



BHEL : PIPING CENTRE : CHENNAI – 600 017

ENQUIRY NO: 4011000034

DATE: 11.06.10

IMPORTANT INFORMATION TO BIDDERS.

1. This Tender is a **TWO PART BID**.
Type and quantum of work is detailed in "SCOPE OF WORK"
2. The quoted price shall be " FIRM " till the complete execution of the scope.
3. Mode of Operation for Price Bid – Reverse Auction.
4. Last date for submission of offer **25.06.2010 - Time - 14.00 Hours.**
5. Techno-Commercial Bid Opening Date **25.06.2010 - Time - 14.30 Hours.**
6. The above bid shall be sent in a sealed cover duly indicating

Enquiry No. & date, Tender Opening date and "IS 3589 PIPES –OTPC Tripura Project
To
ADDL.GM / MM
BHEL - Piping Centre
Old No 93, (New No:80) G N Chetty Road
T Nagar / Chennai 600 017 . PHONE : 28161244 / 28161331

SCOPE OF WORK :

BHEL requires the below mentioned quantities of various sizes of Welded Pipes – Pipes either **Spiral or Longitudinal Seam Weld** conforming to IS 3589 FE 410 Pipes with Painting and as per TDC-TDG:07:05 and to be delivered to OTPC Tripura project site. The raw material plate is to be arranged by suppliers themselves.

LIST OF ITEMS

Enq. Sl.no	Pipe Size in MM OD x Thickness	Qty. Mtrs	Delivery	Project Site	Work Order Details
10	1422 mm x14 mm OG	112	30.10.10	OTPC TRIPURA	7023 1 80 468 002-56 Mtrs
					7024 1 80 468 002- 56 Mtrs
20	1422 mm x 14 mm UG	164			7023 1 80 468 001- 82 Mtrs
					7024 1 80 468 001- 82 Mtrs
30	2132 mm x 18 mm UG	902			7023 1 80 468 003- 430 Mtrs
					7024 1 80 468 003 – 472 Mtrs

Total Weight ~ 980.6MT

TECHNICAL CUM COMMERCIAL

Technical :

1. The bidder shall supply the Welded Pipes, as per IS 3589 Specification and BHEL TDC. The Bidder shall also comply with the following BHEL documents.
 - a. Technical requirements viz. Length, Edge Preparation, Spider Arrangement, Quality Plan etc, as finalized and agreed in MOU.
 - b. Painting requirements for CW Piping as per the enclosed Painting QP for OTPC Tripura Project.



ENQUIRY NO: 4011000034 DT. 11.06.2010

Commercial :

1. The prices quoted by the Bidder shall be on F.O.R. Ex-works basis inclusive of Packing and Forwarding charges with Freight extra for transportation of Finished pipes to OTPC Tripura project site. Price quoted shall be "FIRM" till the execution of the complete scope with raw material plate in their scope.
2. Payment for freight will be based on per meter.
3. The bidder shall furnish all the breakups as requested in the price bid format as enclosed.
4. The bidder shall clearly indicate the source of supply and all the applicable Taxes / Duties / CESS.
5. Delivery – Supplies to be completed before 30.10.2010. The Bidder shall strictly confirm to our delivery requirement.

Delivery is the essence of the Contract/ PO. BHEL may accept or reject the price bid if delivery is not as specified, or if offered delivery is not suiting Project Plan/ Production plan as per BHEL.

BHEL has the right to order partly or fully considering the various requirements. BHEL may short close/cancel an order or divert to another vendor if the performance of the vendor is poor, or the delivery requirement of the item is very critical and not being met, at any time during the currency of the Contract/PO irrespective of the PO Delivery date, if there is no response for improvement in delivery as per BHEL requirement.

BHEL may counter offer the final L1 rate to other eligible vendors for acceptance and decide to distribute the Purchase orders fully or partly to the accepting vendors for ensuring deliveries meeting production/ project requirement. BHEL decision will be final in this regard.

BHEL has the right to reject delayed deliveries or accept on a conditional basis.

6. Bidder shall give a minimum validity of 60 days from the date of Technical bid opening.
7. All other commercial terms as finalized and agreed in the MOU
8. In case of incomplete/inadequate information provided against the requirements of this tender, the offer shall be liable for rejection.
9. Offers with deviation from the above Commercial and Technical Terms will not be considered.



ENQUIRY NO: 4011000034 DT. 11.06.2010

PRICE :

The bidder shall provide the price strictly as per the price format annexed herewith. In this addition to the hard copy, the bidder has to submit in soft copy also in excel format (Preferably in CD).

- a. Base Price shall include Cost of Raw Material plus conversion cost per Meter of bare pipe including Edge Preparation and providing Spider Arrangement and Testing as per BHEL
TDC : TDG : 07 : 05.
- b. Ordering shall be on FOR – Tripura Project Site basis.
- c. Percentage of applicable Taxes, Duties, CESS, Service Tax on Transportation etc shall be clearly indicated.
- d. Service Tax, if included in Freight or extra, shall be clearly indicated.
- e. A soft copy of the price format with price details are also to be sent along with price bid.

Prices quoted shall be " FIRM " till complete execution of the scope and bidder shall give **validity** of this price offer for a period of **minimum 60 days** from the date of opening of Bids.

LIST OF DOCUMENTS ENCLOSED :

1. Painting Quality Plans
QP Reference for Tripura CCPP - QP NO:7023:QPC:12 Rev:00 Dt. 05.04.2010
2. BHEL TDC : TDG : 07 : 05
3. Price Format
4. MOU Terms

The above documents form part of this tender document and bidder shall ensure that they have received all these along with tender and confirm.

The above enquiry will be hosted in BHEL web site.

- **Pre Qualified** is the criteria for consideration for other than the BHEL Approved Vendors. After qualifying for registration, the new Vendors may be considered for future inline with our system and policy. Such Vendors will not be considered in this Enquiry.
- The new Vendors may download Vendor registration forms from BHEL Web Site www.bhel.com and submit all relevant data for formal registration.


Dy. Manager / Purchase

PRIYA BALAJI
Dy. Manager / Purchase
BHEL / Piping Centre
T. Nagar, Chennai - 600 017.

Limited Tender No. 4011000034 Dt.11.06.2010

PRICE FORMAT FOR TRIPURA 2 X 345.6 MW - PCP & LP-1&2

Name of the Bidder:

Qty offered in Mtrs : 112

'Supply Works (BHEL approved Manufacturing Works) :

Item SI NO	Tender Serial No ----->	10
	Item Description ----->	Over ground Piping Pipe Dia 1422 x 14 - 112 Mtrs.
	Elements of Cost	Rate per Meter
1	BASE PRICE including P & F (for Bare Pipe) : Detail Description (To be filled by the bidder in INR)	
2	Painting Charges - Over ground piping	
	a. Internal - Epoxy based Zinc Rich Primer-1 x 50 Microns - Primer Coat	
	b. Internal - Coal Tar Epoxy - 2 x 100 Microns - Finish Coat	
	c. External - HB chlorinated Rubber based Red Oxide Zinc Phosphate Primer - Alkyd base to IS 12744 - 2 x 50 Microns - Primer Coat	
	d. External - Chlorinate Rubber based Finish Paint - Smoke Grey Shade No. 692 of IS 5 - 2 x 30 Microns - Finish Coat	
3	Excise Duty with Cess applicable on Base Price + Painting (1+2a+2b+2c+2d)	-----%
4	CST (applicable on Base price+Painting+ED) or VAT (as applicable)	-----%
5	Freight Charges excluding service tax (up to OTC Tripura Project Site) (To be filled by the bidder in INR)	Rate per Meter
6	Service Tax for Freight Charges (including Cess) - if applicable	-----%
7	Transit Insurance Charges {Transit insurance by BHEL @ 0.05% on Basic Price including P&F, Painting, Taxes, Duties and Freight - (1+2a+2b+2c+2d+3+4+5+6*0.05%)}	-----%
8	Unit All-inclusive Price (Rate per Meter) - 1+2a+2b+2c+2d+3+4+5+6+7	
9	Net Cash Outflow - Rate per Meter - Unit All-inclusive price in Rs.	

Work Order Details

- Pipe Dia 1422 x 14 OG - (ENQ S.NO .10) P1 7023 1 80 468 002 - 56 Mtrs
- Pipe Dia 1422 x 14 OG - (ENQ S.NO .10) P1 7024 1 80 468 002 - 56 Mtrs

PLEASE SUBMIT UNPRICED BID ALSO, AS PER THE ABOVE FORMAT, ALONG WITH TECHNO-COMMERCIAL BID, INDICATING THE APPLICABLE TAXES, DUTIES, ANY OTHER LEVIES.

BHEL : PIPING CENTRE : CHENNAI - 17

Limited Tender No. 4011000034 Dt.11.06.2010

PRICE FORMAT FOR TRIPURA 2 X 345.6 MW - PCP & LP-1&2

Name of the Bidder:

Supply Works (BHEL approved Manufacturing Works)

Item SI No	Tender Serial No ----->	20 & 30
	Item Description ----->	Underground Piping Pipe Dia 1422 X 14 -164 Mtrs. Pipe Dia 2132 X 18 -902 Mtrs. OTPC TRIPURA Project Site
	Elements of Cost	Rate per Meter
1	BASE PRICE including P & F (for Bare Pipe) : Detail Description (To be filled by the bidder in INR)	
	Painting Charges - Underground piping	
	a. Internal - Epoxy based Zinc Rich Primer-1 x 50 Microns - Primer Coat	
2	b. Internal - Coal Tar Epoxy - 2 x 100 Microns - Finish Coat	
	c. External - Red Oxide Zinc Phosphate - Alkyd base to IS 12744 - 1 x 30 Microns - Primer Coat	
3	Excise Duty with Cess applicable on Base Price + Painting (1+2a+2b+2c)	-----%
4	CST (applicable on Base price+Painting+ED) or VAT (as applicable)	-----%
5	Freight Charges excluding service tax (up to OTPC Tripura Project Site) (To be filled by the bidder in INR)	Rate per Meter
	Service Tax for Freight Charges (including Cess) - if applicable	-----%
	Transit Insurance Charges {Transit insurance by BHEL @ 0.05% on Basic Price including P&F, Painting, Taxes, Duties and Freight - (1+2a+2b+2c+3+4+5+6*0.05%)}	-----%
7		
8	Unit All-inclusive Price (Rate per Meter) - 1+2a+2b+2c+3+4+5+6+7	
9	Net Cash Outflow - Rate per Meter - Unit All-inclusive price in Rs.	

Work Order Details

1. Pipe Dia 1422 x 14 UG - (ENQ S.NO 20) 7023 1 80 468 001 - 82 Mtrs
2. Pipe Dia 2132 x 18 UG - (ENQ S.NO 30) 7023 1 80 468 003 - 430 Mtrs
3. Pipe Dia 1422 x 14 UG - (ENQ S.NO 20) 7024 1 80 468 001 - 82 Mtrs
4. Pipe Dia 2132 x 18 UG - (ENQ S.NO 30) 7024 1 80 468 003 - 472 Mtrs

PLEASE SUBMIT UNPRICED BID ALSO, AS PER THE ABOVE FORMAT, ALONG WITH TECHNO-COMMERCIAL BID, INDICATING THE APPLICABLE TAXES, DUTIES, ANY OTHER LEVIES.

**

BHEL : PIPING CENTRE : CHENNAI - 17
Statement - Commercial Terms - BHEL Terms vis-à-vis Terms quoted by the Bidders
ENQ NO. 4011000034 DT. 11.06.10 - IS 3589 Pipes for OTPC TRIPURA Project.

Pipe Dia 1422mm x 14mm OG - 112 Mtrs

Pipe Dia 1422mm x 14mm UG - 164 Mtrs

Pipe Dia 2132mm x 18mm UG - 902 Mtrs

	COMMERCIAL		
A	TERMS OF PAYMENT	100% within 45 days from the date of submission of despatch documents	
1	PRICE VARIATION	FIRM	
2	LIQUIDATED DAMAGES	1/2 % PER WEEK - MAX 5%	
3	DELIVERY	30.10.2010	
4	TOLERANCE	+/-2 Mtrs of PO Qty	
5	VALIDITY	60 DAYS	
6	SERVICE TAX ON TRANSPORTATION	WHETHER INCLUDED OR NOT QUOTED - TO CLEARLY INDICATE	
7	QTY OFFERED	Pipe dia 1422 x 14 OG - 112 Mtrs.	
		Pipe dia 1422 x 14 UG - 164 Mtrs.	
		Pipe dia 2132 x 18 UG - 902 Mtrs.	
8	TECHNICAL		
B	TDC	TDG:07 : 05	
1	SUPPLY LENGTH OF PIPE	7 - 12.5 Meters	
2	SUPPLY FROM	WORKS	
3	APPLICABLE TAXES	VAT / CST	
4	MOU TERMS	ACCEPTANCE	
5	Remarks		

Signature

1.0 SCOPE

- 1.1 This Technical Delivery Conditions specify the requirements in addition to IS:3589 for electrically welded (ERW \ SAW) steel pipes.
- 1.2 The pipes are intended for water services (under Non-IBR piping system only).
- 1.3 The pipes shall conform to the size, grade and quantity as specified in the purchase order.

2.0 MATERIAL

- 2.1 The plates / coils used for pipe shall meet the requirements as per IS: 3589 Grade Fe 410 MPa including mechanical test requirements.

3.0 DIMENSIONAL TOLERANCES

- 3.1 The tolerances limits are:

OD:- Upto NB 1600 mm: ± 4 mm; Above NB 1600 mm: ± 6 mm

Thickness:- Upto 14mm : $+1.3$ mm / -0.8 mm; Above 14 mm : $+1.4$ mm / $- 0.8$ mm.

Length:- for OD upto 1300 mm : $+10$ mm/ $- 0$ mm;
for OD above 1300 mm : ± 50 mm

Ovality (Difference between major and minor inside diameter) : 0.5% maximum

Squareness of ends: The ends of pipe section shall not vary by more than 3 mm at any point from a true plane perpendicular to the axis of the pipe and passing through the center of the pipe at the end.

- 3.2 Other tolerances shall be as per IS: 3589

4.0 MANUFACTURING

- 4.1 The pipe shall be of longitudinally welded or spirally welded as indicated in the P.O.
- 4.2 The ends shall be edge prepared as indicated in the purchase order.
- 4.3 Circumferential seams shall be 1500 mm apart from each other and from ends.
- 4.4 All pipes shall be completely finished and free from surface, sub surface defects such as pits, cracks, weld spatters & laminations etc..

5.0 NDE

- 5.1 The spiral welds/butt welds of length 100 mm from both the ends of the pipe shall be radiographically tested.

6.0 HYDROSTATIC PRESSURE TEST

- 6.1 Each pipe shall be subjected to a hydraulic test pressure as per IS: 3589 .
(i.e., using the formula $P = 2ST / D$)

7.0 INSPECTION

- 7.1 All pipes shall be inspected by the vendor prior to BHEL / Customers' Inspection. BHEL or BHEL authorized inspector / Customer will select the pipes at random and carryout the inspection. The necessary Material Despatch Clearance Certificate is to be obtained by the vendor prior to the despatch of material.

P.Elangovan, QA K.Ganeshan, MM	Approved by C. Karunakaran, Engg K. Vedaprasad, QC
-----------------------------------	--

8.0 PAINTING AND PACKING

- 8.1 Unless otherwise specified in the Purchase Order, all the pipes shall be coated with resin type translucent dry type rust preventive on the outside; pipes of diameter above NB 450 mm, shall be coated inside also.
- 8.2 Spiders are to be provided on both ends of the pipes as per the drawing - if indicated in the enquiry / Purchase Order.

9.0 MARKING

- 9.1 All pipes shall be paint stencilled, hard punched with the following details.

Paint Stencil

- Specification
- Heat number
- Pipe number
- Manufacturer's identification
- Material Code
- Size

Hard punch

- Specification
- Heat number
- Pipe number
- Manufacturer's identification

- 9.2 In addition to the above, for the pipes directly despatched to project site, the following details (furnished in the P.O. or separately) shall be **paint stencilled & hard punched** on both ends of the pipes
- Work order No
 - DU No
 - Project name
 - Quantity
 - Weight

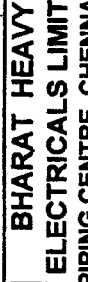
10.0 CERTIFICATES

- 10.1 Three original test certificates typed in English shall be submitted along with the Inspection report.
- 10.2 The test certificate shall furnish the following details.
- a. Purchase Order references.
 - b. Test Certificate number.
 - c. Specification, grade, size, quantity
 - d. Heat number of plate (or pipe number with traceability to heat number)
 - e. Chemical composition and mechanical properties
 - f. Hydrostatic pressure test report
 - g. RT Report.

P.Elangovan, QA
K.Ganeshan, MM

Approved by

C. Karunakaran, Engg
K. Vedaprasad, QC



BHARAT HEAVY ELECTRICALS LIMITED
PIPING CENTRE, CHENNAI-17
QUALITY ASSURANCE & CONTROL DEPT.

PAINTING SCHEME FOR LP PIPING
(CW / ACW / ECW / Plant water, Air Piping, etc...,)

PROJECT NAME : OTPC TRIPURA (2 X 363.3 MW)
BHEL CUSTOMER Nos : 7023.7024.

QPNO : 7023:QPC:12
REV.NO : 00
Date : 05.04.2010

Sl. NO	PGMA / Description	Surface Preparation & Surface Profile	Primer coat		Intermediate coat			Finish coat			Total DFT Microns (Min.)	REMARKS
			Primer	No of coats	Paint	No of coats	Shade	Paint	No of coats	Shade		
1	2	3	4	5	6	7	8	9	10	11	12	13
	(a) Internal Surface - CW Pipe (for pipe - dia - 1000 mm and above)	Blast Cleaning SSPC SP-10 SA 2½ (Refer Note 1)	Epoxy based Zinc rich Primer (Refer Note 2)	1 (50 Microns Min. per coat)	—	—	—	Coal tar epoxy (Refer Note 2)	2 (100 Microns Min. per coat)	—	250 Microns (Refer Note 3)	
HOLIDAY TESTING BY LOW VOLTAGE (75 Volts Min.) wet sponge Holiday detector or by High voltage (Voltage per micron of DFT is as recommended by Paint Manufacturer subjected to minimum of 5V / Micron). Holiday test Equipment to be calibrated before testing.												
	External Surface of CW - Buried Piping (Refer Note 3)	SSPC-SP3 / Power Tool Cleaning	Red Oxide Zinc Phosphate (Alkyd base to IS 12744)	1 (30 Microns per coat)	—	—	—	—	—	—	30 Microns	
1 Approved	Protection for transportation from works (1000 mm and above) (Temporary)											
2 Approved	Protection for transportation from works (1000 mm and above) (Temporary)											
3 Returned	Contract requirements for approval.											
4 Not Approved	Resubmit for review											
	External Surface (over ground piping) (Refer Note 3)	SSPC-SP3 / Power Tool Cleaning	HB Chlorinated Rubber based Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744	2 (50 microns per coat.)	—	—	—	Chlorinated Rubber based finish paint	2 (30 Microns per Coat)	Smoke Grey Shade No 692 of IS 5	160 Microns	
	External Surface (over ground piping) (Refer Note 3)	SSPC-SP3 / Power Tool Cleaning	HB Chlorinated Rubber based Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744	2 (50 microns per coat.)	—	—	—	Chlorinated Rubber based finish paint	2 (30 Microns per Coat)	Smoke Grey Shade No 692 of IS 5	160 Microns	
	External Surface (over ground piping) (Refer Note 3)	SSPC-SP3 / Power Tool Cleaning	HB Chlorinated Rubber based Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744	2 (50 microns per coat.)	—	—	—	Chlorinated Rubber based finish paint	2 (30 Microns per Coat)	Smoke Grey Shade No 692 of IS 5	160 Microns	
	External Surface (over ground piping) (Refer Note 3)	SSPC-SP3 / Power Tool Cleaning	HB Chlorinated Rubber based Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744	2 (50 microns per coat.)	—	—	—	Chlorinated Rubber based finish paint	2 (30 Microns per Coat)	Smoke Grey Shade No 692 of IS 5	160 Microns	
	External Surface (over ground piping) (Refer Note 3)	SSPC-SP3 / Power Tool Cleaning	HB Chlorinated Rubber based Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744	2 (50 microns per coat.)	—	—	—	Chlorinated Rubber based finish paint	2 (30 Microns per Coat)	Smoke Grey Shade No 692 of IS 5	160 Microns	
	External Surface (over ground piping) (Refer Note 3)	SSPC-SP3 / Power Tool Cleaning	HB Chlorinated Rubber based Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744	2 (50 microns per coat.)	—	—	—	Chlorinated Rubber based finish paint	2 (30 Microns per Coat)	Smoke Grey Shade No 692 of IS 5	160 Microns	
	External Surface (over ground piping) (Refer Note 3)	SSPC-SP3 / Power Tool Cleaning	HB Chlorinated Rubber based Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744	2 (50 microns per coat.)	—	—	—	Chlorinated Rubber based finish paint	2 (30 Microns per Coat)	Smoke Grey Shade No 692 of IS 5	160 Microns	
	External Surface (over ground piping) (Refer Note 3)	SSPC-SP3 / Power Tool Cleaning	HB Chlorinated Rubber based Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744	2 (50 microns per coat.)	—	—	—	Chlorinated Rubber based finish paint	2 (30 Microns per Coat)	Smoke Grey Shade No 692 of IS 5	160 Microns	
	External Surface (over ground piping) (Refer Note 3)	SSPC-SP3 / Power Tool Cleaning	HB Chlorinated Rubber based Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744	2 (50 microns per coat.)	—	—	—	Chlorinated Rubber based finish paint	2 (30 Microns per Coat)	Smoke Grey Shade No 692 of IS 5	160 Microns	
	External Surface (over ground piping) (Refer Note 3)	SSPC-SP3 / Power Tool Cleaning	HB Chlorinated Rubber based Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744	2 (50 microns per coat.)	—	—	—	Chlorinated Rubber based finish paint	2 (30 Microns per Coat)	Smoke Grey Shade No 692 of IS 5	160 Microns	
	External Surface (over ground piping) (Refer Note 3)	SSPC-SP3 / Power Tool Cleaning	HB Chlorinated Rubber based Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744	2 (50 microns per coat.)	—	—	—	Chlorinated Rubber based finish paint	2 (30 Microns per Coat)	Smoke Grey Shade No 692 of IS 5	160 Microns	
	External Surface (over ground piping) (Refer Note 3)	SSPC-SP3 / Power Tool Cleaning	HB Chlorinated Rubber based Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744	2 (50 microns per coat.)	—	—	—	Chlorinated Rubber based finish paint	2 (30 Microns per Coat)	Smoke Grey Shade No 692 of IS 5	160 Microns	
	External Surface (over ground piping) (Refer Note 3)	SSPC-SP3 / Power Tool Cleaning	HB Chlorinated Rubber based Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744	2 (50 microns per coat.)	—	—	—	Chlorinated Rubber based finish paint	2 (30 Microns per Coat)	Smoke Grey Shade No 692 of IS 5	160 Microns	
	External Surface (over ground piping) (Refer Note 3)	SSPC-SP3 / Power Tool Cleaning	HB Chlorinated Rubber based Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744	2 (50 microns per coat.)	—	—	—	Chlorinated Rubber based finish paint	2 (30 Microns per Coat)	Smoke Grey Shade No 692 of IS 5	160 Microns	
	External Surface (over ground piping) (Refer Note 3)	SSPC-SP3 / Power Tool Cleaning	HB Chlorinated Rubber based Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744	2 (50 microns per coat.)	—	—	—	Chlorinated Rubber based finish paint	2 (30 Microns per Coat)	Smoke Grey Shade No 692 of IS 5	160 Microns	
	External Surface (over ground piping) (Refer Note 3)	SSPC-SP3 / Power Tool Cleaning	HB Chlorinated Rubber based Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744	2 (50 microns per coat.)	—	—	—	Chlorinated Rubber based finish paint	2 (30 Microns per Coat)	Smoke Grey Shade No 692 of IS 5	160 Microns	
	External Surface (over ground piping) (Refer Note 3)	SSPC-SP3 / Power Tool Cleaning	HB Chlorinated Rubber based Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744	2 (50 microns per coat.)	—	—	—	Chlorinated Rubber based finish paint	2 (30 Microns per Coat)	Smoke Grey Shade No 692 of IS 5	160 Microns	
	External Surface (over ground piping) (Refer Note 3)	SSPC-SP3 / Power Tool Cleaning	HB Chlorinated Rubber based Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744	2 (50 microns per coat.)	—	—	—	Chlorinated Rubber based finish paint	2 (30 Microns per Coat)	Smoke Grey Shade No 692 of IS 5	160 Microns	
	External Surface (over ground piping) (Refer Note 3)	SSPC-SP3 / Power Tool Cleaning	HB Chlorinated Rubber based Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744	2 (50 microns per coat.)	—	—	—	Chlorinated Rubber based finish paint	2 (30 Microns per Coat)	Smoke Grey Shade No 692 of IS 5	160 Microns	
	External Surface (over ground piping) (Refer Note 3)	SSPC-SP3 / Power Tool Cleaning	HB Chlorinated Rubber based Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744	2 (50 microns per coat.)	—	—	—	Chlorinated Rubber based finish paint	2 (30 Microns per Coat)	Smoke Grey Shade No 692 of IS 5	160 Microns	

Notes:

1. Blast cleaning to near white metal to obtain roughness as per epoxy paint data sheet.
2. Application of Epoxy based Zinc rich Primer, Coal Tar Epoxy shall be done as per manufacturer's data sheet / recommendation, meeting the thickness requirements as per this document.
3. Witness by BHEL / BHEL nominated inspection agency.

4. Final Painting shall be done at site and colour shade as required will be ensured

Direct ananda 21

Beispiel

PREPARED and REVIEWED BY : VIVEKANANDA YELLU, PE / QA.

APPROVED BY: G.PANNEERSELVAM, DGM / QA