



**PRODUCT STANDARD**

PROJECT ENGINEERING & SYSTEMS DIVISION

**PY52043**

Rev. No. 00

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**PRE-FABRICATED PIPING**

This specification defines the scope of supply, technical requirements, material requirements, quality requirements, inspection, and first coat of painting, packing and dispatch of pre-fabricated piping assemblies as per variants mentioned in variant table.

**1.0 Scope of Supply:**

The piping assemblies shall be fabricated as per BHEL drawings and other referred standards and technical specifications.

- 1.1 Supply of all piping BOQ items i.e. Pipes, fittings, shall be considered in this supply scope as per the attached isometrics/drawings.
- 1.2 This package supply excludes valves, steam traps, bellows, strainers, flanges, spacer and blinds, gaskets, stud with nuts, insulation and hangers.
- 1.3 The scope of pre-fabrication activity includes:

- (a) Preparation of Fabrication Drawings:

Bidder shall prepare and submit the fabrication isometrics drawings in AUTOCAD format based on the post bid drawings/isometrics clearly identifying the spool numbers and field welds, BOQ table meeting the criteria mentioned above. Bidder shall proceed with fabrication after receipt of manufacturing clearance from BHEL.

- (b) Cutting and edge preparation of spools
- (c) Welding of fittings
- (d) Welding of stubs and branch connections

Bidder to consider welding of stubs on pipes for instrument connections, vents and drains, even though the same is not being indicated in the present isometric drawings. The requirement shall be as per the enclosed BOQ.

Bidder to note that the Temperature stubs are non-standard and are to be procured as per the applicable specification attached.

For all the Pipe to Pipe branch connections (reinforced tees), the branch connection shall have a minimum projection of 300mm above the header pipe surface.

- (e) Welding of shoe pads for supports

The shoe pads on bare pipes, shall be fabricated from the parent pipe for all 2" and above pipes, same shall be of length 300 mm and included angle of 120° for all type of Pipes supports. Pipe support locations are indicated in isometrics enclosed with the Specification.

- (f) Extent of pre fabrication:

The extent of spool length shall be done in such a way to have minimum field joints at site. While doing so maximum transportable size of 6M (L) to be considered. All spool pieced shall be of 6.0 m length the maximum extent possible.

All spool pieces are considered as straight pieces, however same can have fittings like an elbow/tee.

All fittings (except for loose items) shall have a minimum one end welded to the connecting pipe Also all the loose pipes & fittings shall be properly edge prepared and sent to site.



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- 1.4 Subsequent to placement of order BHEL shall issue the final isometrics. Bidder shall prepare and submit fabrication drawings within 15 days of issue of the isometric drawings.
- 1.5 Any modification arising in isometrics /drawing during detailing engineering stage, to suit the engineering requirements and not calling for any additional material shall be borne by bidder without any additional price implications.
- 1.6 All the pre-fabricated piping shall be supplied duly tested, cleaned and painted.
- 1.7 Further bidder shall quote the unit rates as indicated in the price bid format which will be the basis for catering to subsequent variations, if any.

## 2.0 Technical Requirements:

The technical requirements for supply of pre-fabricated piping, testing, are as per specifications enclosed in Annexure -A.

## 3.0 Material requirements :

- 3.1 The Pipes and the Pipe Fittings required for the pre-fabricated piping assemblies, shall be procured as per the BOM is listed in the isometrics/drawings (Refer Annexure-B).
- 3.2 For Piping material specification (PMS) Refer Annexure – C.
- 3.3 For piping components material purchase specifications Refer Annexure –D
- 3.4 The vendors for Bought out items shall be from BHEL& RIL approved vendor list only (attached in this specification- Annexure -G).

## 4.0 Quality Requirements:

- 4.1 The quality requirements of pre-fabricated piping shall be as per attached Quality assurance plan (QAP) (Refer Annexure -E).
- 4.2 Material test certificates shall be maintained and produced for BHEL or third party inspection agency as required.
- 4.3 All Welds shall be made as per the relevant WPS (Refer Annexure -F).
- 4.4 All the Stainless steel piping shall be done with 100 % PMI.
- 4.5 No Hydro test is envisaged for the fabricated piping spools assemblies. However At a later stage if found at site that any piping spool found not meeting the intended quality requirements, all such items shall be duly repaired (as per governing code)/replaced and dispatched to site by bidder free of cost within stipulated time as per BHEL requirement so as not to affect project milestones.
- 4.6 Correctness of the spool drawing to match the piping isometric drawing shall be the responsibility of the bidder. Any mismatches arising in the supplied spool piece detected at site while erection with respect to the Piping isometric drawing shall be replaced by bidder.

## 5.0 Painting

All the pre-fabricated piping shall be supplied duly tested, cleaned and application of primer .Also note that bidder shall perform the complete surface preparation activity and first coat only, as specified in painting spec (refer table "L": Painting schedule).

## 6.0 MARKING:

All dispatchable parts assembles, and shipping packets & containers etc. shall be individually, permanently and legibly marked/tagged for material number identification as per the BOM, so as to store, locate & identify the item conveniently, easily & quickly at site.



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## 7.0 PACKING:

- 7.1 All dispatch able parts, assemblies, shipping packets etc., shall be individually, permanently and legibly marked/tagged for material identification number as per the BOM, so as to store & identify the items conveniently at site.
- 7.2 All pre-fabricated assemblies ends shall be protected with secure plastic caps to prevent ingress of rain water at site open storage, this includes the plugging of stubs.
- 7.3 All the items shall be packed in pallet mounted weather proof wooden boxes with steel reinforcement suitable for handling loads and for dispatching to site. Adequate lifting provision shall be provided. The inner side of the box shall be lined with tarpaulin.
- 7.4 Moisture absorbent (pre-packed silica gel) shall be placed in the box.
- 7.5 If more than one shipping container is required, supplier shall provide suitable container marking for recognition of parts of one unit.
- 7.6 These boxes are expected to be put in open condition at site for 6 to 12 months before taken for erection. Necessary preservation treatment to be done for all parts including machined & threaded surfaces.
- 7.7 It is the responsibility of the supplier to ensure adequate packing is done so that all the items arrive at the destination in an undamaged condition.
- 7.8 Packing list duly linking with various BOM items shall be submitted before dispatch of piping assemblies.

## 8.0 Special Notes to Bidders:

- 8.1 Bidder shall quote for entire scope of package. Offers with partial scope or incomplete offer will be rejected. Also any deviations from this specification shall be clearly listed and brought in technical bid. In case of no deviations being highlighted by bidder it is presumed that bidder has no deviation.
- 8.2 The identification numbering of pre-fabricated spools and other loose materials shall be discussed by bidder and finalized with M/s BHEL during execution stage i.e. after award of contract.
- 8.3 Loose material items shall have proper identification number assigned and shall be supplied loose to site.
- 8.4 In case of conflict of requirements, issues shall be brought to notice of BHEL by bidder for resolution.
- 8.5 Review/approval of bidder's documents shall not relieve the bidder from their responsibilities for compliance with the applicable codes, standards & good engineering practices.
- 8.6 Annexure-I is for bidder ready information only, Bidder to derive actual BOQ from isometrics/drawings only.

## 9.0 LIST OF ENCLOSURES:

- 9.1 **ANNEXURE-A:** TECHNICAL SPECIFICATIONS
- 9.2 **ANNEXURE-B:** LIST OF DRAWINGS CONTAINING BOQ
- 9.3 **ANNEXURE-C:** PMS
- 9.4 **ANNEXURE-D:** PURCHASE SPECIFICATIONS OF PIPING ITEMS
- 9.5 **ANNEXURE-E:** QAP
- 9.6 **ANNEXURE-F:** WPS
- 9.7 **ANNEXURE-G:** LIST OF SUB BIDDERS FOR BOUGHT OUT ITEMS
- 9.8 **ANNEXURE-H:** P&ID LIST
- 9.9 **ANNEXURE-I:** CONSOLIDATED BOM LISTING

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**VARIANT TABLE**

Var. No.	Project	Material Code	Scope of supply	Remarks
00.	RUPPL - HMD : NON IBR PRE- FABRICATED PIPING PACKAGE	PY9752043003	PEMC-04561	
01.	RUPPL - DMD : NON IBR PRE- FABRICATED PIPING PACKAGE	PY9752043011	PEMC-04562	

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### PRICE FORMAT

**Enquiry No** :  
**Project** : RIL-HMD  
**Name of the Bidder** :  
**Scope of supply** : PEMC-04561

SI No	Item Description	As-Built weight (Kg) (Envisaged from bid stage dwgs- Weights arrived at based on individual piping component weights)	Unit price (Rs / kg)	Total Price (Rs)
01	Supply of pre-fabricated pipe assemblies (i.e pre-fabricated pipe along with elbows, tees, stubs, caps, couplings, reducers) of <b>carbon steel material</b> .	507311		
02	Supply of pre-fabricated pipe assemblies (i.e pre-fabricated pipe along elbows, tees, stubs, caps, couplings, reducers) of <b>stainless steel material</b> .	70719		
03	Total Price pre-fabricated Carbon steel and Stainless Steel material : Sum of (1) & (2) above.			

Notes:

- 1.0 Price bid evaluation will be based on total price quoted as per SI no (3) above.
- 1.1 The weights indicated are for tender purpose only. However as part of execution, the actual quantities may vary. The variation shall be in the range of (-) 10 % to (+) 20%.The unit prices (Rs/Kg) quoted by bidder as above shall be utilized for any addition/deletion during execution.
- 1.2 The actual final payment shall be based on weights of various piping components of various sizes as per the final drawings of the execution.
- 1.3 It is considered that the unit prices (Rs/Kg) are quoted based on weights of various piping components of the fabricated spools/loose supply items of various sizes.
- 1.4 It is considered that all the material cost, cutting allowances, wastages, consumables, fabrication and any other relevant aspects are duly accounted in arriving at the unit rate.
- 1.5 The drawings enclosed with the specification are for tender purpose and are meant for ready reference of bidder for assessment of unit prices.
- 1.6 In the Technical cum un-priced Commercial Bid, bidder to mention "Quoted" in all the applicable fields above along with confirmation to Commercial Terms listed in this Document.
- 1.7 The break up prices quoted shall be firm and applicable till the execution of the project.

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(Authorized Signatory of bidder)  
Seal of the Company

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**RECORD OF REVISIONS**

Rev. No.	Date	Revision Details	Prepared By	Approved By
00	17.05.14	First issue	V .Uday Kumar	VVSS Sundar

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