



**Bharat Heavy Electricals Limited
(A Govt. of India Undertaking)**

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REF: ENQ NO:PC:8022

DT: 26.11.2008

Open Tender for indigenous manufacturers only.

Sub: Rate contract for manufacture of pipe fittings- elbow from raw material pipe supplied by BHEL.

Ref: Enquiry No:PC:8022 dt 26.11.2008

Due date for opening : 29.12.08 at 2.30 PM

Pre qualification is the criteria for qualifying in this enquiry.

The following tender documents are enclosed

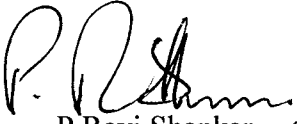
1. Part A - Criteria for pre-qualification
2. List of items – Annexure-A1
3. Elbow drawings
4. Technical Delivery Conditions: TDG:102:rev03
5. Part B - Terms and conditions
6. List of likely projects

The supplier has to submit their offer for the conversion work in two parts

Part A – Criteria for pre-qualification - Details shall be provided by the vendor.

Part B - This part shall be submitted in two parts 1) Technical cum commercial part and 2) Price part - As explained in terms and conditions.

Only those bidders who qualify the pre qualification criteria (Part-A), will be considered for this tender. Only such of those qualified vendor bids will be considered for (Part B 1- Technical and commercial) opening.
Only those bidders who qualify for Part B 1 will be considered for (Part B 2- Price part) opening.


P.Ravi Shankar 26/11/08
DGM / Purchase

BHEL / Piping Centre
80,GN Road, T.Nagar
Chennai-600017

e-mail – prs@bhelmpc.co.in
Phone:044-28161245

Ref: PC8022 dt. 26.11.08

PART – A

CRITERIA FOR PRE QUALIFICATION

The scope of this Enquiry is for manufacturing of Carbon steel , Alloy Steel Elbows with BHEL Raw materials. BHEL will supply Raw Materials Pipes to vendors on freight paid basis and vendors have to convert the Pipes to Elbows as per BHEL drawing and specification, which is enclosed.

Details of sizes of the Elbows to be manufactured and the raw material pipe sizes to be supplied by BHEL are indicated in –Annexure A1.Vendors are not permitted to quote raw material other than that specified and such offers will not be considered.

Following are the criteria required by the supplier to quote for this tender.

1. Supplier should provide details of having manufactured the elbow sizes as per enclosure, or higher sizes during last three calendar years. Minimum 10 Nos in each size.
2. Supplier's customer reference list , PO copies, invoices and performance certificate as a proof for having supplied these Elbows.
3. If vendor is already approved by any of the BHEL units for fittings and details of the same to be given.
4. The process of manufacturing , including stages to be submitted.
5. The following manufacturing facilities are required.
 - a) Press capacity of 1200 T
 - b) Heat treatment furnace with automatic controller to achieve temperature with tolerance of + / - 10 deg C and capacity to accommodate above elbows. The furnace shall be within the same premises where press is located.
 - c) Positive material Identification (PMI), tensile testing equipment availability and machining facility.
 - d) Non destructive testing (NDT) facilities for penetrant testing (PT) magnetic particle testing (MT) & ultrasonic testing (UT)
 - e) Shop floor should be neat and leveled to produce quality fittings.
6. Supplier should be approved by IBR
7. Quality Management system procedure of the supplier is required which should indicate order processing (Raw material to final product).
8. Supplier to have ISO 9000 certification.
9. Supplier to submit Quality plan for approval by BHEL.
10. Supplier to submit 3 years balance sheet and P&L statement for our review.
11. The manufacturing process shall be inspected by BHEL/Third party inspection agency.
12. Proof of having carried out burst test as per ASME B16.9 qualifying the sizes covered in the tender / quoted to be furnished.
13. To confirm supply of fittings as per Technical delivery conditions TDG:102:rev03& ASME B16.9.
14. Vendor shall submit the above details for evaluation by BHEL .
15. Bank guarantee for 10% of raw material cost of the ordered items has to be provided by the vendor in the event of placement of order.
16. In the event of the vendor meeting pre qualification criteria and successful in this tender, Developmental order will be placed. Only after successful completion of the first manufactured Elbow, duly inspected by BHEL ,the balance Elbows can be taken up for manufacture.

Enquiry No: PC8022

LIST OF ELBOW SIZES --ANNEXURE A1

SINO.	DESCRIPTION	SPECN	DRAWING NO	QTY	Pipe raw matl offered by BHEL
1	90 DEG LR ELBOW 219.1 X 25	SA234WP91	4-80-999-93177/00	32	219.1 X 25
2	45 DEG LR ELBOW 323.9 X 31	SA234WP91	4-80-999-93094/00	66	323.9 x 38
3	90 DEG LR ELBOW 323.9 X 31	SA234WP91	4-80-999-93093/00	197	323.9 x 38
4	45 DEG LR ELBOW 323.9 X 35	SA234WP91	4-80-999-93087/00	8	323.9 x 42
5	90 DEG LR ELBOW 323.9 X 35	SA234WP91	4-80-999-93084/00	20	323.9 x 42
6	30 DEG LR ELBOW 660 X 36	SA234WP22CL1	4-80-999-93092/01	24	660 x 45
7	45 DEG LR ELBOW 660 X 36	SA234WP22CL1	4-80-999-93088/01	24	660 x 45
8	90 DEG LR ELBOW 660 X 36	SA234WP22CL1	4-80-999-93085/00	204	660 x 45
9	30 DEG LR ELBOW 711.2 X 40	SA234WP22CL1	4-80-999-93174/00	24	720 X 49
10	90 DEG LR ELBOW 711.2 X 40	SA234WP22CL1	4-80-999-93086/00	132	720 X 49
11	90 DEG LR ELBOW 660 X 20	SA106GRC	4-80-999-93176/00	96	660 X 20
				827	

Enclosed a) Tolerance drawing no 4-80-301-26192 , b) Edge preparation drawing no 38030019825



TERMS & CONDITIONS FOR PROCUREMENT OF FITTINGS

PART B


SL NO	BHEL REQUIREMENT	SUPPLIER CONFIRMATION
1	<p>This is a rate contract enquiry and the prices offered shall be kept valid for a period of one year from the date of entering into rate contract. The L1 (lowest rates) will be counter offered to other vendors and ordering will be done on the following basis</p> <p>a) 50% of the items will be ordered on original L1 vendors and balance will be distributed equally among vendors accepting counter offered rates.</p> <p>b) Clause (a) will be operated subject to capacity ,performance and meeting the delivery commitment of previous orders.</p> <p>TYPE OF BID – The vendor shall submit the offer in TWO PARTS as below And the following procedure shall be followed.</p> <p><u>Part- B1 (Sl nos 1 to 16)TECHNICAL - CUM COMMERCIAL PART :-</u></p> <p>This part of the Bid shall contain Technical and Commercial Points only (Except Price Portion)</p> <ul style="list-style-type: none"> Acceptance to our TDC (Technical delivery condition) as given in the tender. Deviation if any shall be clearly indicated. If there is no specific indication about deviation it will be taken as totally accepted and processed. Copy of price bid without price part to know the items for which you are quoting against this tender. (Money values shall not be indicated i.e.un priced bid). <p><u>PART B2 PRICE PART :</u></p> <p>THE PRICES SHALL BE QUOTED AS RATE PER PIECE IN RS, FOR Project site in India /BHEL Trichy stores basis and shall include all testing, inspection , packing ,forwarding and freight charges. THE FREIGHT SHALL BE SAME FOR ANY PROJECT SITE /TRICHY STORES. THE PRICE BID SHALL BE EVALUATED ON THE BASIS OF TOTAL COST TO BHEL.</p> <p>This part of the Bid shall contain item-wise Price details against each Enquiry Sl.No. and the same shall be put in a sealed cover duly indicating Tender No, Tender Opening date, and “Price Bid” on the Sealed cover.</p> <p>Both the above referred parts (PART B1 &PART B2)of the Bid each sealed in a separate cover shall be put in a sealed outer cover duly indicating Tender No.& Date, Tender Opening date and to be sent to</p> <p style="text-align: center;">DGM/PURCHASE/FITTINGS BHEL : PIPING CENTRE 80, G.N CHETTY STREET T.NAGAR, CHENNAI 600 017</p>	
2.	<p>Tolerances for dimensions other than edge preparation shall be as per ASME B 16.9/B 16.28/B 16.11:</p>	
3	<p>Forwarding of Documents.</p> <p>Documents as listed below should be sent to DGM Purchase / Piping centre BHEL Chennai immediately after the shipment / dispatch of items and not through Bank.</p> <p>a)Purchase documents.</p> <p>Original LR to be sent as CC attached to the consignee and not through bank. ,copy of the LR ,invoice to be sent to DGM/Purchase.</p> <p>b) Quality Documents.</p> <p>i) Three sets of original certificates item-wise (ie) Works TC, IBR Form III C, UT Report, MPI report, Dimensional report, Raw Material TC (Xerox copy)</p> <p>ii) 10 copies of IBR Form III C for each item duly attested by the makers representative who has signed in IBR Form III C. The company seal shall be affixed below the signature in case the ordered quantity of an item is 10 and above, (otherwise you can restrict the number of attested copies to the ordered quantity of an item). These certificates are to be dispatched along with the other TC and not through Bank.</p>	

SL NO	BHEL REQUIREMENT	
	All the above documents are to be submitted in soft copy apart from the hard copies as above, if the materials are not ready on the date of visit by BHEL INSPECTOR against specific call for inspection by vendor, all the expenses incurred for the visit shall be liable for recovery from, the invoices of the vendor. Further, this will also have an adverse bearing on the performance rating of the vendor.	
4	Year of Code for Viz. the standards ASME B16.9, ASME B16. 28 & ASME B.16.11 etc. shall be latest and the specific year is to be mentioned in the Manufacturer's test certificates, as well as in IBR Form III-C. Also the relevant Year Code for material standard and the NDT standard (ie PT,MT,UT) has to be mentioned.	
5	VALIDITY OF THE OFFER :- The quotation shall be valid for a period of 120 days from price bid opening date for entering into rate contract..The rate should be kept firm for a period of 1 year from the date of contract. Offer with lesser validity will not be considered.	
6	DELIVERY SCHEDULE :- within 60 days from the receipt of raw material.	
7	TERMS OF DELIVERY :- FOR BHEL/ Trichy stores/ any destination of project site in India.	
8	TAXES & DUTIES :- Please indicate clearly the percentages of applicable taxes, duties like CST, Excise Duty or any other taxes / duties in your offer.	
9	TRANSPORT :- All the Items are to be dispatched to our Trichy Stores/Project Site in various states within India. Likely projects sites is enclosed.	
10	<p>PRESERVATION :- Fittings shall be cleaned and the following painting shall be applied.</p> <p>On External surface.</p> <p>Primer Coat :- One coat of Red oxide Zinc Phosphate Primer (Alkyd Base) to IS 12744; DFT= 30 microns minimum.</p> <p>FINISH COAT :- TWO COATS OF SYNTHETIC ENAMEL PAINT (LONG OIL ALKYD) TO IS 2932; SMOKE GREY SHADE NO 692 OF IS 5</p> <p>DFT 20 microns minimum per coat.</p> <p>Total coating thickness 30+ 40 = 70 DFT</p> <p>ON INTERNAL SURFACE</p> <p>ONE COAT OF METALLIC VARNISH.</p> <p>ENDS OF THE FITTINGS SHALL BE PROTECTED WITH METALLIC STRIPS.</p>	
11	<p>INSPECTION :-</p> <p>A) IBR & BHEL / QC Inspection or Third Party inspection agency for CS & AS materials.</p>	
12	<p>CERTIFICATION :- IBR TC in form III C, inspection report of BHEL Third Party inspection agency, Mfg TC, incorporating BHEL Specification requirement /ASME requirement. Mechanical / Hardness & Heat treatment and other Lab test reports to be furnished. Confirmation report to BHEL Specification to be furnished. Basic raw material (Mill) TC & other requirements as per TDC / Specns shall be submitted.</p> <p>Inspection Charges:- Inspection charges of BHEL/ Their representative are to BHEL A/c. Any other testing charges and IBR inspection charges should be included in the quoted prices.</p> <p>If entire P O quantity is manufactured in one lot but dispatched in phased manner, original IBR should be sent along with the first consignment and the same shall be attested by vendor for subsequent consignments on Xerox copies.</p>	
13	IDENTIFICATION As per Technical delivery condition TDG:102:rev03	
14	GUARANTEE : Vendors shall guarantee the supplies for a period of 24 months from the date of dispatch of materials or 18 months from the date of their commissioning which ever is later.	
15	<p>TERMS OF PAYMENT :</p> <p>90% payment against presentation of following documents to our Finance Departments Directly with a copy of Invoice alone to Purchase department.</p> <p>A. Invoice in Triplicate</p> <p>B. Delivery Challan in duplicate.</p> <p>C. Guarantee certificate in duplicate.</p> <p>D. Lorry Way Bill Copy- one copy (Original copy of LWB should be sent through the carrier)</p>	

	<p>E. Inspection report copy – one copy</p> <p>F. IBR Form III-C- one copy</p> <p>G. ED gate pass original or copy with a confirmation that the original is sent with the goods.</p> <p>Balance 10% will be paid on submission of Invoice along with proof of receipt of material at project site / BHEL Trichy stores.</p> <p>BG for 10% of raw material value shall be provided as per our format.</p>	
16	<p>GENERAL :-</p> <ul style="list-style-type: none"> • The PO copy with all details will be given to successful bidders in soft mode also. However Hard copy will be used for record purpose. The same soft copy should be utilized by the suppliers to furnish information as called for in the format. See attached format for details. This soft copy will go up and down between BHEL and the supplier for tracking the full process and smooth closing of the PO • During the Contract period, any of our sister units of BHEL Piping Centre will be entitled to place order for this item on the same terms and conditions • BHEL reserves the right to cancel this tender without assigning any reasons what so ever. • Deviation taken after placement of order will not be accepted (Both technical & on delivery) • Suppliers to analyze in detail, at the time of submission of offer with reference to our “delivery” requirement of fittings and confirm compliance or otherwise. • To ensure correct & timely submission of all original test certificates including IBR Form III-C. There should not be any discrepancies in detail leading to time wastage in clarification and revisions. • The quantity indicated in the tender is only tentative, BHEL reserves the right to increase or decrease the tendered quantity . • Lowest prices received against BHEL tenders does not mean order will be placed on that Supplier. BHEL reserves the right not to consider the same. • BHEL reserves the right to negotiate or re-float the tender opened if L1 price /or other details are not acceptable to them • BHEL reserves the right to negotiate the L1 rate. • BHEL reserves the right to order on more than one vendor at the lowest acceptable price to BHEL • The vendor to submit material account , return the offcuts available out of material supplied by BHEL to BHEL/Trichy Stores on freight paid. Basis.Only after this balance 10% payment will be made. • Any rejections/ damage for the raw material supplied by BHEL will be recovered from suppliers bills / BG. 	

Note : Please confirm your acceptance/other wise to all the points indicated above positively and submit this format duly filled, signed & stamped along with the technical bid.

VENDOR

	Bharat Heavy Electricals Limited, Piping Centre, Chennai Technical Delivery Conditions Conditions for Butt welded – Fittings as per Indian Boiler Regulations.	TDG : 102 Rev. 03 Date : 16.02.2008 Page : 1 of 3
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1.0 CODES:-

The fittings shall meet Indian Boiler Regulations (IBR) and the following requirements in addition to the standards specified in the Purchase Order (PO).

2.0 RAW MATERIALS:-

- All pipes used for fittings shall meet the respective specification. The test certificate shall be furnished.
- All mother pipes used for fittings shall be subjected to a hydraulic test as per SA 530 or UT as per ASTM E 213 at the mill
- All plates used for fittings shall be UT tested as per S1 of SA578 and acceptance norms shall be as per Level B of SA578
- The raw material forging shall be ultrasonically tested as per SA 388 and the acceptance norm shall be as per 3.3.4 of ASME Sec VIII Div 2.
- Steel for SA182 F11, F12 & F22 if indigenously procured, to be from following manufacturers approved under IBR for creep resistant steels: i) Alloy Steel Plant Durgapur, ii) Tata Iron & Steel company, Jamshedpur & iii) Mahindra Ugine Steel Company, Mumbai..

3.0 PROCESS:-

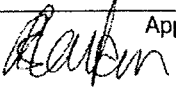
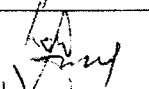
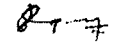

- Process of manufacture shall conform to applicable standards.
- All fittings shall be of seamless unless otherwise specified in the purchase order.
- In case of welded fittings, WPS, PQR & welder qualification shall be approved by BHEL PC, prior to start of welding.
- All fittings shall have smooth surfaces, workman like finish and free from loose scales and defects like laps, seams, folds, cracks, pitting etc.. Repair by welding is NOT permitted.
- Dimensions shall be as per ASME B16.9 or B16.28, Butt Weld edges shall be as given in Purchase Order. The ends of reducers shall have a straight portion of Minimum 13mm.
- Unless otherwise specified in the P.O SA 234 WP 11/12/22 fittings shall be supplied as per class 1, SA 182 F11/12 shall be supplied as class 2, SA 182 F22 shall be of class 3 only.

4.0 HEAT TREATMENT:-

4.1 All fittings shall be heat treated as below.

SA 234 WP B	- As per specification
SA 105, SA234 WP C	- Normalised
SA234 WP11/ WP12/ WP22	- Normalised & Tempered
SA182 F11/ F12/ F22	- Normalised & Tempered
Stainless Steel :-	
SA 182 F304/ 316/ 321/ 347	- Solution annealed
SA 403 WP304/ 316/ 321/ 347	- Solution annealed

4.2 Fittings conforming to SA 234 WP91 and SA182 F91 shall be normalised at ± 40 to 1070°C (for wall thickness larger than 75 mm, accelerated cooling may be done to obtain a fully martensitic structure) and tempered at $760 \pm 10^{\circ}\text{C}$

S. Jayakumar, Engg		Approved by	K. Vedaprasad, QC	
P. Elangovan, QA			K. Ganeshan, MPL	



5.0 TESTING :-

- (a) Carbon content of SA 234 WPB, WPC, SA 105 fittings shall be restricted to 0.25% max.
- (b) All ferrous fittings shall be tested by MPI as per ASTM E-709 and SS fittings shall be LPI tested as per ASTM E 165.
- (c) One fitting of each specification, heat, heat treatment lot and size shall be subjected to Tension Test as per applicable standard.
- (d) All fittings of wall thickness above 6mm or NB 200mm and above shall be Ultrasonically Tested as per SA 388; acceptance norms shall be 3.3.4 of ASME section VIII Div.2.
- (e) Hardness test shall be carried out on each fittings of WP91 / F91. For other fittings hardness shall be checked on 10% of the fittings.
- (f) In case of welded fittings; all the welds shall be 100% RT tested and acceptance norms shall be UW 51 of ASME Sec VIII DIV-1
- (g) The following supplementary tests shall be carried out for specifications namely SA105, SA 182 F11 / F12 / F22 / F91, SA 234 WPC / WP11 / WP12 / WP22 / WP91 (No supplementary test applicable for SA 234 WPB)
 - a) Product analysis – one / heat / size.
 - b) Tension test – one / heat / heat treatment lot / size.
- (h) Metallography:- Metallography shall be carried out one per heat, per size, per heat treatment lot of WP91 / F91 fittings.

6.0 POSITIVE MATERIAL IDENTIFICATION (PMI) FOR ALLOY STEEL FITTINGS.

Each alloy steel fitting shall be checked for the correctness of the material during manufacturing and final inspection using X-ray fluorescence principle or spark emission spectrography.


7.0 MARKING, COLOUR CODING, PACKING AND PRESERVATION :-

7.1 All fittings shall be PUNCHED OR ETCHED with specification, Grade, Heat No, maker's emblem and Inspection Authorities Seal. In addition, specification, grade, heat no and size shall be stencilled on fittings of sizes above 76mm.

7.2 COLOUR CODING:-

SA 234 WPB / WPBW	=	Red
WPC / SA105	=	Blue
WP11 / SA182 F11	=	Green & White
WP12 / SA182 F12	=	Black & Red
WP22 / SA182 F22	=	Blue & Red
WP91 / SA182 F91	=	Brown & Red
SA182 / SA 403 F / WP 304	=	Blue & Yellow
316	=	Black & Green
321	=	Blue & Brown
347	=	Yellow & Black

S. Jayakumar, Engg		Approved by	K. Vedaprasad, QC	
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	Bharat Heavy Electricals Limited, Piping Centre, Chennai Technical Delivery Conditions Conditions for Butt welded – Fittings as per Indian Boiler Regulations.	TDG : 102 Rev. 03 Date : 16.02.2008 Page : 3 of 3
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7.3 PACKING AND PRESERVATION :-

All fittings except SS to be applied with resin type rust preventive coating with visibility to punched and stenciled details on outside and either with rust preventive coating or rust inhibitor inside. SS fittings to be surface treated as per ASTM A380 both inside and outside. Ends to be closed, with end caps secured for storage and suitably packed in box/crate to avoid transit/other damages.

8.0 INSPECTION & CERTIFICATION :-

All fittings are to be Inspected at the manufacturer's works by the Inspection agencies / authorities as per IBR and as indicated in the P.O. Inspection certificate in IBR Form III C shall be submitted along with the Work Test Certificate countersigned by the above authorities and shall include the following.

1. Test Certificate Number & date.
2. BHEL P.O Number & Amendment Number
3. BHEL P.O. Serial Number
4. BHEL TDC Number
5. Size-wise Quantity
6. Specification, Grade & Year of code.
7. Heat/Melt Number
8. Starting material details.
9. Steel making process
10. Laddle Analysis of Raw Material and product analysis of fitting.
- *11. Positive Material Identification (PMI) report for Alloy steel fittings.
- *12. Supplementary Test(Product analysis, Tension test..) results.
- *13. Heat Treatment Chart.
- *14. NDE report. (VISUAL,MPI, LPI,UT)
- *15. Tensile Test Report
- *16. Hardness Test Report
- *17. Metallography as applicable.
- *18. Dimensional conformance.
- *19. RT test report / Results (for welded fittings)
- *20. Guarantee of HTP shall be given as follows:- "Fittings are capable of withstanding without failure, leakage or impairment of their serviceability a hydrostatic test pressure equal to that prescribed for the specified matching pipe of equivalent material".

*Details furnished in the Tests certificate in lieu of chart/report is acceptable.

9.0 RECORDS OF REVISION :-

Rev 01 : a) Fully revised for better clarity.


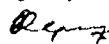
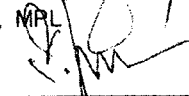
: b) Para 2.0 e added.

Rev 02 : a) Para 2.0 (c): UT acceptyance norms revised from level A to B.

Rev 03 : a) Fully revised for better clarity.

: b) Para 4.2,6.0, 8.0 (11) added.

c) Para 2 (d) ,4.1, 5 (d) are revised.

S. Jayakumar, Engg		Approved by K. Vedaprasad, QC
P. Elangovan, QA		K. Ganeshan, MPL 

LIST OF LIKELY PROJECT SITES

Sl No	Project site
1	BHUSAWAL 1 (Maharastra)
2	BHUSAWAL 2 (Maharastra)
3	KHAPERKHEDA 500MW (Maharastra)
4	SIMHADRI -1 (A.P)
5	SIMHADRI -2 (A.P)
6	ARAVALI -1 (Haryana)
7	ARAVALI -2 (Haryana)
8	ARAVALI -3 (Haryana)
9	ENNORE (T.N)
10	KODERMA -1 (Jharkand)
11	KODERMA -2 (Jharkand)
12	DURGAPUR 1 (W.B)
13	DURGAPUR 2 (W.B)
14	MAITHAN (Jharkand)
15	ANPARA (U.P)
16	UKAI 500 MW PCP U6 (Gujarat)
17	BELLARY (Karnataka)
18	KOTHAGUDAM (A.P)
19	Nabinagar -1 (Bihar)
20	Nabinagar -2 (Bihar)
21	BONGAIGAON (Assam)
22	Satpura (Maharastra)