connection on Main and Branch cable simultaneously.
- The IPC shall have a rigid removable end cap which can be slide fitted onto the main connector body on either right or left by the installer (depending on site requirement) for sealing the cut end of the branch cable. Once the connector is fitted, it should not be possible to remove the cap without removing the connector as per figure below
- All the metallic parts of the IPC should be corrosion resistant and there should not be any appreciable change in contact resistance & temperature after overloads & load cycling.
- The housing shall be made entirely of mechanical and weather resistant plastic insulation material and no metallic part outside the housing is acceptable except for the tightening bolt.
- The connectors shall be totally insulated with no loose parts. They shall be totally weather and moisture proof so that no water or moisture can enter through the pierced holes on the cable insulation.

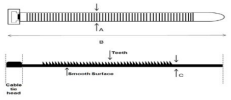
	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 1**
	INSULATION END CAP	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	Cable Insulation Sealing End Cap		
2	Cable Size	mm^2	25-95	
3	Elongation	%	350	
4	Water Absorption	%	<0.2	
5	Heat Shrink Material	Cross Linked Polyolefin		
6	Degree of Protection	IP68		
7	Colour	Black		
8	Minimum Tensile Strength	Mpa	12	
9	Minimum Breaking Load	kN	0.35	
10	Operating Ambient Temperature	°C	1-40	
11	Relative Humidity	%	85	
12	Altitude	m	1400	
13	Exposure to Sunlight	Yes/No	Yes	
Other requirements				
14	Drawings showing dimensions to be provided with the bid	Yes/No	Yes	
15	Previous type test of steel to be provided upon client request	Yes/No	Yes	
16	Quality assurance certificate to be provided with the bid	Yes/No	Yes	
17	Applicable standard(s)	BS EN 50483 & PIESA 1018-5		

NOTES:

- End sealing caps shall be insulated and provide protection against the ingress of moisture and ensure that the system is fully insulated. They shall be manufactured and tested as per BS EN 50483.
- The caps shall be permanent applied, range taking and suitable for installation on $16mm^2$ -$35mm^2$ ABC cables.
- The caps shall not be push fit as accidental contacts could result in them being removed and exposing the live cores.
- Cable End Sealing Caps shall have the following features:
  - Quick and fool-proof installation using simple tools.
  - A strong and permanent environmental seal.
  - Excellent resistance to weathering, moisture contamination & adverse environmental conditions.
  - Special adhesive lining provides seal on irregular cable sheaths.
  - Valved end Cap available for pressurized application.

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 2**
	CABLE TIE HEAVY DUTY	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	Cable Tie Black Polyamide 6.6 Heavy Duty		
2	Width (A)	mm	8.8-12.7	
3	Length (B)	mm	180	
4	Thickness (C)	mm	2	
5	Material	Weather and UV-Resistant Nylon Polyamide 6.6		
6	Locking Type	Locking Non-Releasable		
7	Colour	Black		
8	Minimum Loop Tensile Strength	kN	0.55	
9	Minimum Breaking Load	kN	0.35	
10	Operating Ambient Temperature	°C	1-40	
11	Relative Humidity	%	85	
12	Altitude	m	1400	
13	Exposure to Sunlight	Yes/No	Yes	
Other requirements				
14	Drawings showing dimensions to be provided with the bid	Yes/No	Yes	
15	Previous type test of steel to be provided upon client request	Yes/No	Yes	
16	Quality assurance certificate to be provided with the bid	Yes/No	Yes	
17	Applicable standard(s)	PIESA 1020		
18	Drawing			

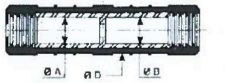
	TECHNICAL SPECIFICATION	Doc Number: Version: 1

CODE:	DESCRIPTION OF MATERIAL:	Page 2 of 2
	CABLE TIE HEAVY DUTY	

NOTES:

- Cable tie shall be suitable for outdoor use
- Mechanical strength maintained even in dry climate
- The Cable Tie is extensively tested according to Tensile Strength Test and Loop Tensile Test and shall pass UL 94 V-2 flammability tests.
- The cable tie shall be heavy duty type single piece assembly of minimum loop tensile strength of 550N; advanced pawl and teeth design, with tail finger grips for easier handling and tightening.
- The cable tie shall be tapered to facilitate insertion into the tie clamp.
- The cable tie material shall be weather-stabilized, corrosion resistant and unaffected by humidity variation.
- Cable ties shall be of uniform quality and shall be free from sharp edges, irregularities or defects that could affect their performance, reliability, or durability.

	TECHNICAL SPECIFICATION	Doc Number: Version: 1
CODE:	**DESCRIPTION OF MATERIAL:**	**Page 1 of 2**
	PRE-INSULATED SLEEVE JOINT	

ITEM	TECHNICAL DESCRIPTION	UNIT	REA REQUIREMENTS	BIDDER'S OFFER
1	Description	Pre-Insulated Sleeve Joint		
2	Rated Voltage	kV	0.6/1	
3	Length	mm	98.5	
4	Exposure to Sunlight	Yes/No	Yes	
5	Unthreaded Length	mm	150	
6	Ultimate Tensile Strength (UTS)	kN	20	
7	Material for phase connector	Forged Aluminium		
8	Material for phase connector	Aluminium Alloy		
9	Insulation Material	Black thermoplastic		
10	Operating Ambient Temperature	°C	1-40	
11	Relative Humidity	%	85	
12	Altitude	m	1400	
Other requirements				
13	Drawings showing dimensions to be provided with the bid	Yes/No	Yes	
14	Previous Type Test Report/ Certificate to be provided upon client request	Yes/No	Yes	
15	Quality Assurance ISO Certificate to be provided with the bid	Yes/No	Yes	
				

NOTES:

- The sleeves shall compose of:
  - An aluminium (phase) or aluminium alloy (neutral) sleeve with a stop in the middle.
  - A black thermoplastic sealed tube with a flexible elastomer ring.
  - Neutral contact grease in the tube which improve the contact area and protect the aluminium against oxidation.
- The crimping shall be realized on the plastic part according to the marks on the body of the sleeve.