

**STANDARD TECHNICAL SPECIFICATION**  
for

**Galvanised steel shield wire**

**SPECIFICATION NO: TB-STD-316-021**  
**REVISION: 0**  
**DATE: 04.08.2022**



**BHARAT HEAVY ELECTRICALS LIMITED**  
**TRANSMISSION BUSINESS GROUP**  
**NOIDA, UP (INDIA) – 201305**

	Prepared by	Checked by	Approved by
Name	Shobhna Singh	Sanjeev Shrivastava/ Vivek Kapil	Aruna Gulati
Signature			
Date	05/08/22	05/08/22	5/8/12



**STANDARD TECHNICAL  
SPECIFICATION FOR  
GALVANISED STEEL SHIELD  
WIRE**

SPECIFICATION NO. TB-STD-316-021

REVISION

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SHEET 1 OF 1

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## **Section-I: Scope, Bill of Quantities & Specific Technical Requirements**

### **1.0 PURPOSE**

This specification is intended for finalization of rate contract between BHEL TBG and bidder. Standard technical details as indicated in the specification shall be agreed upon between BHEL TBG and bidder. Project specific technical detail shall be made available to the bidder along with project enquiry.

### **2.0 SCOPE**

This technical specification covers the requirements of design, manufacture, inspection and testing at manufacture's works, proper packing and delivery to site of **Galvanised steel Shield wire** conforming to this specification.

It is not the intent to specify herein all the details of design & manufacture of material. However, the material shall conform in all respects to high standard of design, engineering & workmanship and shall be capable of performing in continuous commercial operation at site condition.

Technical requirements of Galvanised steel Shield wire are indicated in Section-II.

No deviation from the requirements specified in various clauses of this specification shall be allowed. A duly signed & stamped certificate to this effect shall have to be furnished along with the offer in the format of as provided in the NIT document. Bidder shall mandatorily submit the format along with the offer and in case the certificate is not submitted, the offer will be deemed to be considered as without any technical deviations.

### **3.0 BILL OF QUANTITIES**

Refer **ANNEXURE-BOQ**.

#### **Note:**

1. The bidder to quote for items as per unpriced price schedule attached with NIT. **The quantity as mentioned in the BOQ is only for evaluation purpose.** However, actual ordered quantity may vary from project to project throughout the contract.
2. Quantity variation as per NIT terms & condition.
3. Separate project specific purchase order will be issued time to time within RC validity.
4. **Unit price of Galvanised steel Shield wire should be inclusive of non-returnable wooden drum.**

### **4.0 DOCUMENTS & DRAWINGS TO BE SUBMITTED**

Bidders shall submit following documents duly signed and sealed as the part of their technical offer for evaluation,

- (i) UNPRICED BOQ mentioning "QUOTED" against each item as per format given with NIT.
- (ii) Documents for meeting the TECHNICAL QUALIFICATION REQUIREMENT
- (iii) NIL Technical Deviations Certificate as per format given with NIT.

After placement of project specific Purchase order BHEL will provide project site information within one-week time.

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 Following documents shall be submitted for specific project requirement after placement of order for the approval of BHEL/Customer,

<b>Sl. no.</b>	<b>Drawing / Document Description</b>	<b>Document no.</b>	<b>Document Type</b>	<b>First Submission</b>	<b>Resubmission</b>
1	Technical Data Sheet (to be submitted for all projects except POWERGRID projects)	TB-XXX-316-E151	Primary	Within 2 weeks of PO	Within 1 week of comments
2	Quality Plan	TB-XXX-316-E152	Primary	Within 2 week of PO	Within 1 week of comments
3	Routine & Acceptance Test Reports	TB-XXX-316-E153	Secondary	Within 1 week of test conduction	--

**Notes**

1. Approval on Primary documents is essential for providing manufacturing clearance.
2. The bidder/ manufacturer may note that all re-submissions must incorporate all comments given in the prior submission by the Purchaser. Adequate justification for not incorporating the same must be submitted, failing which the submitted documents may be returned.

**5.0 TECHNICAL QUALIFYING REQUIREMENT & EXPERIENCE**

Technical qualifying requirement shall be as per TBEM/TQR/RC/GSSW Rev.0 attached herewith.

**6.0 TYPE TESTING**

The bidder shall submit the type tests reports for the tests conducted on the equipment(s) identical or similar to those to be supplied under this contract and the test(s) should have been conducted at an independent laboratory not earlier than ten (10) years from the date of original scheduled date of bid opening. If any type test report is found to be technically unacceptable, such type test(s) shall be conducted by the bidder without any cost and delivery implication to BHEL/customer.

The type test (s) as per section-II shall be carried out in line with procedure mentioned in the detailed technical specification.

All acceptance, routine tests and tests during manufacture as per relevant standards and specification shall be deemed to be included in the bidder’s scope.

**7.0 QUALITY ASSURANCE, TESTING & INSPECTION**

7.1 At contract stage, the successful bidder shall submit the Quality Plan (QP) for approval of BHEL/ end customer. **BHEL standard quality plan is enclosed as TBQM-STD-SHW.** The standard QP enclosed is for reference purpose and project specific approval shall be given only after project specific purchase order placement. In case the bidder has reference Quality Plan agreed with end customer, same can be submitted for specific project after award of contract for approval/ extension from BHEL/customer. There shall not be any commercial implication to BHEL on account of changes in Quality Plan (QP) during contract stage.

7.2 All materials shall be procured, manufactured, inspected and tested by vendor/ sub-vendor as per approved Quality Plan (QP). The supplier shall perform all tests necessary to ensure that the material and workmanship conform to the relevant standards and comply with the

requirements of the specification.

- 7.3 The supplier shall perform all routine and acceptance tests during manufacturing as per requirement of the specification. The material shall be offered for inspection by BHEL/customer in accordance with agreed Quality Plan (QP) with 1 Week advance information. Commercial implications, if any for all these tests shall be deemed to be included in the bid price.
- 7.4 For POWERGRID Purchase order, POWERGRID approved standard quality plan will be applicable.

### **8.0 PACKING AND MARKING**

The material shall be packed to ensure protection against damage during transit, storage for prolonged periods and handling.

The drum shall be properly marked as per following details,

1. Name & Address of Consignee
2. Purchase Order Number with Date
3. Name of Supplier
4. Description of Materials along with size/ length etc.

### **9.0 ABBREVIATIONS USED**

NIT: Notice Inviting Tender

QP: Quality Plan

BOQ: Bill of Quantities

IS: Indian Standard

IEC: International electro-technical commission

**ANNEXURE-BOQ**

Sl.No.	PROJECT	UNIT	SHIELD WIRE	
			7/9	7/8
1	PARADIP-ERSAMA	km	2	0
2	PARADIP-DUBRI	km	1	0
3	TALCHAR	km	4	0
4	NEEMUCH	km	5	0
5	FUTURE ANTICIPATED PROJECTS IN COMING 2 YEARS	km	5	5
	<b>TOTAL</b>	<b>km</b>	<b>17</b>	<b>5</b>

Note: Unit price should be inclusive of non-returnable wooden drum.

Shobhu

Sankar



# QUALITY PLAN

<b>ITEM : GI SHIELD WIRE</b>						QP NO : TBQM-STD-SHW REV: 01 DATE : Page 1 of 4		PROJECT :					
						PACKAGE /CONTRACT :							
						CONTRACTOR : BHEL							
S.NO	COMPONENT / OPERATION	CHARACTERISTI C CHECKED	CATEGO RY	TYPE OF CHECK	EXTENT OF CHECK	REFERNCE DOCUMENT	ACCEPTANCE NORM	FORMAT OF RECORD	AGENCY			REMARKS	
									P	W	V		
1	2	3	4	5	6	7	8	9	D	10	11	12	13

A. RAW MATERIAL													
1	High Carbon Steel wire rod	Chemical Composition	Major	Chem.	4 samples / heat / lot	IS 7904 & BHEL Specification / GTP	IS 7904 & BHEL Specification / GTP	Mfr TC	Y	M		C,N	a) Wire Rod to be taken from BHEL approved Sources.  b) Co-relation of Material Test Certificates to be maintained
		Dimensions including diameter & ovality	Major	Physical	-do-	-do-	-do-	-do-	Y	M		C,N	
		Physical tests -UTS -Elongation -% redn. in area -Cleanliness & smoothness	-do-	Visual / physical	-do-	-do-	-do-	-do-	Y	M		C,N	
		Microstructure -structure -Grain size -Inclusion rating -Surface defect	-do-	Visual / Metallurgical	3 samples / heat / lot	-do-	-do-	-do-	Y	M		C,N	
		Decarburisation	-do-	Visual / Metallurgical	3 samples / heat / lot	-do-	-do-	-do-	Y	M		C,N	
2.	Electrolytic Zinc	Chemical composition	Major	Chemical	1 sample / 50 MT lot	IS 209	IS 209 Purity of 99.5 % min.	Supplier TC	Y	M		C,N	Co-relation of Material Test Certificates to be maintained

BHEL SIGN & SEAL	<b>LEGEND :</b> M – SUPPLIER / SUB SUPPLIER C - BHEL / NOMINATED INSPECTION AGENCY N – CUSTOMER /CUSTOMER NOMINATED AGENCY CHP- CUSTOMER HOLD POINT TC – TEST CERTIFICATE IR- INSPECTION REPORT JIR – JOINT INSPECTION REPORT P – PERFORMED BY W – WITNESSED BY V – VERIFICATION BY	APPROVED BY SIGN & SEAL
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# QUALITY PLAN

**ITEM : GI SHIELD WIRE**

QP NO : TBQM-STD-SHW  
REV: 01  
DATE :  
Page 2 of 4

PROJECT :

PACKAGE /CONTRACT :

CONTRACTOR : BHEL

S.NO	COMPONENT / OPERATION	CHARACTERISTI C CHECKED	CATEGO RY	TYPE OF CHECK	EXTENT OF CHECK	REFERNCE DOCUMENT	ACCEPTANCE NORM	FORMAT OF RECORD	AGENCY			REMARKS	
									P	W	V		
1	2	3	4	5	6	7	8	9	D	10	11	12	13

		-do- of bath sample	Major	Chemical	1 sample / day	IS 209	IS 209 Purity of 98.5 %	TC of TPI lab	Y	M		C	
B	FINAL INSPECTION & TESTING												
1.0	ACCEPTANCE TESTS ON COMPOSITE GALV. STRANDED STEEL WIRE												
1.1		Overall dia of composite galvanized stranded steel wire	Major	Measurement	One sample from every 10 drums or part thereof	IS: 2141	Appd GTP / IS 2141	Test certificate	Y	M	C,N		
1.2		No. of strand & their dia.	Major	Measurement	One sample from every 10 drums or part thereof	IS: 2141	Appd GTP / IS 2141	Test certificate	Y	M	C,N		
1.3		Total area of cross a section	Major	Calculation	"	IS: 2141	Appd GTP / IS 2141	Test certificate	Y	M	C,N		

BHEL SIGN & SEAL	<b>LEGEND :</b> M – SUPPLIER / SUB SUPPLIER C - BHEL / NOMINATED INSPECTION AGENCY N – CUSTOMER /CUSTOMER NOMINATED AGENCY CHP- CUSTOMER HOLD POINT TC – TEST CERTIFICATE IR- INSPECTION REPORT JIR – JOINT INSPECTION REPORT P – PERFORMED BY W – WITNESSED BY V – VERIFICATION BY	APPROVED BY SIGN & SEAL
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# QUALITY PLAN

<b>ITEM : GI SHIELD WIRE</b>						QP NO : TBQM-STD-SHW REV: 01 DATE : Page 3 of 4		PROJECT :					
						PACKAGE /CONTRACT :							
						CONTRACTOR : BHEL							
S.NO	COMPONENT / OPERATION	CHARACTERISTI C CHECKED	CATEGO RY	TYPE OF CHECK	EXTENT OF CHECK	REFERNCE DOCUMENT	ACCEPTANCE NORM	FORMAT OF RECORD	AGENCY			REMARKS	
									P	W	V		
1	2	3	4	5	6	7	8	9	D	10	11	12	13

1.4		Lay length & Direction	Major	Measurements	One sample from every 10 drums or part thereof	IS: 2141	Appd GTP / IS 2141	Test certificate	Y	M	C,N		
1.5		Breaking load of composite galvanized stranded steel wire	Major	Mechanical	"	"	Appd GTP / IS 2141	Test certificate	Y	M	C,N		
1.6		Elongation of composite galvanized stranded steel wire	Major	Measurement	"	"	Appd GTP / IS 2141	Test certificate	Y	M	C,N		
1.7		D.C. Resistance on composite galvanized stranded steel wire	Major	Electrical	"	"	Appd GTP / IS 2141	Test certificate	Y	M	C,N		
2.0	ACCEPTANCE TESTS ON INDIVIDUAL GALVANIZED STEEL WIRE												
2.1		PREECE test (Uniformity of zinc coating)	Major	Chemical	One sample from	IS:4826	1 min x 3 dip & ½ minute x 1 dip. At the end	Test certificates	Y	M	C, N		

BHEL SIGN & SEAL	<b>LEGEND :</b> M – SUPPLIER / SUB SUPPLIER C - BHEL / NOMINATED INSPECTION AGENCY N – CUSTOMER /CUSTOMER NOMINATED AGENCY CHP- CUSTOMER HOLD POINT TC – TEST CERTIFICATE IR- INSPECTION REPORT JIR – JOINT INSPECTION REPORT P – PERFORMED BY W – WITNESSED BY V – VERIFICATION BY	APPROVED BY SIGN & SEAL
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# QUALITY PLAN

<b>ITEM : GI SHIELD WIRE</b>						QP NO : TBQM-STD-SHW REV: 01 DATE : Page 4 of 4		PROJECT :					
						PACKAGE /CONTRACT :							
						CONTRACTOR : BHEL							
S.NO	COMPONENT / OPERATION	CHARACTERISTI C CHECKED	CATEGO RY	TYPE OF CHECK	EXTENT OF CHECK	REFERNCE DOCUMENT	ACCEPTANCE NORM	FORMAT OF RECORD	AGENCY			REMARKS	
									P	W	V		
1	2	3	4	5	6	7	8	9	D	10	11	12	13

					every 10 drums of part thereof		of specified no. of dips the specimen shall not show any deposit of copper upon base metal						
2.2		Weight of zinc coating	Major	Chemical	“	“	Min. 275 gms/ sq.mtr.	Test certificates	Y	M	C,N		
2.3		Adhesion test	Minor	Mechanical	“	“	The zinc coating shall remain adherent to the steel wire when wound 10 turns on a mandrel having dia. equal to 6 times the dia. of the wire	Test certificates	Y	M	C,N		
2.4		Chemical Analysis of Steel	Major	Chemical	“	“	Appd GTP / IS 2141/Tech Spec		Y	M	C,N		

**NOTE: LATEST EDITION OF IS CODE SHALL BE FOLLOWED.**

BHEL SIGN & SEAL	<b>LEGEND:</b> M – SUPPLIER / SUB SUPPLIER C - BHEL / NOMINATED INSPECTION AGENCY N – CUSTOMER /CUSTOMER NOMINATED AGENCY CHP- CUSTOMER HOLD POINT TC – TEST CERTIFICATE IR- INSPECTION REPORT JIR – JOINT INSPECTION REPORT P – PERFORMED BY W – WITNESSED BY V – VERIFICATION BY	APPROVED BY SIGN & SEAL
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## **Section 2: Detailed Technical Requirements for Material under Scope of Supplies**

### **1.0 SCOPE**

This section covers the standard technical requirements of the Galvanised steel Shield wire .

### **2.0 APPLICABLE STANDARDS**

The Galvanised steel Shield wire shall strictly conform to the following Indian and International standards, as appropriate,

IS: 398 (Part-II):1976 Aluminium conductors for overhead transmission purposes

IEC: 61089/IS 398 (Part-V) Aluminium conductors galvanized Steel reinforced

IS 2629:1990 Recommended practice for hot dip galvanizing on iron and steel.

IS 4826:1992 Hot dip galvanized coatings on round steel wires

IS 2633:1992 Method for testing uniformity of coating of zinc--coated articles.

IS 6745: 1990 Methods for determination of mass of Zinc coating on zinc coated iron and steel articles

IS 8263:1990 Methods for radio interference test

IS 1778:1980 Reels and drums for bare conductors

IS 1521:1991 Method for tensile testing of steel wire

### **3.0 TECHNICAL REQUIREMENTS & CONSTRUCTIONAL DETAILS**

#### **3.1 Details of Earth wire**

3.1.1 The galvanised steel earth wire shall generally conform to the specification of ACSR core wire as mentioned in IEC:60888/IS: 398 (Part-II)-1976 except where otherwise specified herein.

The contractor shall supply the earthwire as per the guaranteed technical particulars given hereunder. For POWERGRID project, separate approval **for guaranteed technical particulars** is not required during detailed engineering.

#### **3.2 Workmanship**

3.2.1 All steel strands shall be smooth, uniform and free from all imperfections, such as spills and splits, die marks, scratches, abrasions and kinks after drawing and also after stranding.

3.2.2 The finished material shall have minimum brittleness as it will be subjected to appreciable vibration while in use.

3.2.3 The steel strands shall be hot dip galvanized and shall have minimum Zinc coating after stranding, as stipulated in guaranteed technical particulars attached herewith. The zinc coating shall be smooth, continuous, of uniform thickness, free from imperfections. The steel wire rod shall be of such quality and purity that, when drawn to the size of the strands specified and coated with zinc, the finished strands shall be of uniform quality and have the same properties and characteristics as prescribed in ASTM designation B498-74.

3.2.4 The steel strands shall be preformed and post formed in order to prevent spreading of strands while cutting of composite earth wire. Care shall be taken to avoid damage to galvanisation during preforming and postforming operation.

3.2.5 To avoid susceptibility towards wet storage stains (white rust), the finished material shall be provided with a protective coating of boiled linseed oil.

#### **3.3 Joints in Wires**

There shall be no joints of any kind in the finished steel wire strand entering into the manufacture of the earth wire. There shall be no strand joints or strand splices in any length of the completed stranded earth wire.

**3.4 Tolerances**

The manufacturing tolerance to the extent of the limits as stipulated in guaranteed Technical particulars attached with this specification shall only be permitted in the diameter of the individual steel strands and lay length of the earth wire.

**3.5 Materials**

**3.5.1 Steel**

The steel wire strands shall be drawn from high carbon steel rods and the chemical composition shall conform to the requirements as stipulated in Guaranteed Technical Particulars attached with.

**3.5.2 Zinc**

The zinc used for galvanising shall be electrolytic High Grade Zinc. It shall conform to and satisfy all the requirements of IS: 209 -1979.

**3.6 Standard Length**

3.6.1 The standard length of the earth wire shall be as stipulated in Guaranteed Technical Particulars attached with, with the specified tolerance on standard length.

**3.7 TESTS**

3.7.1 The following type, routine & acceptance tests and tests during manufacturing shall be carried out on the earthwire.

**3.7.2 TYPE TESTS**

In accordance with the stipulation of specification, the following type tests reports of the earthwire shall be submitted for approval:

a)	UTS test	As per Annexure - A
b)	DC resistance test	

**3.7.3 ACCEPTANCE TESTS**

a)	Visual check for joints, scratches etc. and length of Earthwire )	As per Annexure - A
b)	Dimensional check	
c)	Galvanising test	
d)	Lay length check	
e)	Torsion test	
f)	Elongation test	
g)	Wrap test	
h)	DC resistance test	As per IS:398 (PART-III)-1976
i)	Breaking load test	
j)	Chemical analysis of steel	

**3.7.4 ROUTINE TESTS**

a) Check that there are no cuts, fins etc. on the strands.

b) Check for correctness of stranding.

### 3.7.5 TESTS DURING MANUFACTURE

a)	Chemical analysis of zinc used for galvanising	As per Annexure - A
b)	Chemical analysis of steel	

## 4.0 GUARANTEED TECHNICAL PARTICULARS

S. no.	Description	Unit	Standard Values	
			7/9 SWG	7/8 SWG
<b>1.0</b>	<b>Raw Materials</b>			
<b>1.1</b>	<b>Steel wires / rods</b>			
a)	Carbon	%	Not more than 0.55	
b)	Manganese	%	0.40 to 0.90	
c)	Phosphorous	%	Not more than 0.04	
d)	Sulphur	%	Not more than 0.04	
e)	Silicon	%	0.15 to 0.35	
<b>1.2</b>	<b>Zinc</b>			
a)	Minimum purity of Zinc	%	99.95	
<b>2.0</b>	<b>Steel strands</b>			
<b>2.1</b>	<b>Diameter</b>			
a)	Nominal	mm	3.66	4.00
b)	Maximum	mm	3.74	4.08
c)	Minimum	mm	3.58	3.92
<b>2.2.</b>	<b>Minimum breaking load of strand</b>			
a)	After stranding	KN	10.58	11.7
<b>2.3</b>	<b>Galvanising</b>			
a)	Minimum weight of zinc coating per sq.m. after stranding	gms.	275	
b)	Minimum number of dips that the galvanized strand can withstand in the standard preece test	Nos.	3 dips of 1 minute and one dip of ½ minute	
c)	Minimum number of twists in a gauge length equal to 100 times diameter of wire which the strand can withstand in the torsion test, after stranding	Nos.	18	
<b>3.0</b>	<b>Stranded Earth wire</b>			
<b>3.1</b>	<b>UTS of Earth wire (min.)</b>	KN	68.4	77.7
<b>3.2</b>	<b>Lay length of outer steel layer</b>			
a)	Standard	mm	181	180
b)	Maximum	mm	198	216
c)	Minimum	mm	165	144
<b>3.3</b>	<b>Maximum DC resistance of earth wire at 20° C</b>	Ohm/km	3.375	2.09

Standard Technical Specification for **Galvanised steel Shield wire**

<b>3.4</b>	<b>Standard length of earth wire</b>	M	2000 or actual quantity whichever is less.	
<b>3.5</b>	<b>Tolerance on standard length</b>	%	±5	
<b>3.6</b>	<b>Direction of lay for outside layer</b>		Right hand	
<b>3.7</b>	<b>Linear mass</b>			
a)	Standard	Kg/km	583	687
b)	Maximum	Kg/km	552	719
c)	Minimum	Kg/km	600	663
<b>3.8</b>	<b>Overall diameter</b>	mm	10.98	12

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Annexure-A

**Testing procedure for Galvanised Steel Earthwire**

**1. UTS TEST**

Circles perpendicular to the axis of the earthwire shall be marked at two places on a sample of earthwire of minimum 5m length suitably compressed with dead end clamps at either end. The load shall be increased at steady rate upto 50% of UTS and held for one minute. The circles drawn shall not be distorted due to relative movement of strands. Thereafter, the load shall be increased at a steady rate to 100% of UTS and held for one minute. The earthwire sample shall not fail during this period. The applied load shall then be increased until the failing load is reached and value recorded.

**2. D.C. RESISTANCE TEST**

On an earthwire sample of minimum 5m length, two contact clamps shall be fixed with a predetermined Bolt torque. The resistance shall be measured by a Kelvin double-bridge by placing the clamps initially zero meter and subsequently one meter apart. The test shall be repeated at least five times and the average value recorded. The value obtained shall be corrected to the value at 20°C shall conform to the requirements of this specification.

**3. Visual check for joints, scratches etc. and length of earthwire**

Earthwire drums shall be rewound in the presence of the inspector. The inspector shall visually check for joints, scratches etc. and see that the earthwire generally conforms to the requirements of this specification. The length of earthwire wound on the drum shall be measured with the help of counter meter during rewinding.

**4. TORSION TEST**

The minimum number of twists which a single steel strand shall withstand during torsion test shall be eighteen for a length equal to 100 times the standard diameter of the strand. In case the test sample length is less or more than 100 times the standard diameter of the strand, the minimum number of twists will be proportionate to the length and if number comes in the fraction then it will be rounded off to next higher whole number.

**5. DIMENSIONAL CHECK**

The individual strands shall be dimensionally checked to ensure that they conform to the requirements of this specification.

**6. LAY LENGTH CHECK**

The lay length shall be checked to ensure that they conform to the requirements of this specification.

**7. GALVANISING TEST**

The test procedure shall as specified in IS:4826-1968. The material shall conform to the requirements of this specification. The adherence of zinc shall be checked by wrapping around a mandrel four times the diameter of steel wire.

**8. CHEMICAL ANALYSIS OF ZINC USED FOR GALVANIZING**

Samples taken from zinc ingots shall be chemically/spectrographically analysed. The same shall be in conformity to the requirements stated in this specification.

**9. CHEMICAL ANALYSIS OF STEEL**

Samples taken from steel ingots/coils/strands shall be chemically/ spectrographically analysed. The same shall be in conformity to the requirements stated in this specification.

**TECHNICAL QUALIFICATION REQUIREMENT**Name of Project: **VARIOUS (RATE CONTRACT)**Name of Customer: **VARIOUS (RATE CONTRACT)**Name of Item: **GALVANISED STEEL SHIELD WIRE****TECHNICAL QUALIFICATION REQUIREMENT**

Bidder should have offered material from manufacturer who has manufactured and supplied at least 2 KM of Galvanised steel Shield wire during the last 5 years from the original scheduled date of bid opening.

**SUPPORTING DOCUMENTS TO BE SUBMITTED BY BIDDER ALONG WITH TECHNICAL BID**

<b>Sr</b>	<b>Required Criteria</b>	<b>Supporting Documents</b>
1	Manufacturing	Approved GTP / Approved Quality Plan / Factory Inspection Test Report etc. of offered item
2	Supply	PO / Dispatch clearance / LR / Material Receipt certificate at site / etc. of offered item
3	Type Test	TTR approval from customer / Type Test Report etc. establishing successful type tested design

  
SHOBHNA SINGH  
(SENIOR MANAGER)

VIVEK KAPIL (AGM)/

  
SANJEEV K SHRIVASTAVA (SDGM)

  
ARUNA GULATI  
(HOD/AGM)

PREPARED BY

REVIEWED BY

APPROVED BY



Indian Electrical & Electronics Manufacturer's Association  
501, Kakad Chambers P +91 22 2493 0532  
132, Dr. A. B. Road, Worli, F +91 22 2493 2705  
Mumbai 400 018 E mumbai@ieema.org  
India W www.ieema.org

**Cir. No.:073/PVC/CLAR/02**

**12<sup>th</sup> May 2015**

To Members of Conductor and Project T&D division, Subscribers of PV Circulars  
All SEBs, Utilities and other listed Purchasing Organizations

**Sub: PV formula for 'Earth Wire'**

In the recent IEEMA Project T&D division, members decided to adopt Price Variation formula of Power Grid Corporation of India (PGCIL) for 'Earth Wire' with fixed cost weightages of 70 and 10 for Steel and Labour portion respectively.

Steel portion is represented by High Tensile galvanized steel wires which is already being published in IEEMA PV circular for Aluminium Conductors.

Hence, 'Earth Wire' PV formula is being made operational vide monthly PV circular applicable for Aluminium Conductor after adding All India Average Consumer Price Index Number in the circular.

We recommend incorporating this new PV clause in all future tenders starting from 1<sup>st</sup> May 2015.

**Deputy Director General**

Encl.: IEEMA PV clause of 'Earth Wire'



IEEMA(PVC)/EARTHWIRE/2015

Indian Electrical &amp; Electronics Manufacturer's Association

501, Kakad Chambers  
132, Dr. A. B. Road, Worli,  
Mumbai 400 018  
IndiaP +91 22 2493 0532  
F +91 22 2493 2705  
E mumbai@ieema.org  
www.ieema.orgEffective from: 1<sup>st</sup> April 2015

### MATERIAL PRICE VARIATION CLAUSE FOR EARTHWIRE

The price quoted/confirmed for Earthwire is based on the input cost of raw materials as on the date of quotation. It is deemed to be related to the prices of raw materials, as specified in the price variation clauses given below. In case of any variation in these prices, the prices payable shall be subject to adjustment up or down in accordance with the following formula.

$$P = \frac{P_0}{100} \left( 20 + 70 \frac{FE}{FE_0} + 10 \frac{W}{W_0} \right)$$

Wherein,

P = Ex-works price payable as adjusted in accordance with the price variation clause

P<sub>0</sub> = Ex-works price quoted/confirmed

FE<sub>0</sub> = Price of High Tensile Galvanized Steel Wire in Rs./MT of appropriate size  
This price is applicable prevailing as on 1<sup>st</sup> working day of the month one month prior to the date of tender opening.

W<sub>0</sub> = All India average consumer price index number for industrial workers, as published by the Labour Bureau, Ministry of Labour, Govt. of India (Base: 2001 = 100)  
This index number is as applicable on the first working day of the month, three months prior to the date of tender opening.

For example, if tender is opened during June 2015, then the applicable raw material price of Steel Wire (FE<sub>0</sub>) and All India average consumer price index number (W<sub>0</sub>) would be for the month of May 2015 and March 2015 respectively.

The above prices and indices are as published by IEEMA vide monthly PV circular for Aluminium Conductor; currently circulated vide reference number IEEMA (PVC)/AL\_CONDUCTOR\_LME/2014/\_/\_ one month prior to the date of tendering.

FE = Price of High Tensile Galvanized Steel Wire in Rs./MT of appropriate size  
This price is applicable prevailing as on first working day of the month Two months prior to the date of delivery.

W = All India average consumer price index number for industrial workers, as published by the Labour Bureau, Ministry of Labour, Govt. of India (Base: 2001 = 100)  
This index number is as applicable on the first working day of the month, four months prior to the date of delivery.

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Indian Electrical &amp; Electronics Manufacturer's Association

501, Kakad Chambers  
132, Dr. A. B. Road, Worli,  
Mumbai 400 018P +91 22 2493 0532  
F +91 22 2493 2705  
E mumbai@ieema.org  
www.ieema.org**Effective from: 1<sup>st</sup> April 2015**

For example, if date of delivery falls during December 2015, then the applicable raw material price of Steel Wire (FE) and All India average consumer price index number (W) would be for the month of October 2015 and August 2015 respectively.

The date of delivery is the date on which the Conductor is notified as being ready for inspection/dispatch (in the absence of such notification, the date of manufacturer's dispatch note is to be considered as the date of delivery) or the contracted delivery date (including any agreed extension thereto), whichever is earlier.

**Notes:**

1. All domestic prices of raw materials applicable to excise duty units are exclusive of modvatable excise/CV duty amount and exclusive of any other central, state or local taxes, octroi etc.
2. The price of High tensile Galvanized Steel Wire (in Rs./MT) for different sizes in mm is the price as quoted by a primary producer.

**Authorized Signatory**

