



**Bharat Heavy Electricals Limited**  
(A Govt. Of India Undertaking)  
**PROJECT ENGINEERING MANAGEMENT**

Enq No.: PE/PG/RTC/E-5186/2015

Date. 16.02.2016

**OPEN TENDER ENQUIRY THROUGH E-PROCUREMENT**

<b>DUE DATE</b>
<b>March, 08, 2016</b>
<b>02:00 P.M.</b>

**Subject: Tender Enquiry for Rate Contract for Above Ground Earthing & Lightning Protection Materials for two years on Techno-Commercial Compliance Basis**

Dear Sir,

We are pleased to invite your tender offers for subject package. Please upload your best quotation/ offer in two (2) parts on <https://bheleps.buyjunction.in> for the requirement strictly on **TECHNO-COMMERCIAL COMPLIANCE BASIS** before above mentioned due date & time. The details of the tender enquiry is as mentioned below:

Sl. No	Description for which Rate Contract is desired	Tentative Quantity	Delivery required
1	<b><u>Above Ground Earthing &amp; Lightning Protection Materials</u></b> - Refer Technical specification no. PE-RC-999-509-E003 Rev-01 for detailed description.	As per BOQ in Annexure-I (cumulative for the Prospective Projects as per Annexure-III)	The delivery period for all the items of Above Ground Earthing & Lightning Protection Materials shall be Four (04) months from the PO date for respective project/requirement under the RC. Other schedules like submission of drawings, approval of drawings, inspection etc. shall be as per the Technical Specification no. PE-RC-999-509-E003 Rev-01. Delays due to non-fulfilment of the requirements as specified in the specification shall be to the vendor's account. Vendors to note that delivery period mentioned above is for contractual LD calculation purpose, however in case of exigencies BHEL may ask for early delivery.

Rate contract is proposed for 2 year from placement of RC PO with a provision for further extension after review on mutual consent. PVC shall be applicable as per Annexure-B formula of Technical Specification no. PE-RC-999-509-E003 Rev-01 with following limit on the same:

Price variation shall be limited to +10% of total Ex-works price actually supplied and no limit on -ve price variation. PVC shall be payable only for contractual delivery period (including delivery extensions if any) i.e. no PVC shall be payable for delay in delivery attributed to vendor & in delayed delivery cases PVC for contractual delivery date & actual delivery date shall be compared and whichever found lower side shall be payable to vendor.

Rate contract shall be decided on overall L1 basis of FOR site prices for total quantity of all type of Above Ground Earthing & Lightning Protection Materials as per price format (Annexure-I), vendors to quote Ex-work price, ED, CST (not VAT) & Freight as % of Ex-work price strictly as per schedule of price format, considering delivery anywhere in India. Tentative list of projects considered for the tender enclosed as annex-III. Bidders to take care of note no. 2 of price schedule (annex-I) for the purpose of price break-up, the same need to be complied during submission of price break-up.

Rate Contract (RC) to be done with 3 vendors in the ratio of 50: 30: 20 value wise at overall L1 price. BHEL will try to maintain proposed order splitting among the bidders during RC period but Proposed splitting of RC between vendors may change during ordering stage against specific project due to non-approval of vendor by customer etc. & order for a project shall not be split.

L1 rates (as per price break-up agreed with L1 bidder in line with note no. 2 of price schedule) shall be counter offered to vendors (L2, L3, L4 & so on) in succession, if only one bidder accepts L1 rates then RC shall be done with two bidders in the ratio of 60:40 & in case none of accepts L1 rates, RC shall be done with L1 bidder for 100

Please reply to:  
PEM -Power Sector  
PPEI Building,  
BHEL House  
HRD & ESI Complex,  
Plot-25, Sector-16-A NOIDA - 201301

Phone: 0120-4213591, 4368749  
Fax : 0120-4329026  
e-mail: ncsharma@bhlepem.co.in

Regd. Office:

Siri Fort  
New Delhi - 110049



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% value. Since the rate contract is being proposed on three bidders, vendors shall be asked to quote prices with CST against form-C.

Further, Vendor to note that for uniformity in evaluation, bid evaluation shall be done on CST basis i.e. same state ordering is not envisaged under proposed RC. However after RC during ordering for specific project falling in the same State where manufacturing factory of the vendor is also located & it gets established that ordering on VAT is economical then BHEL may do suitable amendment in PO on case to case basis.

**Vendors have to enter into Integrity Pact with BHEL.** The Integrity pact shall be returned by the bidder along with their Techno-commercial Bid, duly filled & signed by the authorized signatory and will form part of the order. Only those vendors/bidders who enter into Integrity Pact with BHEL, would be qualified to participate in the bidding Process. (Refer Annexure-IX, as per GCC Rev-06). In other words, entering into this integrity pact would be a preliminary qualification requirement.

**To oversee implementation, of Integrity Pact Sh. D. R. S Chaudhary, IAS (Retd.) has been appointed Independent External Monitor (IEM) by BHEL.**

**Pre-Qualifying Requirements (PQR):** All the bidders (registered/ non-registered) have to submit documents fulfilling PQR requirements (as per enclosed annex-V) with the bid & their further evaluation shall be done based on qualification in PQR.

**All the bids shall be treated conditional as registered vendors have to qualify PQR & non-registered vendors have to qualify PQR & get registered with PEM for the package.**

**Non-Registered Vendors** “vendors who are not registered with PEM needs to apply & get registered for subject package with PEM before P-2 (price bid opening) & hence they need to apply online for registration on PEM web portal & have to enclose acknowledgement with this effect with the bid documents else their bid will not be considered for evaluation”

The bidders (who are not registered with BHEL-PEM) -Online Registration Portal is operational in BHEL. Non-registered Vendors, who wish to apply for registration with BHEL-PEM, have to apply through Online Registration Portal available at [www.bhelpem.com](http://www.bhelpem.com) → vendor section → Online Supplier Registration. All credentials and/or documents duly signed and stamped related to registration has to be uploaded on the website and submit the application for registration. One set of hard copy of the filled-up SRF downloaded from Online Registration Portal duly signed and stamped has to be submitted.

Bidder shall confirm total compliance to the technical specification without any deviations from the technical requirements and commercial terms & conditions stipulated.

**TERMS AND CONDITIONS: -**

Please refer GCC Rev. 06 which is available on <http://www.bhelpem.com/Documents/GCC/GCC-Rev-06.pdf>. You are requested to kindly download the same.

1. Enquiry No., due date etc. must be as per clause no. 2.0 of “Instructions to Bidders”.
2. Offers should be submitted in two parts online at <https://bheleps.buyjunction.in> as follows:

**Part-I: TECHNO-COMMERCIAL BID**

**Part-II: PRICE BID.**

3. **No Technical & Commercial deviations are acceptable.**
4. Standard pre-printed terms & conditions of the tenderers shall not be considered valid.
5. Unsolicited fresh/ revised price bids shall not be entertained.
6. Purchaser shall be under no obligation to accept the lowest or any other tender and shall be entitled to accept or reject any/ all tender(s) in part or full without assigning any reason whatsoever.
7. Bidder is requested to quote their best competitive prices. “BHEL reserves the right to go for **Reverse Auction (RA)** instead of opening the sealed envelope price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. All bidders to give their acceptance for participation in RA. Non-acceptance to participate in RA may result in non-consideration of their bids, in case BHEL decides to go for RA.

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HRD & ESI Complex,  
Plot-25, Sector-16-A NOIDA – 201301

Phone: 0120-4213591, 4368749  
Fax : 0120-4329026  
e-mail: nesharma@bhelpem.co.in

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In case BHEL decides to go for Reverse Auction, only those bidders who have given their acceptance to participate in RA will be allowed to participate in the Reverse Auction. Those bidders who have given their acceptance to participate in Reverse Auction will have to necessarily submit online sealed bid in the Reverse Auction. Non-submission of online sealed bid by the bidder will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue.

Terms and Conditions of Reverse Auction shall be as per attached Annexure-4.

8. **Tenders should be submitted ONLINE via e-Procurement System only**, however, all correspondence thereof, shall be addressed to the undersigned by name & designation and sent at the following address :

Mr. N.C Sharma, Sr. Engr./MM M/s Bharat Heavy Electricals Ltd., Project Engineering Management, Power Project Engineering Institute, HRD & ESI Complex, Plot No 25, Sector-16 A, Noida-201301 e-mail : <a href="mailto:ncsharma@bhhelpem.co.in">ncsharma@bhhelpem.co.in</a> Ph. No. 0120- 4213591	Mr. I P Singh, Sr. Mgr./ CMM M/s. Bharat Heavy Electricals Ltd., Project Engineering Management, Power Project Engineering Institute, HRD & ESI Complex, Plot No 25, Sector-16A,Noida-201301,U.P.,INDIA e-mail: <a href="mailto:INDRA@bhhelpem.co.in">INDRA@bhhelpem.co.in</a> Ph. No. 0120-4368749
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However, for **Technical clarifications**, following persons may be contacted:

Mr. Vikas Kumar Singh, Sr. Engr. /Elec. M/s Bharat Heavy Electricals Ltd., Project Engineering Management, Power Project Engineering Institute, HRD & ESI Complex, Plot No 25, Sector-16 A, Noida-201301 e-mail : <a href="mailto:vikaskingsingh@bhhelpem.co.in">vikaskingsingh@bhhelpem.co.in</a> Ph. No. 0120- 4213616	Mr Vikas Yadav, Dy. Mgr. /Elec. M/s Bharat Heavy Electricals Ltd., Project Engineering Management, Power Project Engineering Institute, HRD & ESI Complex, Plot No 25, Sector-16 A, Noida-201301 e-mail : <a href="mailto:vikasyadav@bhhelpem.co.in">vikasyadav@bhhelpem.co.in</a> Ph. No. 0120- 4368741
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9. Any taxes and duties applicable on the date of bid but not quoted by the bidders shall be to the bidder account.
10. Delivery terms for dispatches shall be FOR Dispatch Station.
11. CIF is not available for this package.
12. Bidders to submit their offers strictly in line with the enclosed Price Format (Annexure-I).
13. Bidder to note that all other terms and condition shall be strictly as per NIT, GCC Rev. 06 & SCC (annex-II). In the event of any contradiction in the terms and conditions mentioned, the order of preference shall be NIT (this letter) / SCC / GCC Rev. 06.

**NOTE: In case you are not making an offer against this enquiry, you are requested to send a regret letter so as to reach us on or before the due date.**

Thanking you,  
Yours faithfully,  
For and on behalf of BHEL

N.C Sharma  
Sr. Engr. / MM

**Enclosures:**

- Technical Specification No. PE-RC-999-509-E003 Rev-01.
- Annexure-I: Price Format (including BOQ).
- Annexure-II: Special Conditions of Rate Contract (SCC).
- Annexure-III: List of prospective projects.
- Annexure-4: Terms and Conditions of Reverse Auction.
- Annexure-V: PQR (Pre-qualifying Requirement)

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PRICE SCHEDULE OF ABOVE GROUND EARTHING & LIGHTNING PROTECTION MATERIALS										
S. No.	ITEM DESCRIPTION	ITEM CODE	UNIT	Tentative QTY	UNIT PRICE EX-WORKS (DULY PACKED) (Rs)		ED @ % (Including cess) (Rs.)	CST @ % (Rs) against form-E	FREIGHT CHARGES @ % of Ex-work (Including Service Tax) (Rs.)	TOTAL F.O.R. SITE PRICE (Rs.)
					5	6 = (4x5)				
	Price for design, manufacture, inspection and testing at manufacturer's works, proper packing for delivery to site as specified in the Technical Specification no-PE-RC-999-509-EO03 for ABOVE GROUND EARTHING & LIGHTNING PROTECTION MATERIALS									
	<b>MAIN SUPPLY</b>									
1	<b>100 ID, 13 MM THICK GI PIPE (PERFORATED) 3M LONG.</b>	507-23001-A	NOS	250						
2	<b>FLEXIBLE COPPER BRAID FOR GATE EARTHING.</b>	507-23008-A	NOS	650						
3	<b>GI WIRE 12 SWG</b>	507-23009-A	MTR	1000						
4	<b>GI WIRE 14 SWG</b>	507-23010-A	MTR	1000						
5	<b>GI WIRE 16 SWG</b>	507-23011-A	MTR	1000						
6	<b>GI WIRE 4 SWG</b>	507-23012-A	MTR	1000						
7	<b>GI WIRE 6 SWG</b>	507-23013-A	MTR	9000						
8	<b>GS FLAT 25 X 3 MM</b>	507-23014-A								
9	<b>GS FLAT 25 X 6 MM</b>	507-23015-A								
10	<b>GS FLAT 35 X 6 MM</b>	507-23016-A								
11	<b>GS FLAT 50 X 6 MM</b>	507-23017-A								
12	<b>GS FLAT 50 X 8 MM</b>	507-23018-A								
13	<b>GS FLAT 65 X 10 MM</b>	507-23019-A								
14	<b>GS FLAT 65 X 8 MM</b>	507-23020-A								
15	<b>GS FLAT 75 X 10 MM</b>	507-23021-A								
16	<b>GS FLAT 75 X 8 MM</b>	507-23022-A								
17	<b>GS FLAT 50X10 mm</b>	507-23041-A								
18	<b>GS FLAT 75 X 5 MM</b>	507-23042-A								
19	<b>GS FLAT 75X12MM</b>	507-23056-A								
20	<b>GS FLAT 70X10MM</b>	507-23057-A								
21	<b>GS FLAT 50X3MM</b>	507-23058-A								

Rate contract period of two years										
PRICE SCHEDULE OF ABOVE GROUND EARTHING & LIGHTNING PROTECTION MATERIALS										
S.No.	ITEM DESCRIPTION	ITEM CODE	UNIT	Tentative QTY	UNIT PRICE EX-WORKS (DULY PACKED) (Rs)	TOTAL PRICE EX-WORKS (DULY PACKED) (Rs)	ED @ % (Including cess) (Rs.)	CST @ % (Rs) against form-E	FREIGHT CHARGES @ % of Ex-work (Including Service Tax) (Rs.)	TOTAL F.O.R. SITE PRICE (Rs.)
						6 = (4x5)	7	8	9	10 = (6+7+8+9)
22	GS ROD 20 MM DIA-1000MM LONG	507-23023-A	NOS	2200						
23	TEST LINK 150X50X6 MM GS FLAT	507-23029-A	NOS	300						
24	TEST LINK 150X50X6 MM GS FLAT WITH BOX	507-23030-A	NOS	1000						
25	TEST LINK 150X25X6 MM GS FLAT WITH BOX	507-23047-A	NOS	200						
26	TEST LINK 150X25X6 MM GS FLAT	507-23049-A	NOS	750						
27	40NB GALV MS HEAVY DUTY PIPE (PERFORATED) 3M LONG	507-23050-A	NOS	100						
28	50NB GALV MS HEAVY DUTY PIPE (PERFORATED) 3M LONG	507-23051-A	NOS	900						
29	65NB GALV MS HEAVY DUTY PIPE (PERFORATED) 3M LONG	507-23052-A	NOS	150						
30	100NB GALV MS HEAVY DUTY PIPE (PERFORATED) 3M LONG	507-23053-A	NOS	100						
31	SHIELDING MAST	507-23055-A	NOS	20						
32	100ID, 13MM THK, CI PIPE (PERF) 3.5M LONG	507-23059-A	NOS	150						
33	25NB, 2.5MM THK PERF 3M GALV MS PIPE	507-23060-A	NOS	100						
34	TEST LINK 150X75X10 MM GS FLAT	507-23061-A	NOS	100						
35	25NB GALV MS HEAVY DUTY PIPE (PERFORATED) 3M LONG	507-23062-A	NOS	100						
36	Grant Total ( 1 to 35)									
Notes:										
1	PVC (as per Annexure-B) shall be applicable for GI Wires (Sl. no. 3 to 7) & GS Flats (Sl. no. 8 to 21). For rest of the items, Unit Prices shall be fixed & no PVC shall be applicable.									
2	Ex-work Prices for Flats & Wires (Sl. no. 3 to 21) shall be 94% of Total ex-work prices. Prices for remaining items shall be 6% of Total ex-work prices.									
3	Vendor shall confirm that the base rate for GI Wires & GS Flats as per the base month.									
4	Same state ordering shall not be done to save vat.									

## **Annex-II: Special Condition of Rate Contract for Above Ground Earthing & Lightning Protection Materials**

1. BHEL/PEM intends to enter into Rate Contract for the tendered various Material/Sizes initially for a period of two year. The Rate Contract shall come into force from the date of issue of Purchase order for Rate Contract. Validity for ordering shall be two year from the purchase order for Rate Contract.
2. The items will be required against respective projects. Exact quantities, mode of dispatch, consignee etc. and Project name shall be intimated while placing order for a specific project based on the Rate Contract.
3. The units rate for each item should be quoted ex-works including packing & forwarding, excise duty, CST (not VAT), Freight (% of Ex. Works) to derive FOR site price for tendered specifications/ sizes as per price schedule format. Destination may be as per project requirement.
4. The freight charges shall be paid on percentage on ex-works prices or actual freight charges paid to transporter whichever is lower against production of documentary evidence. Vendor to quote freight charges as percentage (%) of ex-works price for destination anywhere in India.
5. Vendor to note that Excise Duty is payable on self manufacturing item only as per clause no 4.1.2 of GCC Rev 06 & hence for their BOI may quote Excise Duty is inclusive or Nil.
6. PVC shall be applicable as per Annexure-B formula of technical specification no. PE-RC-999-509-E003 Rev 01 during the period of rate contract with a provision for further extension after review on mutual consent.
7. Vendor shall submit all drawings, documents & QP as per schedule given in Technical Specifications, project wise & subsequent revisions also, if required.
8. Inspection of materials shall be carried out by BHEL / TPIA and or by Customer or by an authorized agency at manufacture's works before dispatch, if required.
9. Items have to be manufactured as per specification and supplied strictly in accordance with the approved BHEL / Customer's Drawings & Quality Plan. The items/ test certificate of items, which for any reason are not acceptable to BHEL / Customer, shall be required to be retested. No extra charge shall be payable on those account by BHEL.
10. Vendor shall take full responsibility for obtaining Material Dispatch Clearance Certificate (MDCC) from BHEL or CUSTOMER as required.
11. Mode dispatch shall be by road through Schedule Bank/BHEL (PEM) approved transporters.
12. BHEL reserves the right to enter into a parallel rate contract with L1 or L2...and son on vendors only as per NIT.
13. Other terms and conditions shall be as per Standard Technical specification no. PE-RC-999-509-E003 Rev 01 & GCC Rev 06, Enquiry letter and Price Schedule.
14. Offer shall be evaluated with unit rate + ED + CST (not VAT) + Freight for calculating Total FOR site price. Please refer the
15. Bidder to submit offer on techno-commercial compliance basis for rate contract of said item and to submit complete tender in all respects duly signed & stamped on each and every page by the authorized signatory of the bidder as a token of acceptance of all the terms and conditions of tender.
16. The Bidder along with its associate/ collaborators/ sub-contractors/ sub-vendor/ consultants/ service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL web site <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud as soon as it comes to their notice.





**TECHNICAL SPECIFICATION FOR  
ABOVE GROUND EARTHING & LIGHTNING  
PROTECTION MATERIALS**

**PROSPECTIVE PROJECT LIST: Annex-III**

S. No.	PROJECT NAME
1	1X525 MW TUTICORIN
2	1X250 MW ROURKELA
3	4X660 MW BARETHI
4	4X1000 MW PUDIMADAKA (TG)
5	1X800 MW N.CHENNAI (EXT.)
6	1X660 MW BUSAVAL
7	1X600 MW ADILABAD
8	1X660 MW PANKI
9	2X660 MW UDANGUDI
10	2X800 MW UPPUR
11	2X660 MW JAWAHARPUR
12	5X800 MW YADADADRI
13	2X660 MW OBRA
14	1X350 MW YELAHANKA
15	1X800 MW YERAMARUS

**Terms & Conditions of Reverse Auction**

Against this enquiry for the subject item/ system with detailed scope of supply as per enquiry specifications, BHEL may resort to "REVERSE AUCTION PROCEDURE" i.e., ON LINE BIDDING (THROUGH A SERVICE PROVIDER). The philosophy followed for reverse auction shall be English Reverse (No ties).

1. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
2. Those bidders who have given their acceptance for Reverse Auction (quoted against this tender enquiry) will have to necessarily submit 'online sealed bid' in the Reverse Auction. Non-submission of 'online sealed bid' by the bidder for any of the eligible items for which techno-commercially qualified, will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue.
3. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.
4. In case of reverse auction, BHEL will inform the bidders the details of Service Provider to enable them to contact & get trained.
5. Business rules like event date, time, bid decrement, extension etc. also will be communicated through service provider for compliance.
6. Bidders have to fax the Compliance form (annexure IV) before start of Reverse auction. Without this, the bidder will not be eligible to participate in the event.
7. In line with the NIT terms, BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at "Total Cost to BHEL" like Packing & forwarding charges, Taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) for each of the bidder to enable them to fill-in the price and keep it ready for keying in during the Auction.
8. Reverse auction will be conducted on scheduled date & time.
9. At the end of Reverse Auction event, the lowest bidder value will be known on auction portal.

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10. The lowest bidder has to fax/e-mail the duly signed and filled-in prescribed format for price breakup including that of line items, if required, (Annexure VII) as provided on case-to-case basis to Service provider within two working days of Auction without fail.
11. In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL shall be opened as per BHEL's standard practice.
12. Bidders shall be required to read the "Terms and Conditions" section of the auctions site of Service provider, using the Login IDs and passwords given to them by the service provider before reverse auction event. Bidders should acquaint themselves of the 'Business Rules of Reverse Auction', which will be communicated before the Reverse Auction.
13. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action *as per extant BHEL guidelines*, shall be initiated by BHEL and the results of the RA scrapped/ aborted.
14. The Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party.
15. In case BHEL decides to go for reverse auction, the H1 bidder (whose quote is highest in online sealed bid) may not be allowed to participate in further RA process.

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**BHEL PEM-ELECTRICAL**  
**PRE-QUALIFYING REQUIREMENTS FOR**  
**ABOVE GROUND EARTHING MATERIALS**  
**DOC. NO. PE-PQ-999-509-E002, REV. 02, dated 11.02.16**

**ITEMS** : GS flats, GS rods, perforate pipe, GI stranded wires, shielding mast, test links & flexible braided copper conductor

**SCOPE:**

Supply : YES; Erection & Commissioning : NO;

**A) GENERAL CRITERIA FOR EVALUATION**

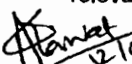
1. Vendor should have in-house fabrication & manufacturing facility.
2. Vendor should be able to supply GS flats, GS rods, perforate pipe, GI stranded wires, shielding mast, test links &, flexible braided copper conductor.
3. Capability of supplying GS flats & galvanised channels/ angles/ structure for about 40 MT per month.
- 4a. Vendor has his own galvanization plant.  
OR
- 4b. Vendor should get galvanization of earthing material done from any of BHEL approved galvanizers.
- 5a. Supplied at least 80 MT of GS flats & galvanised channels/ angles/ structure to 2 different end users.  
OR
- 5b. Repeat order received from 2 different purchasers / end users (each order for minimum 15MT) for GS flats & galvanised channels/ angles/ structure during last 5 years provided the gap between award of two PO's is minimum 2 years.  
OR
- 5c. 1 no. supply experience (as per sl. no. 5a) and 1 no. repeat order (as per sl. no. 5b).  
OR
- 5d. Successful execution of a major order (i.e. supply of at least 80 MT of GS flats & galvanised channels/ angles/ structure in single order) from BHEL- PEM.

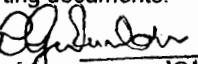
**Note:**

Vendor(s) should submit relevant documents in support of above mentioned General Criteria.

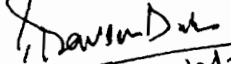
**B) PROJECT SPECIFIC CRITERIA AGAINST ENQUIRY**

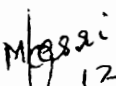
1. After satisfactory fulfilment of all the above criteria/ requirement, offer shall be considered for further evaluation as per NIT and all the other terms of the tender.
2. Consideration of offer will be subject to customer's approval of bidder (if applicable).
3. Any other project specific requirement shall be as per Annexure-I and bidder shall submit relevant supporting documents.

  
 AK Rawat  
 [Technical Convenor]

  
 SK Gurumukhi  
 [SH-E02]

  
 Rajnish Goyal  
 [SH-E03]

  
 Praveen Dutta  
 [SH-E01]

  
 Meena Kesri  
 DH-Electrical.

**TECHNICAL SPECIFICATION**  
**FOR**  
***ABOVE GROUND EARTHING***  
**&**  
***LIGHTNING PROTECTION MATERIALS***

**SPECIFICATION NO. : *PE - RC - 999 - 509 - E003***

***REVISION: 01***



**BHARAT HEAVY ELECTRICALS LIMITED**  
**POWER SECTOR**  
**PROJECT ENGINEERING MANAGEMENT**  
**NOIDA, UP (INDIA) - 201301**



TECHNICAL SPECIFICATION FOR  
ABOVE GROUND EARTHING & LIGHTNING  
PROTECTION MATERIALS

SPECIFICATION NO. PE-RC-999-509-E003  
VOLUME NO. : II-B  
SECTION :  
REV NO. : 01 DATE : 10/02/2016  
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TECHNICAL SPECIFICATION FOR  
ABOVE GROUND EARTHING & LIGHTNING  
PROTECTION MATERIALS

SPECIFICATION NO. PE-RC-999-509-E003
VOLUME NO. : II-B
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# SECTION-A

## SCOPE OF ENQUIRY



TECHNICAL SPECIFICATION FOR  
ABOVE GROUND EARTHING & LIGHTNING  
PROTECTION MATERIALS

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## SCOPE OF ENQUIRY

### 1.0 PURPOSE

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

### 2.0 SCOPE

This specification covers the Design, Manufacture, Inspection and Testing at Manufacturer's works, proper packing and delivery to site of **ABOVE GROUND EARTHING & LIGHTNING PROTECTION MATERIALS**.

3.0 The bids shall be evaluated as per NIT. Ordering shall be done separately for each project.

4.0 The bidder shall be responsible for and governed by all requirements stipulated hereinafter.

5.0 Bidder shall confirm total compliance to the specification without any deviations from technical/quality assurance requirements stipulated.

6.0 The documents shall be in English Language and MKS system of units.

7.0 The quality plan enclosed forms the minimum requirement but not limited to be adhered to by the bidder.

### 8.0 GENERAL TECHNICAL INSTRUCTIONS

- i) BHEL's / Customer representatives shall be given access to the shop in which the Above Ground Earthing & Lightning Protection materials are being manufactured or tested and all test records shall be made available to them.
- ii) The material covered under this specification shall not be dispatched unless the same have been finally inspected, accepted and Material Dispatch Clearance Certificate (MDCC) is issued by BHEL / Customer.
- iii) The bidder to quote for items as per price schedule attached. **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.
- iv) These rates shall be applicable for a period of **2 years** from the date of issue of rate contract for the equipment.



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- v) During rate contract in force; any other BHEL unit may also make use of rates if their specification is identical to specification of rate contract.
- vi) Inspection shall be carried out in line with pre-approved data sheet/QP. However, at contract stage, the successful bidder shall submit the QP for BHEL/ end customer's approval. In case bidder has reference QP agreed with end customer, same can be submitted for specific project after award of contract for BHEL/ end customer's approval. There shall be no commercial implication to BHEL on account of QP approval.
- vii) Inspection will be conducted by BHEL and/or their authorized representatives as per the agreed inspection schedule. The inspection schedule will be submitted by the bidder for BHEL's approval at contract stage. The cost of all tests and inspections will be deemed to have been included in the rate contract.
- viii) Refer Section-D for detailed technical specification, Code & Standards, Tests & Inspection, Drawings & Documents, and Packing.



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PROTECTION MATERIALS

SPECIFICATION NO. PE-RC-999-509-E003  
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# SECTION-D GENERAL TECHNICAL REQUIREMENTS



TECHNICAL SPECIFICATION FOR  
ABOVE GROUND EARTHING & LIGHTNING  
PROTECTION MATERIALS

SPECIFICATION NO. PE-RC-999-509-E003

VOLUME NO. : II-B

SECTION : D

REV NO. : 01 DATE : 10/02/2016

SHEET : 2 OF 4

## 1.0 INTENT OF SPECIFICATION

- 1.1 This specification covers the design, manufacture, inspection & testing, packing at manufacturer's works and delivery to site of Galvanised MS materials to be used for **Above Ground Earthing & Lightning Protection materials**.
- 1.2 The intent of specification is not to specify all details of design & construction of material. The material shall, however, conform in all aspects to high standard of design, engineering and workmanship and be capable of performing in continuous operation upto & after bidder's guarantee period in manner acceptable to purchaser who will interpret the drawings & specification and shall have power to reject any work or material which in his judgement is not in full accordance with this specification.

## 2.0 CODES AND STANDARDS

- 2.1 The material shall comply with all currently applicable safety codes and statutory regulations of India as well as of the locality where the material is to be installed.
- 2.2 The design, material, construction, manufacture, inspection, testing and performance of **Above Ground Earthing & Lightning Protection materials** shall conform to the latest revision of relevant standards and codes of practices as per Annexure-A.
- 2.3 In case of conflict between the applicable reference standard and this specification, this specification shall govern.

## 3.0 SCOPE OF ENQUIRY

- 3.1 Bidder shall quote for **Above Ground Earthing & Lightning Protection materials** in accordance with various sections of this specification. The system shall be complete in all aspects, for satisfactory operation, in accordance with this specification & technical particulars. Project information shall be given separately for the specific project.

## 4.0 TECHNICAL REQUIREMENTS

- 4.1 Technical particulars of Above Ground Earthing & Lightning Protection materials are specified in Technical Datasheet.
- 4.2 Straight lengths of hot dip galvanised MS materials as per project specific requirement shall be supplied in standard lengths as below:
- |    |                              |   |                      |
|----|------------------------------|---|----------------------|
| a) | MS Flats of all sizes        | : | 4-7 metres           |
| b) | SWG wires of different sizes | : | 100 metres (minimum) |



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- 4.3 All finished galvanized MS material shall be free from sharp edges, corners, burs & unevenness.
- 4.4 Test link without box & Test link with box shall be as per enclosed drawing no. PE-DG-999-509-E003.
- 4.5 Flexible braided Copper Conductor of 600 mm length (cross section equivalent to 300 sq.mm) with tinned copper clamp connected by U-bolt for fence gate earthing shall be as per enclosed drawing no. PE-DG-999-509-E003.
- 4.6 Shielding Mast shall be as per enclosed drawing no. PE-DG-999-509-E003.
- 4.7 Necessary fixing hardware shall be provided along with each accessory as specified in drawings enclosed.
- 4.8 BOQ shall be furnished separately for the specific project.

**5.0 QUALITY ASSURANCE, TESTING & INSPECTION**

- 5.1 BHEL's Standard QP (PE-QP-999-509-E001) is enclosed for reference. However, at contract stage, the successful bidder shall submit the QP for BHEL/ end customer's approval. In case bidder has reference QP agreed with end customer, same can be submitted for specific project after award of contract for BHEL/ end customer's approval. There shall be no commercial implication to BHEL on account of QP approval.
- 5.2 All materials shall be procured, manufactured, inspected and tested by vendor/ sub-vendor as per approved quality plan.
- 5.3 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. Charges for all these tests for all the equipment & components shall be deemed to be included in the bid price.

**6.0 PACKING**

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

**7.0 DRAWINGS & DOCUMENTS TO BE SUBMITTED**

- 7.1 Bidders shall furnish following documents as the part of their technical offer for 'Rate Contract':-
- a) Complete signed & stamped copy of this specification.



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- b) "No Technical Deviation" certificate w.r.t. this specification.
- c) Unpriced 'Price Schedule' after mentioning "Quoted" against the items quoted.

7.2 After rate contract, against specific project requirement following information shall be furnished by BHEL:-

- a) Project Information
- b) Updated list of BHEL-PEM approved Galvanizers (Refer Annexure-2 to Quality Plan)
- c) Unpriced 'Price Schedule' for the Specific Project.

**Signed and stamped copy of Unpriced 'Price Schedule' for the Specific Project mentioned at Sl. No. 7.2 above shall be furnished to BHEL. No deviation/ change shall be allowed in this document.**

7.3 Following documents/drawings shall be submitted after placement of order for BHEL & customer's approval:-

Sl. No.	Drawings/Document Description	Drawings / Document Number	Submission Schedule
1.	Quality Plan for Above ground earthing & Lightning protection material.	PE-V0-XXX-507-E903	Within one week of award of contract

Standard Quality Plan as enclosed in the technical specification is to be appended with cover sheet bearing document number & description as stated above. The signed & stamped copy for the same shall be submitted to BHEL within one week of award of contract without making any changes in the contents of the document for BHEL/ end customer's approval. Refer Cl. No. 5.1 also.

7.4 Document indicated at clause no. 7.3 above, shall be submitted through document management system (DMS).



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# QUALITY PLAN



**QUALITY PLAN**

SHEET 1 OF 2

CUSTOMER :

PROJECT TITLE :

SPECIFICATION NO. :

BIDDER/ VENDOR :

STANDARD QP NO. : PE-QP-999-509-E001, REV. 01

SPECIFICATION TITLE:

SYSTEM EARTHING

ITEM : EARTHING & LIGHTNING PROTECTION MATERIALS

DOC. NO. :

SL. NO.	COMPONENT/OPERATION	CHARACTERISTIC CHECK	CAT.	TYPE/METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORM	FORMAT OF RECORD	AGENCY			REMARKS
									P	W	V	
1	2	3	4	5	6	7	8	9	10			11
1.0	<b>RAW MATERIAL</b>											
1.1	MILD STEEL (FLATS & RODS) AS PER SPECIFICATION	1.CHEMICAL & PHYSICAL PROPERTIES	MA	VERIFICATION, OF TC'S	100%	IS:2062	IS:2062	MILL TC	3	-	1/2	Refer note in Remark at Sl. No.3
		2.DIMENSIONS	MA	MEASUREMENT	100%	IS - 1730	IS - 1730	QC RECORD	3/2	-	-	
		3.SURFACE FINISH	MA	VISUAL	100%	IS : 1079	IS : 1079	QC RECORD	3/2	-	-	
1.2	ZINC	1.CHEM.COMP.	MA	CHEM.TEST	SAMPLE	IS - 209	IS - 209	QC RECORD	3/2	-	1/2	
2.0	<b>IN-PROCESS</b>											
2.1	CUTTING, DRILLING	1.DIMENSIONS	MA	MEASUREMENT	100%	APP. DATA SHEET/ APP. DRAWING	APP. DATA SHEET/ APP. DRAWING	QC RECORD	2	-	1	
		2.SURFACE FINISH	MA	VISUAL	100%	FREE FROM DEFECTS & SLAG	FREE FROM DEFECTS & SLAG	QC RECORD	2	-	1	
2.2	SURFACE PREPARATION	1.CLEANING PICKLING, RINSING, & FLUXING	MA	VISUAL	PERIODIC IN EACH SHIFT	IS:2629	IS:2629	QC RECORD	2	-	-	
		2.SURFACE QUALITY	MA	VISUAL	100%	IS:2629	IS:2629	QC RECORD	2	-	-	

<b>BHEL</b>	<b>PARTICULARS</b>	<b>BIDDER/VENDOR</b>
	<b>NAME</b>	
	<b>SIGNATURE</b>	
	<b>DATE</b>	
		<b>BIDDER'S/VENDORS COMPANY SEAL</b>

LEGEND : 1 - BHEL/ CUSTOMER 2 - VENDOR 3 - SUB- VENDOR P - PERFORM W - WITNESS V - VERIFICATION



**QUALITY PLAN**

CUSTOMER :

PROJECT TITLE :

SPECIFICATION NO. :

BIDDER/ VENDOR :

STANDARD QP NO. : PE-QP-999-509-E001 REV. 01

SPECIFICATION TITLE:

SHEET 2 OF 2

SYSTEM EARTHING

ITEM : EARTHING & LIGHTNING PROTECTION MATERIALS

DOC. NO. :

SL. NO.	COMPONENT/OPERATION	CHARACTERISTIC CHECK	CAT.	TYPE/METHOD OF CHECK	EXTENT OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORM	FORMAT OF RECORD	AGENCY			REMARKS																											
									P	W	V																												
1	2	3	4	5	6	7	8	9	10			11																											
2.3	GALVANISING	1.TEMPERATURE OF BATH	MA	TEMPERATURE INDICATOR	CONTINUOUS	IS - 2629	IS - 2629	QC RECORD	3/2	-	-	Galvanization is to be done at galvanisation plant listed in annexure-2 to quality plan.																											
		2. DROSS	MA	VISUAL	PERIODIC	IS - 2629	IS - 2629	QC RECORD	3/2	-	-																												
		3. RATE OF IMMERSION	MA	VISUAL/ MEASUREMENT	100%	IS - 2629/ MFRS PRACTICE	IS - 2629/ MFRS PRACTICE	QC RECORD	3/2	-	2																												
		4.SURFACE QUALITY	MA	VISUAL	100%	IS - 2629	FREE FROM BURRS, ROUGHNESS, SLAG, FLUX, STAIN ETC.	QC RECORD	3/2	-	-																												
3.0	<b>FINISHED ITEMS</b>											<p>Note: sample for chemical test shall be selected by BHEL&amp; testing shall be done at NABL/ govt. approved</p> <p>Sampling plan for galvanization test: Inspection shall be as per table 2 of IS 4759 and same is mentioned below:</p> <table border="1"> <thead> <tr> <th>No. of units in a</th> <th>No. of units to be selected in a sample</th> <th>Acceptance No.</th> </tr> </thead> <tbody> <tr> <td>(1)</td> <td>(2)</td> <td>(3)</td> </tr> <tr> <td>Upto 25</td> <td>3</td> <td>0</td> </tr> <tr> <td>26-100</td> <td>5</td> <td>0</td> </tr> <tr> <td>101-150</td> <td>8</td> <td>1</td> </tr> <tr> <td>151-500</td> <td>13</td> <td>1</td> </tr> <tr> <td>501-1000</td> <td>20</td> <td>2</td> </tr> <tr> <td>1001-10000</td> <td>32</td> <td>3</td> </tr> <tr> <td>10001 and above</td> <td>50</td> <td>5</td> </tr> </tbody> </table> <p>Note:- If the number of defective units in a lot exceeds the acceptance number as specified in col (3) of the table, the lot shall be rejected, else accepted.</p>	No. of units in a	No. of units to be selected in a sample	Acceptance No.	(1)	(2)	(3)	Upto 25	3	0	26-100	5	0	101-150	8	1	151-500	13	1	501-1000	20	2	1001-10000	32	3	10001 and above	50	5
No. of units in a	No. of units to be selected in a sample	Acceptance No.																																					
(1)	(2)	(3)																																					
Upto 25	3	0																																					
26-100	5	0																																					
101-150	8	1																																					
151-500	13	1																																					
501-1000	20	2																																					
1001-10000	32	3																																					
10001 and above	50	5																																					
3.1	MS FLATS	1. CHEMICAL	MA	CHEMICAL	1 No./LOT/SIZE	IS-2062	IS-2062	LAB TC	2	-	1																												
		2.DIMENSIONS	MA	MEASUREMENT	IS 2500 (PART 1 LEVEL S-4	APP. DATA SHEET/ APP. DRAWING	APP. DATA SHEET/ APP. DRAWING	INSP. REPORT	2	1	-																												
		3.SURFACE FINISH	MA	VISUAL	IS 2500 (PART 1 LEVEL S-4	FREE FROM BURRS, SLAG, ROUGHNESS, FLUX, STAIN, ETC.	FREE FROM BURRS, SLAG, ROUGHNESS, FLUX, STAIN, ETC.	INSP. REPORT	2	1	-																												
		4.MASS OF ZINC COATING	MA	CHEM. TEST	Refer Remarks	IS-6745 / APP. DATA SHEET	APP. DATA SHEET	INSP. REPORT	2	1	-																												
		5.UNIFORMITY OF ZINC COATING	MA	CHEM. TEST	Refer Remarks	IS-2633	IS-2633	INSP. REPORT	2	1	-																												
		6.THICKNESS OF ZINC COATING	MA	ELCOMETER	Refer Remarks	APP. DATA SHEET	APP. DATA SHEET	INSP. REPORT	2	1	-																												
		7.ADHESION	MA	MECH.TEST	Refer Remarks	IS-2629	IS-2629	INSP. REPORT	2	1	-																												
<p>Note: Items like Pipes/ Flexible Copper Braid/ GI wire/ GS Rod/ Shielding Mast/ Test link will be cleared based on COC (certificate of Compliance)</p>																																							

<b>BHEL</b>	<b>PARTICULARS</b>	<b>BIDDER/VENDOR</b>
	<b>NAME</b>	
	<b>SIGNATURE</b>	
	<b>DATE</b>	
		<b>BIDDER'S/VENDORS COMPANY SEAL</b>
<b>LEGEND :</b>	<b>1 - BHEL/ CUSTOMER</b>	<b>2 - VENDOR</b>
	<b>3 - SUB- VENDOR</b>	<b>P - PERFORM</b>
	<b>W - WITNESS</b>	<b>V - VERIFICATION</b>

## ANNEXURE – 1

### INSTRUCTIONS FOR FILLING QUALITY PLAN

The Quality Plan shall include all the Quality Control Measures and Checks adopted by the Vendor to ensure that the material/component/assembly/services supplied by him meet/will meet the requirements as per specifications and good practices. They shall include all stages of operation such as materials, processes, manufacture, assembly, packing and despatch. The following guide lines may be noted:

- Column 1- Serial Number
- Column 2- Component/Operation- The component and/or operation being checked shall be given here.
- Column 3- Characteristics check- The characteristics being checked shall be given here, e.g., chemical composition, mechanical properties, leak tightness, surface defects etc..
- Column 4- Category -'CR' stands for critical characteristic - affecting safety of equipment and personnel  
'MA' stands for major Characteristic - affecting safety of equipment and personnel  
'MI' stands for minor characteristic - affecting appearance etc.
- Column 5- Type/Method of check e.g. chemical analysis tensile testing, hydraulic test, visual examination radiography etc.
- Column 6- Extent of check, such as, 100, 10, 1 percent etc.
- Column 7- Reference Documents - Documents, such as technical specification, drawings, standard specifications (IS, BS ETC.) procedure, etc. according to which check is done.
- Column 8- Acceptance Norms - Standards etc. according to which acceptability or otherwise of the characteristics being checked is decided.
- Column 9- Format of Record - Formats, log sheets, reports, etc. in which the observations are recorded. Standard log sheets, reports, formats etc. of the Vendors shall be numbered and such reference numbers shall be included here.
- Column 10- Agency - The agency which performs the test/instruction shall be written in sub-column 'W'  
The agency which verifies test certificates/inspection records and carries out audit check of the components/operation shall be written in sub-column 'V'
- The agencies are codified as 1,2 & 3
- '1' stands for (BHEL)
- '1' \* means the operation shall be cleared by BHEL before the start of the next operation.
- '2' Stands for Vendor
- '3' stands for sub-Vendor of the Vendor and so on.
- Example :
- Entry '3' in column 'P' means test./inspection to be performed by sub-Vendor's QC
- Entry '2' in column 'W' means test./inspection to be witnessed by Vendor's QC
- Entry '1' in column 'V' means verification shall be done by BHEL and next stage to be started only after the hold point is cleared by BHEL
- Column 11- Remarks - Any special remarks shall be given here.

#### NOTES :

- In absence of correlation with the test certificate(s) (e.g. material identification) samples shall be drawn by BHEL and all tests as per relevant specifications shall be carried out in their presence or in recognized Government Laboratory.
- When materials and components are initially identified and stamped by BHEL QS engineer, the identification marks shall be preserved till despatch. Wherever this is not possible, the identification mark shall be transferred to the components in the presence of BHEL QS Engineer unless otherwise agreed.
- For castings and forgings integral test specimens shall be provided, When this is not possible for casting, they shall be poured in the presence of BHEL QS Engineer unless otherwise, if witnessing of test by BHEL is called for.
- When welders qualified by reputed inspection agencies or statutory bodies are not available, qualification tests shall be conducted in the presence of BHEL QS Engineer.
- This Quality Plan is liable to be modified as per the requirements of approved drawings and changes in technical specifications/drawings. If there are contradictions in respect of column 7 & 8 between this Quality Plan and the approved drawings specifications, the latter shall prevail.
- Wherever inspection by BHELs Purchaser/Third Party/Statutory authorities are mandatory, this shall be complied with.
- Inspection reports, log sheets, test reports/certificate. etc. shall be furnished to BHEL at the appropriate stages or at the time of final inspection, as required.
- This Quality Plan is also applicable to spares, if any, under scope of supply of Vendor.
- The quality plan shall be submitted in minimum 4 copies with a soft copy of the same or in line with contract requirements.

**ANNEXURE-2 to Quality Plan  
(LIST OF BHEL- PEM APPROVED GALVANIZERS)**

SL. NO.	ITEM	VENDOR NAME	ADDRESS
1	Galvanising	Jenco Industrial Corporation	Chincholi Bunder Khkar Road Near Link Road Devruwadi Malad (W) Mumbai 400064
2	Galvanising	National Galvanizing Company	66, Barrackpore Kamarhatt Trunck Road Calcutta-700058
3	Galvanising	Sigma Galvanising Pvt. Ltd.	Plot No.C-169, TTC, MIDC Ind Area Navin Mumbai-400705
4	Galvanising	B.P. Projects PVT LTD	167A, Vivekananda Road Kolkata-700006
5	Galvanising	Standard Galvanisers	Makardah Road, Kabar Para, Bankra, Howarah -711403
6	Galvanising	Steel Products	National Highway No. 6, Chamrail, Kona, Howrah-711114
7	Galvanising	Unitech Fabricators & Engineers Pvt. Ltd.	Village- Ajab Nagar, P.O. -Molla Simlla, P.S. - Singur, Dist - Hoogly, Pin-712223
8	Galvanising	Shivam Engineers & Fabricators	A0-282-284, Industrial Area, South Side of G.T. Road, Ghaziabad, U.P.
9	Galvanising	B.G. Shirke Construction Technology Pvt. Ltd	72-76, Mundhawa, Pune - 401 036
10	Galvanising	Galbro Ispat Galvanizers Pvt. Ltd.	GUT 11 AND 12, OPP. KUDUS STEEL ROLLING MILL, WADA, THANE , MUMBAI
11	Galvanising	Eros Metals	G-97, MIDC, Bhutibori , Nagpur
12	Galvanising	Unistar Galvanisers & Fabricators Pvt. Ltd.	Lansdowne Tower, 2/1-a, Sarat Bose Road, 6th Floor, Sarat Bose Road, Kolkata, West Bengal 700020
13	Galvanising	Indmark Formtech Pvt. Ltd.	Phase - 3, E - 11 / 1, M. I. D. C., Chakan, Pune - 410 501, Maharashtra, India.
14	Galvanising	Namdhari Industrial Traders Pvt. Ltd.	Village Latton Dana, Chandigarh Road, Ludhiana
15	Galvanising	Neha Galvaniser	Jalan Industrial Estate, Gate No-1, 1st Right Choise Lane, Near N.G-6, Jangalpur, PO Domjur Howrah - 700071,
16	Galvanising	Patny Systems (P) Ltd.	Unit-IV, Sy No. -228/9, Plot No. 6, IP Kuchavaram, Toopran(M) Dist.- Medak, Telegana - 502336
17	Galvanising	Parmar Metal Company	Survey No.207,Veraval (Shapar) Dist. Rajkot, India.
18	Galvanising	Passive Infra Projects Pvt. Ltd	8th KM Stone, Sampla Kharkhoda Road, Hassangarh, Rohtak, Haryana
19	Galvanising	Rukmani Electrical & Fabricators Pvt, Ltd.	Urla Industrial Area, Urla Sarora Road, Raipur- 493 221 (Chhattisgarh)
20	Galvanising	DMP Projects Pvt.Ltd.	Dulagarh Industrial Park , PS-Sankrail , Howrah -711302
21	Galvanising	Vinfab Engineers India Private Limited	Gut no. 224/1 &2 Bhiwandi Wada State Highway, Village khupri, Dist. Thane, Maharashtra -421303
22	Galvanising	Saral Projects & Processors	B-1, Industrial Area, Site-II, Amawan Road Rae Bareli
23	Galvanising	Jamna Metal Company	D - 1513, DSIDC, Narela Industrial Area Delhi - 110040, India

**NOTES:**

1. ANY CHANGE IN THE ABOVE LIST SHALL BE INFORMED AT THE TIME OF SPECIFIC PROJECT REQUIREMENT AND NO COMMERCIAL IMPLICATION SHALL BE ALLOWED ON THIS ACCOUNT.
2. IT SHALL BE THE RESPONSIBILITY OF THE VENDOR TO GET THE MATERIAL GALVANIZED FROM THE ABOVE LIST WITHOUT ANY COMMERCIAL IMPLICATION TO BHEL.



TECHNICAL SPECIFICATION FOR  
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**ANNEXURE - A**

**APPLICABLE STANDARDS & CODES**

For Hot rolled carbon sheets & strips.	IS: 2062
For Mild Steel Wire	IS: 280
For Surface pre treatment	IS: 2629
For Hot dip galvanising of steel	IS: 2629
For Hot dipped galvanised coating on round steel wires	IS: 4826
For Testing of zinc coating	IS: 2633
For Determining of mass of zinc coating	IS: 6745
For Rolling & cutting tolerances of hot rolled steel products	IS: 1852
For Hot dip zinc coating on structural steel & other allied products	IS: 4759
For Tubes, Tubulars and other Wrought Steel Fittings	IS: 1239



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REV NO. : 01 DATE : 10/02/2016
SHEET : 1 OF 3

**SPECIFIC TECHNICAL  
REQUIREMENTS**

**(TECHNICAL DATASHEET)**



TECHNICAL SPECIFICATION FOR  
ABOVE GROUND EARTHING & LIGHTNING  
PROTECTION MATERIALS

SPECIFICATION NO. PE-RC-999-509-E003
VOLUME NO. : II-B
SECTION : D
REV NO. : 01 DATE : 10/02/2016
SHEET : 2 OF 3

**TECHNICAL DATASHEET**  
(SPECIFIC TECHNICAL REQUIREMENTS)

**1.0 GALVANIZED MS MATERIALS FOR ABOVE GROUND EARTHING AND LIGHTNING PROTECTION SYSTEMS**

- a) Material: Hot Rolled Mild Steel  
b) Type: Hot-dip galvanized

**3.0 SURFACE TREATMENT**

Galvanising:

- a) Pre-treatment As per IS 2629 prior to galvanization  
b) Type Hot dip galvanization.  
c) Applicable Standard IS 2629  
d) Minimum thickness:  
i) MS flats 5mm thick & over 75 microns (minimum)  
ii) MS flats under 5mm thickness 60 microns (minimum)  
iii) Pipes/ conduits with thickness 5 mm & over. 75 microns (minimum)  
iv) Pipes/ conduits with thickness under 5mm 60 microns (minimum)  
v) GI Wire 20 Microns (Medium coated)  
e) Min. weight:  
i) MS flats 5mm thick & over 610 gms. / sq. mtr.  
ii) MS flats under 5mm thickness 460 gms. / sq. mtr.  
iii) Pipes/ conduits with thickness 5 mm & over. 610 gms. / sq. mtr  
iv) Pipes/ conduits with thickness under 5mm. 460 gms. / sq. mtr  
v) GI Wire 150 gms. / sq. mtr.



**TECHNICAL SPECIFICATION FOR  
ABOVE GROUND EARTHING & LIGHTNING  
PROTECTION MATERIALS**

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f) Thickness of Pipes:

Sl. No.	Material	Size	Thickness (in mm.)
1	Cast Iron (CI)	100 ID	13.0
2	Mild Steel (MS)	25 NB, Heavy duty	4.0
3	Mild Steel (MS)	40 NB, Heavy duty	4.0
4	Mild Steel (MS)	50 NB, Heavy duty	4.5
5	Mild Steel (MS)	65 NB, Heavy duty	4.5
6	Mild Steel (MS)	100 NB, Heavy duty	5.4



TECHNICAL SPECIFICATION FOR  
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PROTECTION MATERIALS

SPECIFICATION NO. PE-RC-999-509-E003
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# PRICE SCHEDULE



TECHNICAL SPECIFICATION FOR  
ABOVE GROUND EARTHING & LIGHTNING  
PROTECTION MATERIALS

SPECIFICATION NO. PE-RC-999-509-E003

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**SCHEDULE OF PRICES**

**ABOVE GROUND EARTHING & LIGHTNING PROTECTION MATERIALS**

S. No.	ITEM CODE	DESCRIPTION	UNIT	BOQ	UNIT PRICE (Rs.)
1	507-23001-A	100 ID, 13 MM THICK CI PIPE (PERFORATED) 3M LONG.	NOS	250	
2	507-23008-A	FLEXIBLE COPPER BRAID FOR GATE EARTHING.	NOS	650	
3	507-23009-A	GI WIRE 12 SWG	MTR	1000	
4	507-23010-A	GI WIRE 14 SWG	MTR	1000	
5	507-23011-A	GI WIRE 16 SWG	MTR	1000	
6	507-23012-A	GI WIRE 4 SWG	MTR	1000	
7	507-23013-A	GI WIRE 8 SWG	MTR	9000	
8	507-23014-A	GS FLAT 25 X 3 MM	MT	3300	
9	507-23015-A	GS FLAT 25 X 6 MM			
10	507-23016-A	GS FLAT 35 X 6 MM			
11	507-23017-A	GS FLAT 50 X 6 MM			
12	507-23018-A	GS FLAT 50 X 8 MM			
13	507-23019-A	GS FLAT 65 X 10 MM			
14	507-23020-A	GS FLAT 65 X 8 MM			
15	507-23021-A	GS FLAT 75 X 10 MM			
16	507-23022-A	GS FLAT 75 X 8 MM			
17	507-23041-A	GS FLAT 50X10 mm			
18	507-23042-A	GS FLAT 75 X 5 MM			
19	507-23056-A	GS FLAT 75X12MM			
20	507-23057-A	GS FLAT 70X10MM			
21	507-23058-A	GS FLAT 50X3MM			



TECHNICAL SPECIFICATION FOR  
ABOVE GROUND EARTHING & LIGHTNING  
PROTECTION MATERIALS

SPECIFICATION NO. PE-RC-999-509-E003

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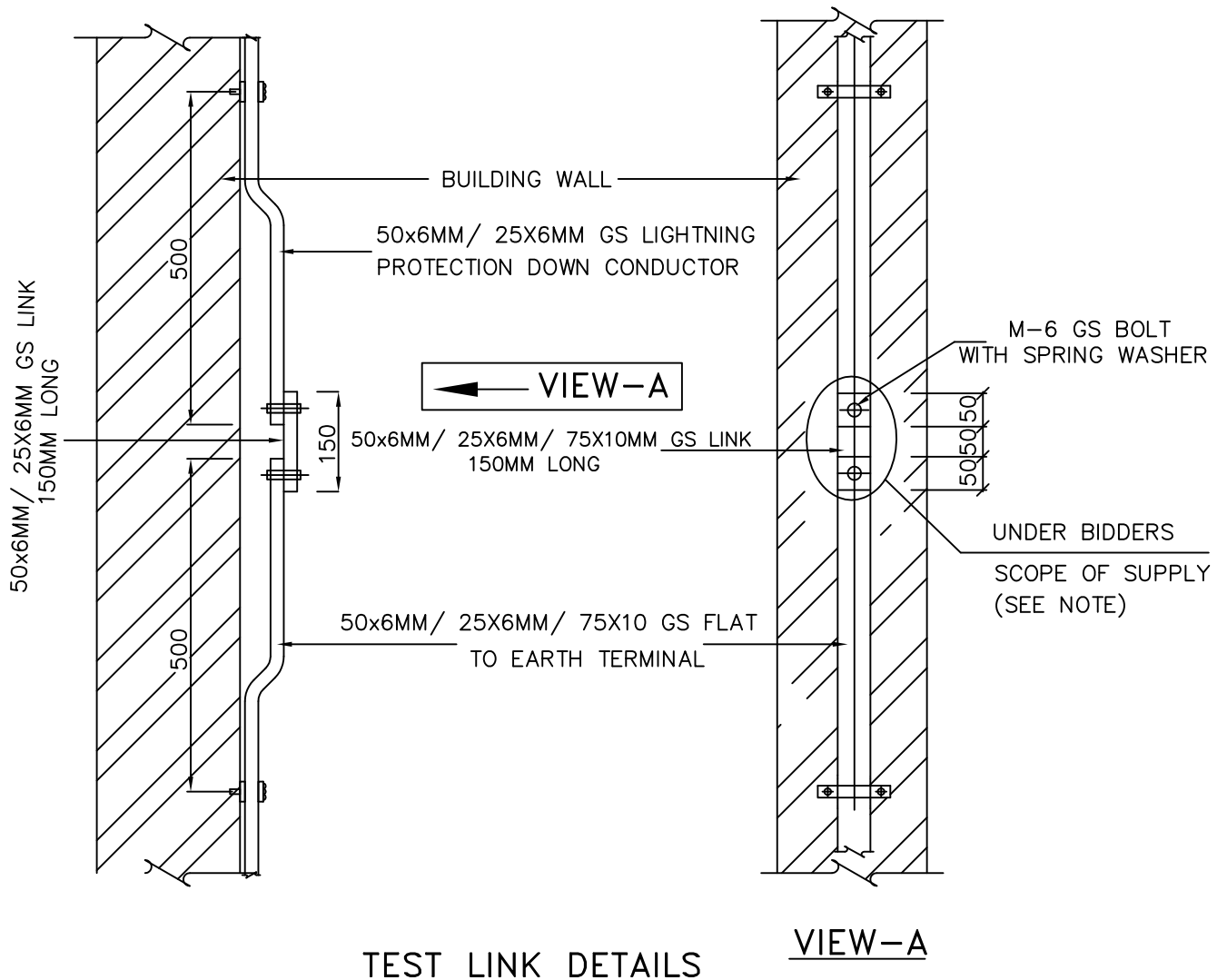
**SCHEDULE OF PRICES**

**ABOVE GROUND EARTHING & LIGHTNING PROTECTION MATERIALS**

22	507-23023-A	GS ROD 20 MM DIA.1000MM LONG	NOS	2200	
23	507-23029-A	TEST LINK 150X50X6 MM GS FLAT	NOS	300	
24	507-23030-A	TEST LINK 150X50X6 MM GS FLAT WITH BOX	NOS	1000	
25	507-23047-A	TEST LINK 150X25X6 MM GS FLAT WITH BOX	NOS	200	
26	507-23049-A	TEST LINK 150X25X6 MM GS FLAT	NOS	750	
27	507-23050-A	40NB GALV MS HEAVY DUTY PIPE (PERFORATED) 3M LONG	NOS	100	
28	507-23051-A	50NB GALV MS HEAVY DUTY PIPE (PERFORATED) 3M LONG	NOS	900	
29	507-23052-A	65NB GALV MS HEAVY DUTY PIPE (PERFORATED) 3M LONG	NOS	150	
30	507-23053-A	100NB GALV MS HEAVY DUTY PIPE (PERFORATED) 3M LONG	NOS	100	
31	507-23055-A	SHIELDING MAST	NOS	20	
32	507-23059-A	100ID,13MM THK,CI PIPE(PERF) 3.5M LONG	NOS	150	
33	507-23060-A	25NB, 2.5MM THK PERF 3M GALV MS PIPE	NOS	100	
34	507-23061-A	TEST LINK 150X75X10 MM GS FLAT	NOS	100	
35	507-23062-A	25NB GALV MS HEAVY DUTY PIPE (PERFORATED) 3M LONG	NOS	100	

**NOTES:**

- 1) PVC (as per Annexure-B) shall be applicable for GI Wires (Sl. no. 3 to 7) & GS Flats (Sl. no. 8 to 21). For rest of the items; Unit Prices shall be fixed & no PVC shall be applicable.
- 2) Ex-work Prices for Flats & Wires (Sl. no. 3 to 21) shall be 94% of Total ex-work prices. Prices for remaining items shall be 6% of Total ex-work prices.



**NOTE:** BIDDER'S SCOPE INCLUDES THE 150 MM LONG 50X6MM/ 25X6MM/ 75X10MM GS LINK ALONG WITH HARDWARES (2 NOS. M-6 GS NUTS & BOLTS & 4 NOS. SPRING WASHERS)

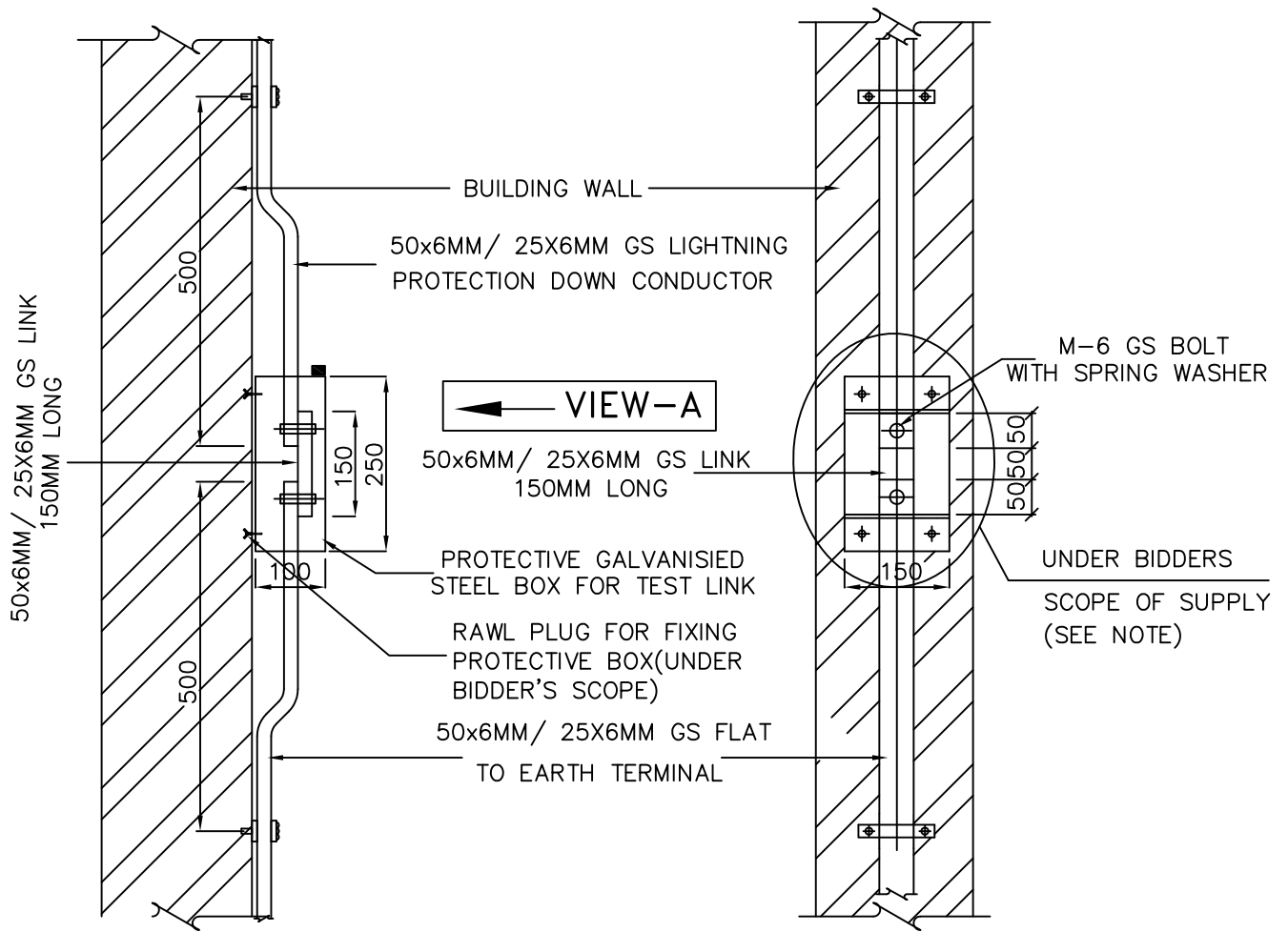


TITLE  
**TYPICAL DETAILS OF TEST LINK**

**PE-DG-999-509-E003**

SH 1 OF 4

REV 1



**TEST LINK DETAILS**

**VIEW-A**

**NOTE:** BIDDER'S SCOPE INCLUDES THE 150 MM LONG 50X6MM/ 25X6MM GS LINK ALONG WITH HARDWARES (2 NOS. OF M-6 GS NUTS & BOLTS & 4 NOS. SPRING WASHERS) & 250X150X100 MM GALVANISED MS COVERING BOX (1.6 MM THICK) WITH 4 NOS. M12 SCREWS & RAWL PLUGS FOR FIXING OF THE SAME.



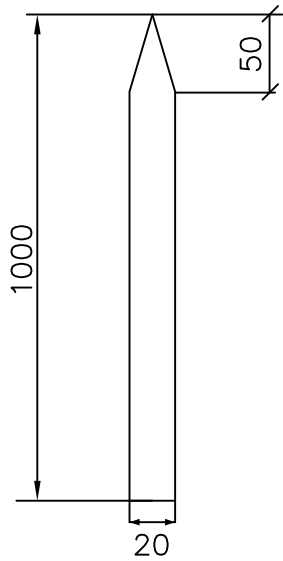
TITLE

**TYPICAL DETAILS OF TEST LINK  
WITH PROTECTIVE BOX**

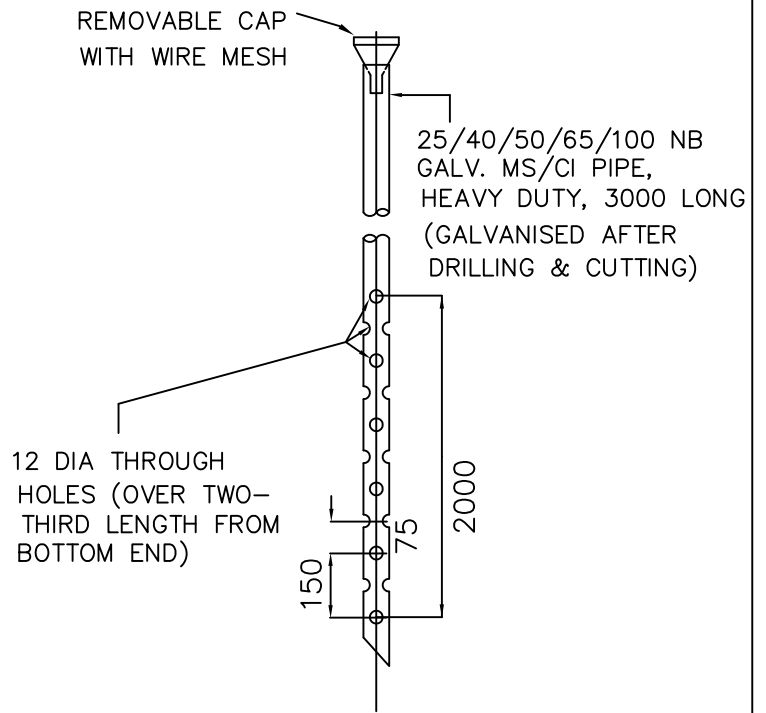
PE-DG-999-509-E003

SH 2 OF 4

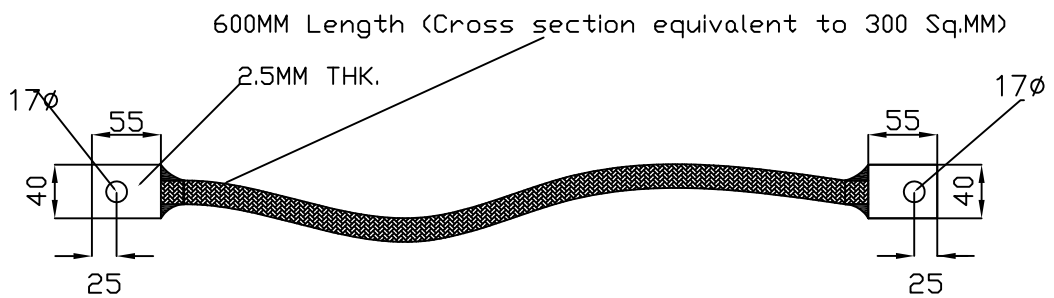
REV 1



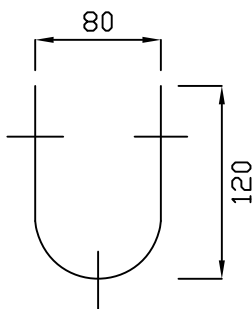
20MM DIA GS ROD  
FOR LIGHTNING PROTECTION



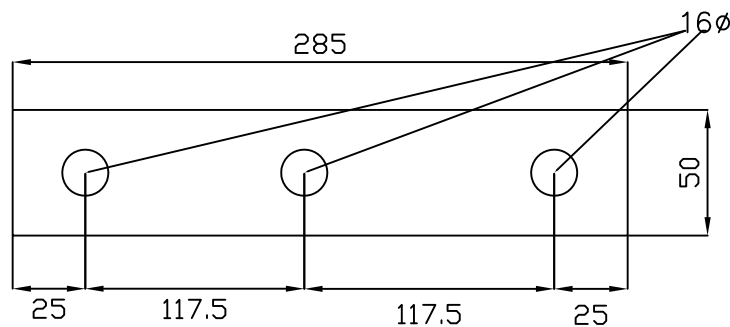
PERFORATED PIPE



FLEXIBLE BRAIDED COPPER CONDUCTOR



PLAN



TINNED COPPER 'U' CLAMP (2.5 MM THICK)



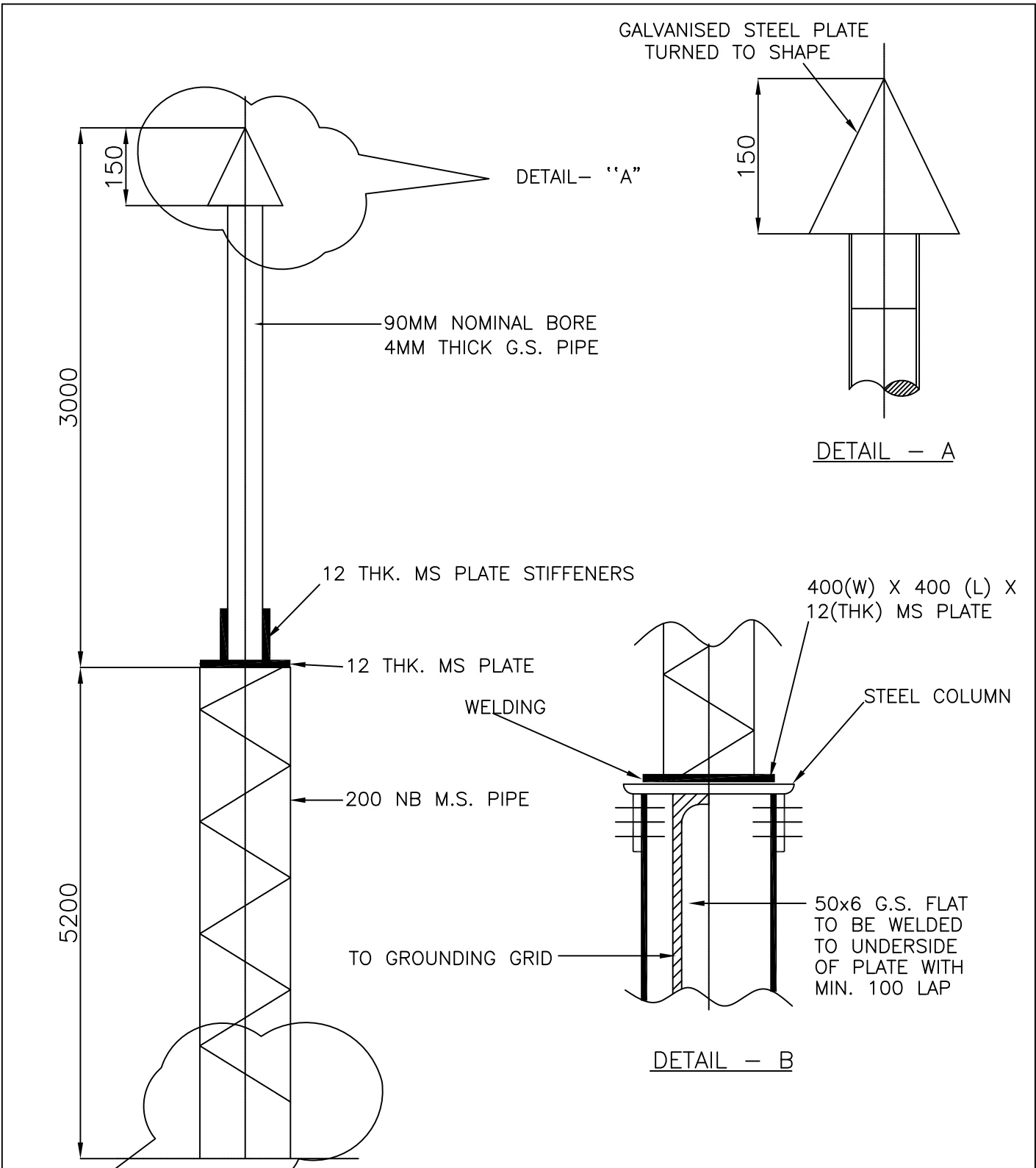
TITLE

TYPICAL DETAILS OF FLEXIBLE  
BRAIDED COPPER, 20 MM DIA.  
GS ROD & PERFORATED PIPE

PE-DG-999-509-E003

SH 3 OF 4

REV 1



FIXING DETAILS OF SHIELDING MAST ON TOP  
STEEL COLUMNS OF POWER HOUSE BUILDING  
(FOR LIGHTNING PROTECTION)

NOTES:

1. THE ABOVE SHIELDING MAST SHALL BE PROVIDED ON TOP OF "A" ROW STEEL COLUMNS OF POWER HOUSE BUILDING
2. ALL DIMENSIONS ARE IN MM.



TITLE

TYPICAL DETAILS OF  
SHIELDING MAST

PE-DG-999-509-E003

SH 4 OF 4

REV 1



## Price Variation Formulae

ANNEXURE-B

Prices shall be variable as per following PVC formulae:-

ABOVE GROUND EARTHING & LIGHTNING PROTECTION MATERIALS	
$P = P_o/100 (20 + 70 (Fe/Fe_o) + 10 (W/ W_o) )$	Indices to be taken from IEEMA Circular (Cir. no. 073/ PVC/CLAR/02) for the applicable month.

Wherein,

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

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

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

W<sub>o</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, **one** month prior to date of tender enquiry.

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 **one** month prior to the date of inspection call.

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, **one** month prior to the date of inspection call.

### NOTE:

- 1) PVC shall be applicable for 'GS FLATS & GI WIRES' only.
- 2) Price variation shall be limited to +10% of total Ex-works price actually supplied and no limit on -ve price variation.
- 3) PVC shall be payable only for contractual delivery period (including delivery extensions if any) i.e. no PVC shall be payable for delay in delivery attributed to vendor & in delayed delivery cases PVC for contractual delivery date & actual delivery date shall be compared and whichever found lower side shall be payable to vendor.