INVITE FOR

EXPRESS OF INTEREST (EOI)

FOR

SUPPLY OF CARBON STEEL SEAMLESS PIPES

EOI FOR SUPPLY OF CARBON STEEL SEAMLESS PIPES

Ladies & Gentlemen,

NUMALIGARH REFINERY LIMITED (NRL) has awarded M/s. Technip Energies India Limited (T.EN) for Project Management Consultancy services (Managing PMC) to provide PMC/MPMC services for BDEP preparation for Open Art units, FEED for Licensed Process units , Tendering & Award of EPC / LSTK contracts for identified process units in EPC mode , Detailed Engineering, Procurement & Expediting services for units identified as MPMC/ Conventional mode, interface management for EPCM-1/EPCM-2/BOO contractors to be engaged by NRL, Construction Management & Supervision, Assistance in start-up, Commissioning & performance test runs for Numaligarh Refinery Expansion Project (NREP) from 3 to 9 MMTPA of its Refinery in Numaligarh, Golaghat District, Assam, India.

On behalf of OWNER (NRL), M/s. Technip Energies India Limited (T.EN) as MPMC Consultant invites Expression of Interest (EOI) for **Supply of CARBON STEEL SEAMLESS PIPES.** Interested bidders are requested to revert on this EOI within stipulated time period given herein with the EOI by submitting duly filled, Signed and Stamped Annexure-1.

The scope of work and details of credentials to be submitted are as follows:

Sr No	Description	Tender Requirement
1	**Type Of EOI**	Domestic Limited
2	**Name Of Work**	**Supply of CARBON STEEL SEAMLESS PIPES**
3	**Scope of Supply**	The scope covers (but not limited to) Manufacturing, procurement of materials and bought out components, assembly at shop, Inspection including inspection by TPIA, Testing at manufacturer's works, packing and supply as per material requisition attached with this EOI on DAP Site basis for NRL Offsites & Utilities Project at NRL, Numaligarh, Golaghat District, Assam

4	**Due date for submission of EOI**	**22-05-2026 upto 15.00 Hrs (IST).**
5	**EOI opening date & time**	**23-05-2026 upto 15.00 Hrs (IST)**
6	**Delivery Requirement**	**Delivery shall be on DAP Site Basis.** **Bidder to Confirm delivery requirement for individual line items in Annexure-II (BOM)** The delivery period quoted/ agreed in EOI shall be strictly followed. Despatch shall be on Express Cargo Services. **Note :** Delivery requirement is very critical from project progress point of view. Non compliance to delivery requirement will reject the EOI and bidder shall not be considered for issuance of tender.
7	**EPCG**	Not Applicable
8	**Basis of evaluation**	**'OVERALL EVALUATION BASIS''**
9	**Part Order**	Part order shall not be applicable. Bidder submitting EOI for partial items / Quantity shall be rejected and shall not be considered for issuance of tender.
10	**Price Reduction Scheule (PRS)**	In case of delay in execution of the order, NRL may at its option, recover from the vendor price reduction of 0.5% of the value of delayed goods per day of delay or part thereof subject to a maximum of 5% of the undelivered order value of goods. LR date / Express Cargo date will be considered as delivery completion date for calculation of price reduction.
11	**Special Instruction for firm Tender**	a) Tender shall be issued as "No Deviation Tender" thru CPP Portal with bid due date of Three (3) Working Days from tender published date for uploading of technical and commercial bids. b) No Bid due date extension shall be provided c) Bidders from MSL 4.188 PIPE /TUBE - AGENTS/STOCKISTS/TRADERS shall ensure that all Materials in this Tender be sourced from manufacturers enlisted under MSL CATEGORY 4.177 PIPE CARBON STEEL (WELDED) TO INDIAN STANDARDS.

1. OBLIGATIONS AND LIABILITIES

♣ Participation in this Call for Bids does not guarantee any future business, or inclusion in future solicitations

♣ The present Call for Bid does not create contractual relations of any kind or commitment from TECHNIP ENERGIES / NRL to award or enter into any contract**.**

INSTRUCTION AND GUIDELINES FOR SUBMISSION OF APPLICATION / EOI

a. EOI for Empanelment document can be downloaded from website at ***http://eprocure.gov.in/eprocure/app.***

b. The EOI documents shall be submitted only as per the enclosed format(s) along with all Annexures. Self-attested documentary proof(s) in respect of the details furnished in the EOI form shall be submitted along with the application.

c. The EOI shall be signed by the authorized person (s) of the firm.

d. The EOI shall be in English language only. Applicant shall provide certified English translations of any documents forming part of the EOI which are not originally in English language, in which case, for the purpose of interpretation of the EOI, the English translation shall govern.

e. The applicant is responsible for all the expenses, costs incurred towards preparation of the EOI, in connection therewith. NRL shall, in no case, be responsible or liable for any such cost, whatsoever, regardless of the outcome of the EOI shortlisting process or its abandonment by NRL.

f. Amendments/ Corrigendum if any shall be published only in CPP Portal website ***http://eprocure.gov.in/eprocure/app*****.** Vendors are requested to keep on visiting the CPP Portal website for amendments/ corrigendum.

g. NRL reserves the right to reject any or all Applications received and/ or any Applicant, at their discretion without assigning any reason whatsoever.

h. Interested bidders shall upload shall upload EOI on CPP Portal website ***http://eprocure.gov.in/eprocure/app*** within the due date and time mentioned above

i. NRL/MPMC reserves the right to ask for additional documents and details, if need arises.

j. NRL/MPMC is not responsible for any EOI not getting uploaded on CPP Portal in time.

k. It shall be sole prerogative/ decision of NRL for utilizing / not utilizing the information gathered from EOI.

l. NRL/MPMC is not bound to assess any or all the responses to the EOIs and also reserves the right to take / not to take any further action.

m. Please Note : This is not a Tender / Request For Quotation and prices are not to be submitted with, 'Expression Of Interest'

n. The contact details for this EOI is

Name : Mr, Sekar Hirudhayam

Designation : Chief Manager

Email : sekar.hirudhayam@ten.com

Mobile No : +91 74002 79099

Yours faithfully,

For and on behalf of Technip Energies India Limited,

Sekar Hirudhayam
Chief Manager – Procurement

ANNEXURES:

ANNEXURE-1	CONFIRMATION OF INTEREST LETTER TO TECHNIP ENERGIES
ANNEXURE-2	BILL OF MATERIALS (BOM)
ANNEXURE-3	Specification

ANNEXURE-1

CONFIRMATION OF INTEREST LETTER TO TECHNIP ENERGIES

Dear Sir,

(Please select your interest by ticking the box accordingly)

We confirm our participation with TECHNIP ENERGIES for this EOI With "No Deviation"	
We decline our participation with TECHNIP ENERGIES for this EOI	

If decline to participate, kindly specify reasons:

Thanking you,

Yours faithfully
(Authorized Signatory with company stamp)

ANNEXURE-2

EOI Ref No: TP/082176C/NRL/PQ/218

ITEM: CARBON STEEL SEAMLESS PIPES

BILL OF MATERIAL (BOM)

SR NO	Ident Code	Size	WT 1	Item Description	QUANTITY	UOM	Items available in Ex-Stock (Yes/No) (A)	Shortest Possible Delivery confirmation by Bidder (in Weeks) from the date of LOA (DAP Site basis) (B)
1	C4E6UK09	0.5"	S 160	Seamless, Pipes, ASME B36.10, ASTM A106 Gr.B, PE, IBR -, -,	35000	m		

Note:

1. Bidders who have confirmed to Ex-Stock delivery (under Column 'A') shall be given First Preference for issuance of tender.

2. Bidders who have confirmed for shortest delivery (under Column 'B') shall be given subsequent preference for issuance of Tender.

3. The final decision to float a tender to a particular bidder shall solely lie with NRL/MPMC.Decision taken by NRL / MPMC shall be construed as final.

4. Supply of Pipes shall be in Single Random Length (SRL) of 5 to 7 meter or Double Random Length (DRL) of 7 to 14 meter respectively.

5. Bidders from MSL 4.188 PIPE /TUBE - AGENTS/STOCKISTS/TRADERS shall ensure that all Materials in this Tender be sourced from manufacturers enlisted under MSL CATEGORY 4.177 PIPE CARBON STEEL (WELDED) TO INDIAN STANDARDS

	NUMALIGARH REFINERY LIMITED	Total pages: 14

NRL EXPANSION PROJECT

SPECIFICATION FOR SUPPLY

PIPES

D3	03/12/2024	Approved for Enquiry	HA	KR	JL			
D2	09/09/2022	Approved for Enquiry	DRK	JAK	JL			
D1	23/12/2021	Approved for Enquiry	DRK	JAK	JL			
Rev.	Date	Reason for Issue	Prepared	Checked	Approved	Prepared	Review	Review
			Discipline Engineer	Discipline Lead	Contractor Representative	Discipline Engineer	Project Engineer	Department Head

TECHNIP ENERGIES INDIA LIMITED		**TEIL**			**NRL**	
		Category		Code	Description	
		Facility Area Code		IZ	Common Document	
NRL's PO NO: 4300062833-AMA/16.06.2020		Document Type		SPE	Specification	
TP DOC REF: 082176C-ZZZ-JSS-1320-0002-D3		System Number		00	General	
		Life Cycle		01	Disk Ref.:	
		Originator/ Contractor	Asset Code	Discipline	Document Type	Sequence Number	Revision
		TP	**1ZZZA**	**PI**	**SPE**	**0016**	**D3**

TABLE OF CONTENTS

1. Introduction:

NUMALIGARH REFINERY LIMITED (NRL) has awarded Letter of Acceptance (LOA) dated 4th May 2020 to M/s. Technip India Limited (TPIL) for Project Management Consultancy services (Managing PMC) to provide PMC/EPCM services for BDEP preparation for Open Art units, FEED for Licensed Process units , Tendering & Award of EPC / LSTK contracts for identified process units in EPC mode , Detailed Engineering, Procurement & Expediting services for units identified as EPCM/ Conventional mode, interface management for EPCM-1/EPCM-2/ BOO contractors to be engaged by NRL, Construction Management & Supervision, Assistance in start-up, Commissioning & performance test runs for Numaligarh Refinery Expansion Project (NREP) from 3 to 9 MMTPA of its Refinery in Numaligarh, Golaghat District, Assam, India.

2. Definitions & Abbreviations:

Wherever used in this procedure, the following words shall have the meaning as given hereunder:

Abbreviation	Definition /Expanded form
NRL / OWNER / CLIENT	shall mean Numaligarh Refinery Limited
CONTRACTOR / MPMC / EPCM	Managing PMC (shall mean Technip India Limited)
SUPPLIER / VENDOR	Any third party supplying the equipment/materials for setting up the Plant
SUB-SUPPLIER / SUB-VENDORS / VENDOR SUB CONTRACTORS	Any party with whom VENDOR has entered any subcontract.
LLI	Long Lead Item – Any critical equipment / Package recommended by Licensor for Process units and agreed by NRL/ CONSULTANT to be considered as Long Delivery Item from schedule and market delivery point of view
PROJECT / NREP	Indicates Numaligarh Refinery Expansion Project (NREP)
SITE	Indicates NRL's Refinery in Numaligarh, Golaghat District, Assam , India
UNIT	Indicates any particular portion of the NREP to be built which can be Process related or Utilities/Offsites related
TPI or TPIA	Third Party Inspection Agency
ASTM	American Society of Testing and Metals
BIS	Bureau of Indian Standards
BOM	Bill of Material
Cl	Class
CS	Carbon Steel.
EN	Euro Norms.
Gr	Grade
H2	Hydrogen
HAZ	Heat Affected Zone
HIC	Hydrogen Induced Cracking
HF	Hydrofluoric Acid
IBR	Indian Boiler Regulations
IS	A prefix included to material specification number that confirms to Bureau of Indian Standards.
IS.ISO	Indicates that BIS has adopted ISO standard as an Indian Standard.
ITP	Inspection and Test Plan
ITR	Inspection and Test Requirement generally attached along with the bid document.

LAS	Low Alloy Steel.
LTCS	Low Temperature carbon Steel.
MDMT	Minimum Design Metal Temperature (Design Temperature at the lower end).
MR	Material Requisition
MTR	Material Test Record
MTC	Material Test Certificate
NACE	National Association of Corrosion Engineers
NDE	Non-Destructive Examination (Same as NDT)
PO	Purchase order
PR	Purchase Requisition
QCP	Quality Control Plan.
RT	Radiographic Testing
SS	Stainless-Steel (In this specification, it indicates Austenitic Stainless Steel).
SSC	Sulphide Stress Cracking
TP	Indicates Type and generally indicates the alloy that has the alloy number that follows the letter TP.
"/" Whenever and wherever "/"	It indicates "and or"
MTC=MTR	They have the same meaning and intent and are used interchangeably.
Sour Service	As defined in ANSI-NACE MR 0103/ISO 17945-1 and NR-0ZZZZ-PI-SPE-0025.

3. Purpose

This specification covers the technical requirements for procurement of new and unused Carbon Steel, Low Alloy Steel, Stainless Steel & high nickel alloy material Seamless & Welded pipes and Non-Metallic pipes to be used for Numaligarh Refinery Expansion Project.

This specification shall be read in conjunction with the material requisition, commodity code description (if any) and the relevant codes and standards.

This specification does not exclude consideration of the SUPPLIER's standard practices or alternative recommendations. Such deviations shall, however, be clearly stated as "exceptions" for APPROVAL by OWNER / CONTRACTOR

If no exceptions are stated, it shall be mutually understood that the supplied items will be in exact accordance with this specification.

Reference Documents

1) NR-0ZZZZ-PI-SPE-0001 - Piping Material Specification

2) NR-0ZZZZ-PI-SPE-0025 - Specification For Material Requirements For Carbon Steel Components Used In Sour Service In Petroleum Refinery Environments

3) NR-0ZZZZ-PI-SPE-0032 - Specification For Positive Material Identification

4. Order Of Precedence

In case of conflict between requirements specified herein and the requirements of any other referenced document, the order of precedence shall be:

- Material requisition,
- This specification,
- Referenced codes and standards

In any case, the SUPPLIER shall notify CONTRACTOR of all conflicts among the aforesaid documents. Resolution and/or interpretation precedence shall be obtained by the SUPPLIER in writing before proceeding with the design or the manufacturing.

5. General Requirements

5.1 Pipes shall confirm to respective ASTM Standard Specifications or pipes made to Bureau of India Standards. All pipes shall be supplied with material test report.

5.2 Only the process of manufacturer (including welding processes) and types (including the weld seam) specified in respective Standard specifications (ASTM, IS) are acceptable. No other manufacturing process and or welding processes or types are acceptable.

5.3 Inspection:

The extent of inspection intervention will be addressed in the ITR pertaining to a given MR or ITP or marked in the QCP. All pipes shall be supplied as a minimum with BSEN 10204 type 3.1 certificate or IS.ISO 10474 type 3.1 b (type 3.1) certificate. For certain items, type 3.2 certificate may be required in the job specific ITP/ITR/QCP depending on the thickness, diameter, material or other characteristics such as application, service.

5.4 IBR (Indian Boiler Regulations) Pipes.

5.4.1 BOM of MR/PO shall clearly identify the items that are under the IBR purview. All IBR pipes shall be supplied with IBR form IIIA, in original, duly approved, signed by IBR authority or authorities who are allowed by the IBR to act on their behalf. Photocopy of the original certificate duly attested by IBR authority may be accepted.

5.4.2 In addition to meeting the mandatory requirements specified in ASTM/IS standard described in the BOM/PO/PR/MR the following shall be complied.

a) In addition to meeting the IBR requirements, the material shall conform to the requirements specified for a given material specification addressed elsewhere in this specification.

b) For Carbon Steel Pipes, Maximum Carbon % shall be 0.25%. Other elements (S, P, Mn) shall be stricter of value indicated in respective material specification and IBR.

c) For A335 & A691, form III A approved by IBR and it shall include the following “Et”, “Sc” & “Sr” values for the complete range as per the following

“Et/1.5 >= SA”, “Sc/2>=SA” & “Sr/2 >= SA”

SA= Allowable stress at the working metal temperature

Et = Yield point (0.2% proof stress at the working metal temperature)

Sc= The average stress produce elongation of 1% creep in 100000 hours at the working metal temperature

Sr= The average stress to produce rupture in 100000 hours at the working metal temperature and in no

case more than 1.33 times the lowest stress to produce rupture at this temperature.

"Sa", Values shall be as per the Appendix A of ASME/ANSI B31.3.

d) Each pipe, irrespective of the size shall have marking on the external surface and the marking requirements shall be consistent with the respective material specification.

e) The letters "IBR" shall be conspicuously marked adjacent to the marking specified in the respective material specification.

f) Each of the IBR pipes shall have a RED colored strip painted all along the length.

5.5 General Notes:

A. Seamless pipes are acceptable instead of welded pipes.

B. SSC test is not required or applicable.

C. NDE in-lieu of hydrostatic test is not acceptable. All pipes shall be subjected to hydrostatic test in the mill and the test pressure shall be indicated in the MTR.

D. All pipes above 2" NPS shall be supplied with end bevel as indicated in the table below. All pipes less than 2" may be supplied with plain ends.

Material	**Thickness**	**Weld Edge Contour (Refer to B16.25)**
Carbon Steel except LTCS	≤ 22 mm	Figure 2 Type A of B16.25
	> 22 mm	Figure 3 Type A of B16.25
LTCS, LAS, SS	≤ 10 mm	Figure 4
	10 mm < thickness ≤ 25 mm	Figure 5 Type A of B16.25
	> 25 mm	Figure 6 Type A of B16.25

E. Supply of Pipes shall be in Single Random Length (SRL) of 5 to 7 meter or Double Random Length (DRL) of 7 to 14 meter respectively.
If supplied in DRL, except for one pipe length which can be supplied in Single Random Length (SRL) of 5 to 7 meter which is allowed exclusively in order to meet the total quantities in meters.

F. Seamless and E.R.W. pipes shall not have any circumferential seam joint in a random length. However, in case of E.FS.W pipe, One welded circumferential seam for one random length and two or three welded circumferential seams for double random length of same quality as longitudinal weld is permitted for larger size (>48"). This weld shall be at least 2.5 m from either end. The longitudinal seams of the two portions shall be staggered by 90°. Single Random Length (SRL) in such cases shall be 5 to 7 meter.

G. Unless specifically mentioned in the item description in the BOM/PR/MR/SR, all welded pipes shall be longitudinal welded. All longitudinally welded pipes shall employ only automatic welding.

H. Unless otherwise mentioned in the respective material code, E.FS.W pipes < 36" shall not have more than one longitudinal seam joint and E.FS.W pipes ≥ 36" shall not have more than two longitudinal seam joints.

I. Repair of pipe body by welding is not permitted. All weld repair shall be conducted prior to final heat treatment.

J. For welded pipes post punching (bending and or curving the longitudinal edge after forming the skelp) or curve forming the longitudinal edge after bending the body is not a preferred method of making the pipe. In the event pipe are made in this method, first 5 pipes of each size shall be subjected to 100% length of RT of the weld using 120 mm wide film. Each and every production pipe (100% of pipes produced using this method shall be subjected to 100% inside visual inspection for presence of score mark, press marks, scratch marks, notches and if any forming marks, notches, scratch mark or score marks are present, those locations shall be smoothly blended and the notch removed completely. This shall be carried out prior to any heat treatment, hydro test. Thickness in all such locations shall be verified and shall be in compliance with the specification.

K. For welded pipes shape correction to meet the ovality requirements are permitted after the heat treatment so long as the shape correction does not involve hammering, expanding the pipe or produce fibre elongation. Shape correction by using external pressing is allowed. All efforts shall be made by the manufacturer to reduce the need for shape correction by provision of appropriate internal/external supports like temporary rings etc. Production hardness (using portable hardness tester) shall be carried out on the base metal weld metal and near the toe of the weld metal (HAZ) to verify compliance with the maximum hardness specified for the grade of the material in the other clause of this specification. Shape correction shall not leave any press marks or dents or notches on the pipes.

L. For Pipes Procured from Mill/manufacturer, the WPS (Welding Procedure Specification) and Supporting Procedure Qualification Record for weldment and repair qualification (Duly certified by third party inspection agency) shall be submitted to NRL / Contractor for review and approval.

M. Pipe Material Certificate (MTR/MTC) shall clearly indicate the heat treatment cycles including heating rate, cooling rate, soaking time. Heat treatment charts shall be available in the manufacturer's shop for the review of NRL / Contractor representative and these charts shall be preserved for at least 5 years from the date of supply and if and when required, the copy of the charts shall be sent to NRL / Contractor.

N. For Welded Pipes, weld repairs in the same spot is allowed only for 1 time in a pipe. If repair occurs 2nd time in the same spot, such pipe shall be rejected or the portion of the repair may be cut-out and the manufacturer may approach NRL for accepting shorter length pipe, if the length of such a pipe is shorter than the specified required length. All repair shall be conducted prior to final heat treatment.

O. Heat treatments like Stress relieving/PWHT, Normalising, Normalising & Tempering, Solution Annealing shall be carried out after all welding and welding repairs are completed.

P. For Welded Pipes Dimension check & Visual check of the pipes shall be conducted after hydro static testing. Thickness, diameter, ovality, length, alignment/straightness shall be measured for each pipe and recorded and a dimension report is required showing the dimensions for each pipe.

Q. For Welded Pipes Each pipe shall have a unique pipe number. Manufacturer shall provide a tally sheet that lists the BOM item number (PO items number), Pipe dimension, Length, Weight, Pipes specification, pipe number, heat number and whether the pipe was repaired and has a portion that was repaired either for rip- offs or in the weldment.

R. Paints, Dyes & Inks used for marking shall be free from Chlorides and Sulphides and harmful halogens and metallic salts of Zinc, Lead and Copper.

S. All pipes shall be clean, dry and free from debris, rust, mud, dust, loose foreign material, scales. Pipes shall be protected against rusting. Varnish/Rust Protection Oils or other suitable rust preventives may be applied on the Carbon Steel pipes external surface as per the manufacturer's standard practice, if such method is used, the fluid used for protecting shall not have constituents that will react with the metal surface or corrode the metal surface.

6. General Notes For CS Pipes

A. Circumference seams in pipes not allowed for IS 1239 pipes.

B. Pipes with threaded/screwed ends shall have NPT External Taper pipe threads confirming to ASME/ANSI B 1.20.1 up to and including 1.5" & IS 554 between 2" and 6" inclusive.

C. Galvanized pipes shall be subjected to Hot Dip Galvanizing as per ASTM A123 or IS 4736.

D. Pipes to IS 3589 Gr.410 are acceptable in place of IS 3589 Gr.330.

E. HIC test is not applicable for IS (Material confirming to BIS) material addressed in this specification.

F. For all ASTM welded pipes, weld seams shall be subjected to 100% radiography.

G. For CS Welded pipes only low hydrogen welding electrodes, having a maximum diffusible hydrogen of 5 mL per 100 g of weld metal per AWS A4.3, shall be used. Nickel content of filler metal also shall remain below 1% and Manganese content below 1.5%. Welding consumables shall be baked, stored, and used in accordance with manufacturer's instructions (for holding in electrode oven, length of time out of oven, use of electrically-heated quivers).

H. For A672 pipes, hydrostatic test shall be conducted after all weld repairs, final heat treatment & sizing. Hydrostatic test shall be conducted at test pressure calculated using the test pressure formula given in ASTM A530, the value of "S" shall be equal to 90 % of SMYS (Specified Minimum Yield Stress).

I. For all carbon steel pipes in A106 and A672 grades, the ratio of Manganese to Carbon shall be 5 (or higher) or the grain size shall be 5 or finer (ASTM E112) to prevent brittle fracture.

J. Manufacturing of IS 3589 Pipes in ERW are acceptable in place of SAW.

7. General Notes For SS Pipes

A. Unless specifically ordered and indicated in the PO/BOM/MR/SR/PR, item description, all ASTM A312 pipes shall be seamless.

B. The % weight of following elements shall be indicated for all austenitic alloys, %Mo, %N, % Ti, % Cb (Nb).

C. When SS 304 is ordered, pipes shall be supplied with SS304/SS304L dual certified. The Maximum %C shall be 0.03%

D. When SS 316 is ordered, pipes shall be supplied with SS 316/SS316L dual certified. The Maximum %C shall be 0.03%

E. SS 304/304L/316/316L shall be in Solution Annealed Condition.

F. SS 321/347/347H shall be in Solution annealed and thermally stabilized heat-treatment condition. Subsequent to the solution anneal heat treatment 321/347/347H shall be given a stabilization heat treatment at a temperature lower than that used for the initial solution annealing heat treatment. Soaking temperature for stabilization heat treatment may be 900 °C with 4.7 min/mm of thickness or 2 hours whichever is higher.

G. All Stainless-steel pipes shall be Blast & Passivated or Pickled & Passivated prior to Hydro testing.

H. For SS pipes one Samples from each heat number per diameter per thickness and each heat treatment lot shall be subjected to A262 IGC Pr E. For welded pipes, the test specimen shall include weld metal, base metal and HAZ. Use of Rapid Screening option (A262 Pr A) in-Lieu of other tests is not acceptable.

I. For the "H" grades of SS like 304H/316H/321H/347H, grain size as per E112 shall be 7 or coarser.

J. All SS pipes shall be subjected to 100% PMI (Positive Material Identification). For welded pipes, PMI shall be conducted on the base metal and weld metal and PMI shall be as per NR-0ZZZZ-PI-SPE-0032.

K. Water used for Hydrostatic test of Stainless-Steel pipes shall have less than 50 PPM of Chloride. Hydrostatic test shall be conducted at test pressure calculated using the test pressure formula given in ASTM A530/A999, the value of "S" shall be equal to 72% of SMYS (Specified Minimum Yield Stress) for "L" low carbon grades (like TP304L, TP316L) and 85% for other grades (TP 304, 304H, 316, 316H, 321, 321H, 347).

L. Pipes that were subjected to PMI shall be marked PMI OK or "AV" on each pipe on the external surface.

M. The dual-grade shall be certified for the mechanical properties (Allowable stresses) of the higher allowable stress material.

N. Dual Marked Stainless Steel (e.g. 316/316L) shall be supplied provided that the chemical and mechanical properties comply with the requirements of both grades. Supply of single grade (e.g. 316 or 316L) shall not be accepted. Same shall be the case with 304/304L.

8. General Notes For LAS Pipes

A. For LAS pipes Maximum tensile strength of the all three Low alloy pipes shall be 100,000 PSI.

B. LAS pipes with thickness greater than 19.05 mm, shall be impact tested at 5°C MDMT and the acceptance criteria is 27 Joules minimum average and 19 Joules for individual value. For Welded pipes, Charpy V Impact test shall include base metal, weld metal and HAZ. Frequency of testing shall be same as that of tensile test.

C. For all LAS (Low Alloy Steel) material the maximum hardness shall be 225 HBW (BHN) for Base Metal. For welded pipes the maximum hardness shall be 225 HBW (BHN) for weld metal, base metal and HAZ.

D. All LAS pipes shall be in Normalized & Tempered Condition.

E. For LAS Pipes following elements shall be indicated in the MTR and shall also be included in the product analysis/check analysis: As, Cu, Nb, Sb, Sn, V.

F. For Grade A335 P11, "X-bar" Factor shall be Max 15,Where X-bar = (10P + 5Sb + 4Sn + As)/100 {elements in ppm}.

G. For A335 P22 (2.25Cr-1Mo), following elements are required to be analysed in addition to the elements listed in the ASTM. Sn, Sb, As, J and X-bar factors shall be maximum of 100 and 15, respectively and (P + Sn) shall be less than 0.01 %. Where J = (Si + Mn) x (P + Sn) x 104 {elements in wt %}.

H. For all ASTM welded pipes, weld seams shall be subjected to 100% radiography. For LAS Pipes As per B31.3, note 11 (from the stress table APPENDIX A of B31.3), Radiography for acceptance of pipes for A691 pipes shall be carried out only after the final heat treatment.

I. For LAS Welded pipes only low hydrogen welding electrodes, having a maximum diffusible hydrogen of 8 mL per 100 g of weld metal per AWS A4.3, shall be used. Welding consumables shall be baked, stored, and used in accordance with manufacturer's instructions (for holding in electrode oven, length of time out of oven, use of electrically-heated quivers).

J. All LAS pipes shall be subjected to 100% PMI (Positive Material Identification). For welded pipes, PMI shall be conducted on the base metal and weld metal and PMI shall be as per NR-0ZZZZ-PI-SPE-0032.

K. Pipes that were subjected to PMI shall be marked PMI OK or "AV" on each pipe on the external surface.

L. For A691 5CR (K41545) Plate Material 5Cr–1⁄2Mo, A387 Gr. 5 Cl. 1. ASME Sec IX P4Material.
   a) Maximum Sulphur shall be 0.003% and
   b) Maximum Carbon Shall be 0.15%
   c) Maximum Cu shall be 0.20 wt. %,
   d) Maximum Ni shall be 0.30 wt%

M. For A691 1.25 CR (K11789) Plate Material 1.25–0.5 Mo–Si A387 Gr. 11 Cl. 1 ASME Sec IX P5BMaterial. X-bar < 15,Where X-bar = (10P + 5Sb + 4Sn + As)/100 [with P, Sb, Sn, and As in ppm]. Following elements shall be analyzed in addition to the chemical elements listed in ASTM.

   The Chemistry limits for other elements are as follows.

   a. C = 0.15 wt. %, maximum
   b. P = 0.010 wt. %, maximum
   c. S = 0.003 wt. %, maximum
   d. Cu = 0.20 wt. %, maximum
   e. Ni = 0.30 wt. %, maximum
   f. Nb = 0.006 wt. %, maximum
   g. V = 0.025 wt. %, maximum
   h. Ti = 0.02 wt. %, maximum and

   The deposited weld metal shall have the following chemistry restrictions

   i. X-bar = (10P + 5Sb + 4Sn + As) / 100 ≤ 15 ppm, Where P, Sb, Sn, and As are in ppm
   ii. C = 0.15 wt.%, maximum
   iii. P = 0.012 wt. %, maximum
   iv. S = 0.007 wt. %, maximum.
   v. Cu = 0.20 wt.%, maximum.
   vi. Ni = 0.30 wt.%, maximum.

N. For A691 2.25CR (K21590). Plate Material 21⁄4Cr–1Mo A387 Gr. 22 Cl. 1. ASME Sec IX P5A Material. The starting plate material for Class 42 shall be in Normalised or Normalised & Tempered condition.

   Following elements are required to be analysed in addition to the elements listed in the ASTM. Sn, Sb, As

   a. % S Maximum shall be 0.003.
   b. J and X factors shall be maximum of 100 and 15, respectively and (P + Sn) shall be less than 0.01 %. Where J = (Si + Mn) x (P + Sn) x 104 {elements in wt %}.
   c. Cu content: 0.20% maximum
   d. Ni content: 0.30% maximum.

   The deposited weld metal shall have the following chemical restrictions

   i. X-bar = (10P + 5Sb + 4Sn + As) / 100 < 15 [P, Sb, Sn, and As in ppm]
   ii. Cu: 0.20%, maximum
   iii. Ni: 0.30%, maximum.

O. For A691 pipes, hydrostatic test shall be conducted after all weld repairs, final heat treatment & sizing. Hydrostatic test shall be conducted at test pressure calculated using the test pressure formula given in ASTM A530, the value of "S" shall be equal to 90 % of SMYS (Specified Minimum Yield Stress).

Service Specific Requirements

In addition to meeting the above general requirements, for the following services mentioned in the BOM/MR, there are additional service specific requirements. Against the services, applicable requirements given in the section 9 and its sub section and section 10 and its subsections are tabulated. The user of this specification shall refer to all the relevant requirements given against the services.

Table 1: Carbon steel

S.No	Service / Special requirement mentioned in BOM / MR	Applicable Service Specific Notes for Seamless Pipes	Applicable Service Specific Notes for Welded Pipes
1	Hydrogen Service	9A, 9B, 9C, 9G	10A, 10B, 10D, 10G
2	Sour Service	9A, 9B, 9C, 9D, 9E, 9F	10A, 10B, 10C, 10D, 10E, 10H, 10I, 10J
3	Sour Service + Hydrogen Service	9A, 9B, 9C, 9D, 9E, 9F, 9G	10A, 10B, 10C, 10D, 10E, 10G, 10H, 10I, 10J
4	Sour Service + Caustic Service	9A, 9B, 9C, 9D, 9E, 9F	10A, 10B, 10C, 10D, 10E, 10H, 10I, 10J, 10Q
5	Sour Service + HIC test	9A, 9B, 9C, 9D, 9E, 9F	10A, 10B, 10C, 10D, 10G, 10H, 10I, 10J, 10P
6	Sour Service + HIC test + Caustic service	9A, 9B, 9C, 9D, 9E, 9F	10A, 10B, 10C, 10D, 10G, 10H, 10I, 10J, 10P, 10Q

Table 2: Low alloy steel (1¼ Cr-½ Mo-Si; 2¼Cr-1Mo)

S.No	Service / Special requirement mentioned in BOM / MR	Applicable Service Specific Notes for Seamless Pipes	Applicable Service Specific Notes for Welded Pipes
1	Hydrogen Service	9G	10F, 10G, 10H
2	Sour Service + Hydrogen Service	9F, 9G, 9H	10A, 10F, 10G, 10H, 10I, 10J, 10R

Table 3: Stainless steel (All SS 300 Series)

S.No	Service / Special requirement mentioned in BOM / MR	Applicable Service Specific Notes for Seamless Pipes	Applicable Service Specific Notes for Welded Pipes
1	Hydrogen Service	-	10L
2	Corrosive Process Service	9K	10K

Table 4: Alloy steel

S.No	Material	Service / Special requirement mentioned in BOM / MR	Applicable Service Specific Notes for Seamless Pipes	Applicable Service Specific Notes for Welded Pipes
1	Monel 400	Corrosive Process Service	9I	10N, 10M
2	Inconel 625	Hydrogen Service	9I, 9J	10N, 10O

9. Service Specific Notes For Seamless Pipes.

A. CS Pipes shall be supplied in normalised condition.

B. When Normalising is required, Normalised rolling is not considered as normalised. Normalising has to be a separate heat treatment.

C. For CS Hardness of base metal shall be ≤ 200 BHN. Hardness test frequency shall be identical to the tensile testing and shall be conducted in the laboratory.

D. Deliberate addition of Micro-alloying elements like V (Vanadium), Cb (Nb) (Columbium/Niobium), B (Boron), Ti (Titanium), Lead (Pb), Selenium (Se), and Sulphur (S) to improve properties (Tensile and or Machinability) is not allowed.

E. In addition to the elements indicated in the ASTM A106 table 1 the following chemical restrictions apply in heat analysis and the product analysis.
   a) % Carbon ≤ 0.23%
   b) Mn/C ≥ 5
   c) % Sulphur ≤ 0.01%,
   d) % Phosphorous ≤ 0.02%,
   e) % Vanadium ≤ 0.02%
   f) % Niobium ≤0.02%
   g) % Boron ≤ 0.002%
   h) Vanadium + Niobium ≤ 0.03
   i) Carbon Equivalent CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15 shall be ≤ 0.43.

F. Pipe Certificate shall indicate compliance with ANSI NACE MR 0103/ISO 17945-1.

G. For CS pipes, Charpy Impact test shall be conducted for 5°C MDMT. The acceptance criteria shall be as follows; average for 3 specimens shall be ≥ 27 Joules and individual values shall be ≥ 19 Joules. Frequency of the test shall be identical to the frequency of tensile test. LAS & CS Pipes thickness 19.05 mm or higher shall be impact tested at 0°C or at MDMT whichever is lower.

H. For LAS seamless pipes maximum Sulphur % shall be 0.01 %

I. Monel (4400) and Inconel 6625 pipes shall be in annealed condition. For Monel (4400) and Inconel 6625, ASTM G48 Method A test shall be conducted as a part of production test. Test Frequency shall be identical to tensile test frequency. The test temperature shall be 50 °C, exposure time 72 hours. Cut edges shall be prepared according to ASTM G48 and pickled (20% HN03 + 5% HF 60 OC for 5 minute). The acceptance criteria shall be; No pitting at 20 x magnification.

J. Inconel 6625 Pipes shall be subjected to corrosion test as per G28 method A, with an acceptance criterion of 0.9 mm/y.

K. For SS 316 & SS 316L pipes % Mo ≥ 2.5%, alternatively SS 317 may be used with due approval from NRL/Contractor

10. Service Specific Notes For Welded Pipes.

A. The steel shall be made in an open-hearth, basic-oxygen, or electric-arc furnace and shall be fully killed. The Plate MTR shall indicate the steel making practice. Deliberate addition of Micro-alloying elements like V (Vanadium), Cb (Nb) (Columbium/Niobium), B (Boron), Ti (Titanium), Lead (Pb), Selenium (Se), and Sulphur (S) to improve properties (Tensile and or Machinability) is not allowed.

B. For A672 Pipes: The Steel for Carbon Steel Plates used for making pipes shall be vacuum degassed/Vacuum treated. In the event the steel is Vacuum Carbon-Deoxidized Steel then Supplementary S17 of A 20 is applicable. Steel shall be Calcium treated for Sulphur Shape control. Plates 50 mm thickness and above, through thickness test as per A770 shall be carried out as per the frequency and location specified in A770 and the minimum % reduction Area shall be 35%. Through thickness test results shall be indicated in the MTR. The ratio of reduction of thickness from a strand-cast slab (also called continuous cast) to plate shall be at least 3.0:1. For A672 C60 material for the use in low temperature applications, the steel shall be killed

and shall conform to the fine austenitic grain size (5 or finer [higher number]) requirement of clause 8.3 of Specification A20/A20M and the MTR shall provide the limits of Aluminium as per 8.3.2 or provide the grain size as determined by ASTM E112 McQuaid Ehn test.

C. The PWHT temperature for Class 22 pipes (if BOM calls for Class 22 Pipes) shall be between 621°C and 648°C for a minimum duration of 1 hour. For thickness beyond 25 mm the soak duration shall be as per ASTM.

D. Plates used for making A672 pipes shall be subjected to Ultrasonic testing as per S11 of A672.

E. The starting plate for making the A672 pipes shall be in Normalised Condition. The Chemical requirements shall be as follows
   a) Carbon <= 0.23%
   b) Maximum vanadium (V) = 0.02 %
   c) Maximum niobium (Nb)= 0.02 %
   d) Maximum vanadium plus niobium = 0.03 % (Note: niobium (Nb) = columbium (Cb).)
   e) The maximum nickel (Ni) plus copper (Cu) shall be 0.15 %.
   f) Mn/C >= 5 in heat analysis and both the product analysis (Literature on Brittle Fracture)
   g) S <=0.002 %
   h) P <=0.01 %
   i) Carbon Equivalent CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15
   j) For Steel with thickness <= 25 mm CE shall be <= 0.43.
   k) For Steel with thickness > 25 mm CE shall be <=0.45.

F. Plates used for making A691 pipes shall be subjected to Ultrasonic testing as per S12 of A387 (SA 578-B)

G. For CS & LAS pipes with thickness higher than 19.05 mm, charpy impact test shall be conducted at 5°C MDMT. The acceptance criteria are 27 Joules for min average and 19 Joules minimum individual. Impact test shall be on base metal, HAZ and weld metal.

H. Hardness testing shall be conducted as a part of mechanical testing regimen and the test frequency shall be identical to that of tensile testing. Hardness test (minimum 3 readings in the cross section-thickness and 3 reading (on weld), 3 readings on HAZ and 3 reading on Base material and on the Internal surface (3 reading on weld, 3 reading on HAZ and 3 reading on base material) and on the external surface (3 reading on weld, 3 readings on HAZ and 3 reading on base metal). The maximum value of hardness of production hardness testing done in laboratory as a part of mechanical testing shall be as follows: For A672 the hardness values of weld metal shall not exceed 200 HBW (Same as BHN where the tip (brae is made of tungsten). Weld metal Maximum hardness value for A691 shall be 225 BHN. For CS and LAS Base metal and HAZ and For SS pipes (Weld, HAZ and Base Metal) the maximum hardness shall be 22 HRC. In addition, 25% of pipes from each size and thickness shall be subjected to production hardness test using portable hardness testing and the values shall meet the requirement specified in this section.

I. MTR shall indicate that the supplied material is in compliance with ASTM, ANSI, NACE MR 0103/ISO 17945-1.

J. Repair Procedure qualification shall be as per ASME Sec IX and shall be fully consistent with ANSI, NACE MR 0103/ISO 17945-1 shall be submitted for review and approval.

K. For SS 316/SS316L Welded Pipes % Mo ≥ 2.5% in Base Metal and Weld Metal.

L. % ferrite of weld shall be between 3.0 % and 10.0 % prior to heat treatment.

M. Maximum Iron Content in Monel Weld shall be 2.5%.

N. All Nickel Alloy Pipes (Inconel & Monel) shall be in Annealed Condition. Corrosion test as per ASTM G48 Method A test shall be conducted as a part of production test. Test Frequency shall be identical to tensile test frequency. The test temperature shall be 50 °C, exposure time 72 hours. Cut edges shall be prepared according to ASTM G48 and pickled (20% HN03 + 5% HF 60 °C for 5 minute). The acceptance criteria shall be; No pitting at 20 x magnification. The test specimen shall include Weld, Base metal and HAZ.

O. Welded Inconel 625 Pipes shall be subjected to corrosion test as per G28 method A, with an acceptance criterion of 0.9 mm/y. For Welded pipes, the test specimen shall include Weld, Base metal and HAZ.

P. Vendor shall comply the clause 6.0 in NR-0ZZZZ-PI-SPE-0025, If HIC test requirement is mentioned for the item in BOM / Requisition.

Q. Welds (accessible) shall be subjected to Wet Fluorescent Magnetic Particle Testing.

R. Plates for making A691 pipes shall have % S <=0.002 %.

11. CPVC Pipes

11.1 Pipe shall be CPVC type 4120; Type IV, Gr 1, Cell Classification 23448 and shall be in accordance with ASTM D1784 and ASTM F441.

11.2 For CPVC Pipes, Wherever "Potable water service" is mentioned in requisition, ASTM F441 supplementary requirement – "S1.Potable water requirement" shall be complied.

11.3 Vendor shall provide their suitable recommendation for primer and Solvent of CPVC pipes

11.4 Heating of surfaces of pipe shall not be permitted.

11.5 Bending of plastic pipe shall not be permitted.

12. Marking & Color coding

12.1 Each pipe, irrespective of the size shall have marking on the external surface and the marking requirements shall be consistent with the respective ASTM. And ident code shall be punched / mentioned for each pipe (at both ends) as per Requisition.

12.2 Color coding shall be as per Specification for colour coding of piping materials By vendor (TP-1ZZZA-PI-SPE-0011)

13. Packing, Shipping & End Protection

13.1 Packing, Marking on packings and Shipping requirements shall be complied as per Packing, Marking & Shipping Specifications (TP-1ZZZA-PQ-SPE-0003).

13.2 In addition to the specification "TP-1ZZZA-PQ-SPE-0003", Vendor shall ensure the following requirements.

a) Both the ends of the pipes shall be protected with Caps or Bevel protectors. If Metallic bevel Protectors are used, protectors shall be Galvanized or shall be powdered coated or suitably painted.

b) SUPPLIER shall ensure adequate protection from damage during shipment to any coating and wrapping on pipes.

c) For large diameter pipes, in particular when thin wall manufactured, SUPPLIER shall provide suitable reinforcements to avoid buckling and ends ovalization.

d) The smaller pipes may be bundled together but limited to the same ident code number.

SL No	Category	Vendor Name	Country	Remarks
22		R D FORGE	INDIA	
23		SANGHVI FORGINGS & ENGINEERING LTD	INDIA	
24		UTSAH ENGINEERING PVT LTD (A CD ENGG COMPANY)	INDIA	
25		VIRAJ PROFILES LTD	INDIA	
	4.174 FLANGES - EXOTIC			
1		BRITEX ENGINEERING WORKS	INDIA	
2		GOOD LUCK ENGINEERING CO	INDIA	
3		KOREA FLANGE CO LTD	SOUTH KOREA	
4		MAASS FLANGE CORPORATION	USA	
5		MELESI OFFICINE AMBROGIO MELESI & C.SRL	ITALY	
6		OFFICINE NICOLA GALPERTI & FIGLIO SPA	ITALY	
7		OFFICINE SANTAFEDE SRL	ITALY	
8		ULMA FORJA S.COOP	SPAIN	
	4.175 COMPACT FLANGE			
1		VECTOR INTERNATIONAL LTD	UK	
	4.176 CLAMP CONNECTOR			
1		VECTOR INTERNATIONAL LTD	UK	
	4.177 PIPE CARBON STEEL (WELDED) TO INDIAN STANDARDS			
1		A.S.T. PIPES PVT LTD (AST GROUP)	INDIA	
2		ADVANCE STEEL TUBE LTD	INDIA	
3		AM/NS INDIA (FORMERLY ESSAR STEEL INDIA LTD)	INDIA	
4		APL APOLLO TUBES LTD (FORMERLY BIHAR TUBES LTD)	INDIA	
5		ASIAN MILLS PVT LTD	INDIA	
6		ASIAN TUBES PVT LTD	INDIA	
7		ASRANI TUBES LTD	INDIA	
8		DADU PIPES PVT LTD	INDIA	
9		GOODLUCK INDIA LTD	INDIA	
10		INDUS TUBES LIMITED	INDIA	
11		JCO GAS PIPE LTD	INDIA	

SL No	Category	Vendor Name	Country	Remarks
12		JINDAL (INDIA) LTD	INDIA	
13		JINDAL INDUSTRIES PVT LTD	INDIA	
14		JINDAL PIPES LTD	INDIA	
15		JINDAL SAW LTD (KOSI WORKS)	INDIA	
16		LAL BABA SEAMLESS TUBES PVT LTD	INDIA	
17		LALIT PIPES AND PIPES LTD	INDIA	
18		MAHARASHTRA SEAMLESS LTD	INDIA	
19		MAN INDUSTRIES (INDIA) LTD	INDIA	
20		MUKAT TANKS & VESSELS PVT LTD	INDIA	
21		NEZONE TUBES LTD	INDIA	
22		NORTH EASTERN TUBES LTD	INDIA	
23		P S STEEL TUBES LTD	INDIA	
24		PSL LIMITED	INDIA	
25		RAMA STEEL TUBES LTD	INDIA	
26		RATNAMANI METALS AND TUBES LTD	INDIA	
27		RAVINDRA TUBES LTD	INDIA	
28		SAMSHI PIPE INDUSTRIES LTD	INDIA	
29		SURYA ROSHNI LTD	INDIA	
30		SWASTIK PIPES LTD	INDIA	
31		UTKARSH TUBES & PIPES LTD (FORMERLY BMW)	INDIA	
32		WELSPUN CORP LTD	INDIA	
33		ZENITH BIRLA (INDIA) LTD	INDIA	
	4.178 PIPES & TUBULARS (WELDED) TO API STANDARDS			
1		AM/NS INDIA (FORMERLY ESSAR STEEL INDIA LTD)	INDIA	
2		BHARAT HEAVY ELECTRICALS LTD (SEAMLESS STEEL TUBE PLANT)	INDIA	
3		ISMT LTD	INDIA	
4		JCO GAS PIPE LTD	INDIA	
5		JINDAL PIPES LTD	INDIA	
6		JINDAL SAW LTD	INDIA	

SL No	Category	Vendor Name	Country	Remarks
7		LALIT PIPES AND PIPES LTD	INDIA	
8		MAHARASHTRA SEAMLESS LTD	INDIA	
9		MUKAT TANKS & VESSELS PVT LTD	INDIA	
10		PSL LIMITED	INDIA	
11		RATNAMANI METALS AND TUBES LTD	INDIA	
12		SURYA ROSHNI LTD	INDIA	
13		SWASTIK PIPES LTD	INDIA	
14		WELSPUN CORP LTD	INDIA	
	4.179 PIPE/TUBE-CARBON STEEL (SEAMLESS) TO ASTM STANDARDS			
1		ANAND SEAMLESS TUBES PVT LTD	INDIA	
2		AVON TUBETECH PVT LTD	INDIA	
3		BHARAT HEAVY ELECTRICALS LTD (SEAMLESS STEEL TUBE PLANT)	INDIA	
4		HEAVY METAL & TUBES LTD	INDIA	
5		ISMT LTD	INDIA	
6		JINDAL SAW LTD	INDIA	
7		JR SEAMLESS PVT LTD	INDIA	
8		LAL BABA SEAMLESS TUBES PVT LTD	INDIA	
9		MAHARASHTRA SEAMLESS LTD	INDIA	
10		PATELS AIRFLOW LTD	INDIA	
11		RATNADEEP METAL TUBES LTD	INDIA	
12		SAINEST TUBES PVT LTD	INDIA	
13		SN TUBES PRIVATE LIMITED	INDIA	
14		UNITED SEAMLESS TUBULAAR PVT LTD	INDIA	
	4.180 ALLOY STEEL (SEAMLESS) TO ASTM STANDARDS			
1		ANAND SEAMLESS TUBES PVT LTD	INDIA	
2		BHARAT HEAVY ELECTRICALS LTD (SEAMLESS STEEL TUBE PLANT)	INDIA	
3		HEAVY METAL & TUBES LTD	INDIA	
4		ISMT LTD	INDIA	
5		JINDAL SAW LTD	INDIA	

SL No	Category	Vendor Name	Country	Remarks
6		JR SEAMLESS PVT LTD	INDIA	
7		LAL BABA SEAMLESS TUBES PVT LTD	INDIA	
8		MAHARASHTRA SEAMLESS LTD	INDIA	
9		PATELS AIRFLOW LTD	INDIA	
10		RATNADEEP METAL TUBES LTD	INDIA	
11		SAINEST TUBES PVT LTD	INDIA	
	4.181 PIPE/TUBE - SS (SEAMLESS & WELDED) TO ASTM STANDARDS			
1		APEX TUBES PVT LTD	INDIA	
2		ARVIND PIPES & FITTINGS IND PVT LTD	INDIA	
3		ASR MET TECH PVT LTD	INDIA	
4		BHANDARI FOILS AND TUBES LTD	INDIA	
5		CHANDAN STEEL LTD	INDIA	
6		DIVINE TUBES PVT LTD	INDIA	
7		HEAVY METAL & TUBES LTD	INDIA	
8		HELLIOS TUBE ALLOYS PVT LTD	INDIA	
9		JINDAL QUALITY TUBULAR LTD	INDIA	
10		JINDAL SAW LTD	INDIA	
11		KRYSTAL STEEL MFG PVT LTD	INDIA	
12		MAXIM TUBES COMPANY PVT LTD	INDIA	
13		MBM TUBES PVT LTD	INDIA	
14		PARAS BHAVANI STEEL PVT LTD	INDIA	
15		PATELS AIRFLOW LTD	INDIA	
16		PRAKASH STEELAGE LTD	INDIA	
17		RATNADEEP METAL TUBES LTD	INDIA	
18		RATNAMANI METALS AND TUBES LTD	INDIA	
19		REMI EDELSTAHL TUBULARS LTD	INDIA	
20		SANDVIK ASIA PVT LTD (AHMEDABAD)	INDIA	
21		SCODA TUBES LTD	INDIA	
22		SCORODITE STAINLESS PVT LTD	INDIA	

SL No	Category	Vendor Name	Country	Remarks
23		SHALCO INDUSTRIES PVT LTD	INDIA	
24		SHUBHLAXMI METALS AND TUBES PVT LTD	INDIA	
25		SLS TUBES PVT LTD	INDIA	
26		STEAMLINE INDUSTRIES LTD	INDIA	
27		SURAJ LIMITED	INDIA	
	4.182 PIPE CARBON STEEL - WELDED TO ASTM STANDARDS			
1		AM/NS INDIA (FORMERLY ESSAR STEEL INDIA LTD)	INDIA	
2		JINDAL SAW LTD	INDIA	
3		LALIT PIPES AND PIPES LTD	INDIA	
4		MAN INDUSTRIES (INDIA) LTD	INDIA	
5		MUKAT TANKS & VESSELS PVT LTD	INDIA	
6		RATNAMANI METALS AND TUBES LTD	INDIA	
	4.183 PIPE ALLOY STEEL - WELDED TO ASTM STANDARDS			
1		CLADTEK MIDDLE EAST FZC	UAE	
2		EEW KOREA CO. LTD	GERMANY	
3		EISENBAU KRAMER GMBH	GERMANY	
4		HYUNDAI RB CO. LTD	SOUTH KOREA	
5		INOX TECH. SPA	ITALY	
6		LALIT PIPES & PIPES LTD.	INDIA	
7		RATNAMANI METALS AND TUBES LTD	INDIA	
	4.184 PIPES - DUPLEX/ SUPER DUPLEX SS WELDED PIPES			
1		GIEMINOX TECTUBI RACCORDI SRL	ITALY	
2		H.BUTTING GMBH & CO. KG	GERMANY	
3		RATNAMANI METALS AND TUBES LTD	INDIA	
4		RIVIT SPA	ITALY	
5		SOSTA GMBH	GERMANY	
	4.185 PIPE - CLADDED			
1		CLADTEK MIDDLE EAST FZC	UAE	
2		EISENBAU KRAMER GMBH	GERMANY	

SL No	Category	Vendor Name	Country	Remarks
3		FTV PROCLAD LLC	UAE	
4		JAPAN STEEL WORKS LTD	JAPAN	
5		NOBELCLAD	USA	
	4.186 PIPE/TUBE - SS WELDED TO A358			
1		BHANDARI FOILS AND TUBES LTD	INDIA	
2		EEW KOREA CO LTD	GERMANY	
3		GIEMINOX TECTUBI RACCORDI SRL	ITALY	
4		H.BUTTING GMBH & CO KG	GERMANY	
5		INOX TECH SPA	ITALY	
6		NIPPON STEEL AND SUMITOMO METAL CORPORATION	JAPAN	
7		OUTOKUMPU STAINLESS TUBULAR P.AB	SWEDEN	
8		RATNAMANI METALS AND TUBES LTD	INDIA	
9		REMI EDELSTAHL TUBULARS LTD (FORM RMIL)	INDIA	
10		RIVIT SPA	ITALY	
11		SEAH STEEL CORPORATION	SOUTH KOREA	
12		SOSTA GMBH	GERMANY	
13		TUBACEX INDIA PVT LTD	INDIA	
14		JINDAL SAW LTD	INDIA	P5-Addition
15		SCORODITE STAINLESS (INDIA) PVT LTD	INDIA	P5-Addition
16		INOX PIPE & FITTINGS INDUSTRIES	INDIA	P5-Addition
	4.187 PIPE/TUBE - SEAMLESS (DUPLEX / SUPER DUPLEX SS)			
1		MAXIM TUBES COMPANY PVT LTD	INDIA	
2		RATNADEEP METAL TUBES LTD	INDIA	
3		RATNAMANI METALS AND TUBES LTD	INDIA	
4		SANDVIK ASIA PVT LTD (AHMEDABAD)	INDIA	
5		SURAJ LIMITED	INDIA	
6		TUBACEX INDIA PVT LTD	INDIA	
	4.188 PIPE /TUBE - AGENTS/STOCKISTS/TRADERS			
1		BHARAT ENTERPRISES	INDIA	

SL No	Category	Vendor Name	Country	Remarks
2		CHAMPAK STEEL & ENGG CO	INDIA	
3		EVERGREEN SEAMLESS PIPES & TUBES PVT LTD	INDIA	
4		GREEN LINE PIPE AND FITTINGS	INDIA	
5		HEAVY METAL PIPE CENTRE	INDIA	
6		HI-TECH METAL & TUBES	INDIA	
7		INDUSTRIAL METAL CORPORATION	INDIA	
8		KWALITY TUBES	INDIA	
9		MOKSHI INDUSTRIES PVT LTD	INDIA	
10		MOTILAL LAXMICHAND SANGHVI	INDIA	
11		N-PIPE SOLUTION INC	INDIA	
12		P K FORGE & FITTING INDUSTRIES	INDIA	
13		RAJENDRA PIPING & FITTINGS	INDIA	
14		SADAF TRADING COMPANY	INDIA	
15		VENUS TRADING CO	INDIA	
	4.189 PIPE/FITTINGS - PTFE LINED			
1		D V POLYMERS INDIA PVT LTD	INDIA	
2		DIP-FLON ENGINEERING & CO	INDIA	
3		HORIZON POLYMER ENGINEERING PVT LTD	INDIA	
4		MIL INDUSTRIES LIMITED	INDIA	
5		PLASTRULON PROCESSORS LTD	INDIA	
6		SUPER INDUSTRIAL LINING PVT LTD	INDIA	
	4.190 PIPE - PVDF/FRP			
1		GANDHI & ASSOCIATES	INDIA	
2		PRAVEEN REINFORCED PLASTICS PVT LTD	INDIA	
3		SUNRISE INDUSTRIES (INDIA) LTD	INDIA	
	4.191 PIPE - FRP			
1		CARBON EVERFLOW LTD	INDIA	
2		CARBORUNDUM UNIVERSAL LTD-PRODORITE DIVISION	INDIA	
3		CHEMICAL PROCESS EQPTS PVT LTD	INDIA	

SL No	Category	Vendor Name	Country	Remarks
4		COMPOSITE PIPES INDUSTRY LLC	INDIA	
5		DOLF INDUSTRIES	INDIA	
6		EPP COMPOSITE PVT LTD	INDIA	
7		GANDHI & ASSOCIATES	INDIA	
8		INDUSTRIAL SERVICES	INDIA	
9		POLY PLAST CHEMI-PLANT (I) PVT LTD	INDIA	
10		PRAVEEN REINFORCED PLASTICS PVT LTD	INDIA	
11		RUIA CHEMICALS PVT LTD	INDIA	
12		STRATEGIC ENGINEERING PVT LTD	INDIA	
13		SUNRISE INDUSTRIES (INDIA) LTD	INDIA	
	4.192 PIPE - GRE			
1		COMPOSITE PIPES INDUSTRY LLC	OMAN	
	4.193 PIPE - LEAD			
1		WALDIES INDUSTRIES PVT LTD	INDIA	
	4.194 FITTINGS FROM SEAMLESS PIPE - CARBON STEEL			
1		CSA FITTINGS	INDIA	
2		DEE DEVELOPMENT ENGINEERS LTD	INDIA	
3		FITTECH INDUSTRIES PVT LTD	INDIA	
4		GAYATRI FORGE PVT LTD	INDIA	
5		INTERTECH FITTINGS INDIA PVT LTD	INDIA	
6		K.S PIPE FITTINGS PVT LTD	INDIA	
7		M.S. FITTINGS MFG CO PVT LTD	INDIA	
8		MAXELL FORGE INDUSTRIES	INDIA	
9		P.K.TUBES & FITTINGS PVT LTD	INDIA	
10		PATTECH FITWELL TUBE COMPONENTS	INDIA	
11		PETRO CHEM INDUSTRIES	INDIA	
12		SAWAN ENGINEERS PVT LTD	INDIA	
13		SIDDHARTH & GAUTAM ENGINEERS PVT LTD	INDIA	
14		TEEKAY TUBES PVT LTD	INDIA	

SL No	Category	Vendor Name	Country	Remarks
15		TOPAZ PIPING INDUSTRIES	INDIA	
16		TUBE BEND (CALCUTTA) PVT LTD	INDIA	
17		TUBE TURN (INDIA) PVT LTD	INDIA	
18		U I PIPE FITTINGS PVT LTD	INDIA	
	4.195 FITTINGS FROM SEAMLESS PIPE - ALLOY STEEL			
1		CSA FITTINGS	INDIA	
2		DEE DEVELOPMENT ENGINEERS LTD	INDIA	
3		FITTECH INDUSTRIES PVT LTD	INDIA	
4		GAYATRI FORGE PVT LTD	INDIA	
5		INTERTECH FITTINGS INDIA PVT LTD	INDIA	
6		K.S PIPE FITTINGS PVT LTD	INDIA	
7		M.S. FITTINGS MFG CO PVT LTD	INDIA	
8		MAXELL FORGE INDUSTRIES	INDIA	
9		P.K.TUBES & FITTINGS PVT LTD	INDIA	
10		SAWAN ENGINEERS PVT LTD	INDIA	
11		SIDDHARTH & GAUTAM ENGINEERS PVT LTD	INDIA	
12		TEEKAY TUBES PVT LTD	INDIA	
13		TOPAZ PIPING INDUSTRIES	INDIA	
14		TUBE TURN (INDIA) PVT LTD	INDIA	
	4.196 FITTINGS FROM SEAMLESS PIPE – STAINLESS STEEL			
1		CSA FITTINGS	INDIA	
2		DEE DEVELOPMENT ENGINEERS LTD	INDIA	
3		FITTECH INDUSTRIES PVT LTD	INDIA	
4		GAYATRI FORGE PVT LTD	INDIA	
5		INTERTECH FITTINGS INDIA PVT LTD	INDIA	
6		K.S PIPE FITTINGS PVT LTD	INDIA	
7		M.S. FITTINGS MFG CO PVT LTD	INDIA	
8		MAXELL FORGE INDUSTRIES	INDIA	
9		P.K.TUBES & FITTINGS PVT LTD	INDIA	

SL No	Category	Vendor Name	Country	Remarks
10		PETRO CHEM INDUSTRIES	INDIA	
11		SAWAN ENGINEERS PVT LTD	INDIA	
12		SIDDHARTH & GAUTAM ENGINEERS PVT LTD	INDIA	
13		TEEKAY TUBES PVT LTD	INDIA	
14		TOPAZ PIPING INDUSTRIES	INDIA	
15		TUBE BEND (CALCUTTA) PVT LTD	INDIA	
16		TUBE TURN (INDIA) PVT LTD	INDIA	
	4.197 FITTING BLOCK FORGED - CARBON STEEL			
1		CSA FITTINGS	INDIA	
2		EBY FASTENERS	INDIA	
3		FLASH FORGE PVT LTD	INDIA	
4		GAYATRI FORGE PVT LTD	INDIA	
5		HILTON METAL FORGING LIMITED	INDIA	
6		K.S PIPE FITTINGS PVT LTD	INDIA	
7		LEADER VALVES LTD	INDIA	
8		M.S. FITTINGS MFG CO PVT LTD	INDIA	
9		MAXELL FORGE INDUSTRIES	INDIA	
10		P.K.TUBES & FITTINGS PVT LTD	INDIA	
11		SIDDHARTH & GAUTAM ENGINEERS PVT LTD	INDIA	
12		TOPAZ PIPING INDUSTRIES	INDIA	
13		VAIBHAV FITTING INDIA PVT LTD	INDIA	
	4.198 FITTING BLOCK FORGED - ALLOY STEEL			
1		CSA FITTINGS	INDIA	
2		EBY FASTENERS	INDIA	
3		FLASH FORGE PVT LTD	INDIA	
4		GAYATRI FORGE PVT LTD	INDIA	
5		K.S PIPE FITTINGS PVT LTD	INDIA	
6		LEADER VALVES LTD	INDIA	
7		M.S. FITTINGS MFG CO PVT LTD	INDIA	

SL No	Category	Vendor Name	Country	Remarks
8		MAXELL FORGE INDUSTRIES	INDIA	
9		P.K.TUBES & FITTINGS PVT LTD	INDIA	
10		SIDDHARTH & GAUTAM ENGINEERS PVT LTD	INDIA	
11		TOPAZ PIPING INDUSTRIES	INDIA	
12		VAIBHAV FITTING INDIA PVT LTD	INDIA	
	4.199 FITTING BLOCK FORGED - STAINLESS STEEL			
1		CSA FITTINGS	INDIA	
2		EBY FASTENERS	INDIA	
3		FLASH FORGE PVT LTD	INDIA	
4		GAYATRI FORGE PVT LTD	INDIA	
5		HILTON METAL FORGING LIMITED	INDIA	
6		K.S PIPE FITTINGS PVT LTD	INDIA	
7		LEADER VALVES LTD	INDIA	
8		M.S. FITTINGS MFG CO PVT LTD	INDIA	
9		MAXELL FORGE INDUSTRIES	INDIA	
10		P.K.TUBES & FITTINGS PVT LTD	INDIA	
11		SIDDHARTH & GAUTAM ENGINEERS PVT LTD	INDIA	
12		TOPAZ PIPING INDUSTRIES	INDIA	
13		VAIBHAV FITTING INDIA PVT LTD	INDIA	
	4.200 FITTING BLOCK FORGED - EXOTIC MATERIALS			
1		ALLIED INTERNATIONAL	ITALY	
2		FITTINOX SRL	ITALY	
3		SAWAN ENGINEERS PVT LTD	INDIA	
	4.201 FITTINGS FABRICATED FROM PLATE - CARBON STEEL			
1		DEE DEVELOPMENT ENGINEERS LIMITED	INDIA	
2		NAVKAR PIPE FITTINGS & FORGINGS PVT LTD	INDIA	
3		P.K TUBES & FITTINGS PVT LTD	INDIA	
4		PARAS ENGINEERING WORKS (MUMBAI) PVT LTD	INDIA	
5		SAWAN ENGINEERS PVT LTD	INDIA	

SL No	Category	Vendor Name	Country	Remarks
6		SIDHARTH & GAUTAM ENGINEERS PVT LTD	INDIA	
7		TEEKAY TUBES PVT LTD	INDIA	
8		TOPAZ PIPING INDUSTRIES	INDIA	
9		TUBE INNOVATIVES (INDIA)	INDIA	
10		TUBE TURN (INDIA) PVT LTD	INDIA	
	4.202 FITTINGS FABRICATED FROM PLATE - ALLOY STEEL			
1		DEE DEVELOPMENT ENGINEERS LIMITED	INDIA	
2		NAVKAR PIPE FITTINGS & FORGINGS PVT LTD	INDIA	
3		P.K TUBES & FITTINGS PVT LTD	INDIA	
4		PARAS ENGINEERING WORKS (MUMBAI) PVT LTD	INDIA	
5		SAWAN ENGINEERS PVT LTD	INDIA	
6		SIDHARTH & GAUTAM ENGINEERS PVT LTD	INDIA	
7		TEEKAY TUBES PVT LTD	INDIA	
8		TOPAZ PIPING INDUSTRIES	INDIA	
9		TUBE INNOVATIVES (INDIA)	INDIA	
10		TUBE TURN (INDIA) PVT LTD	INDIA	
	4.203 FITTINGS FABRICATED FROM PLATE - STAINLESS STEEL			
1		DEE DEVELOPMENT ENGINEERS LIMITED	INDIA	
2		NAVKAR PIPE FITTINGS & FORGINGS PVT LTD	INDIA	
3		P.K TUBES & FITTINGS PVT LTD	INDIA	
4		PARAS ENGINEERING WORKS (MUMBAI) PVT LTD	INDIA	
5		SAWAN ENGINEERS PVT LTD	INDIA	
6		SIDHARTH & GAUTAM ENGINEERS PVT LTD	INDIA	
7		TEEKAY TUBES PVT LTD	INDIA	
8		TOPAZ PIPING INDUSTRIES	INDIA	
9		TUBE INNOVATIVES (INDIA)	INDIA	
10		TUBE TURN (INDIA) PVT LTD	INDIA	
	4.204 WELDOLETS / ELBOWLETS / SOCKOLETS			
1		C.D ENGINEERING CO	INDIA	

SL No	Category	Vendor Name	Country	Remarks
2		CSA FITTINGS	INDIA	
3		EBY FASTENERS	INDIA	
4		FLASH FORGE PVT LTD	INDIA	
5		M.S. FITTINGS MFG CO PVT LTD	INDIA	
6		P.K.TUBES & FITTINGS PVT LTD	INDIA	
7		SAWAN ENGINEERS PVT LTD	INDIA	
8		SIDDHARTH & GAUTAM ENGINEERS PVT LTD	INDIA	
9		TOPAZ PIPING INDUSTRIES	INDIA	
10		TUBE TURN (INDIA) PVT LTD	INDIA	
11		VAIBHAV FITTING INDIA PVT LTD	INDIA	
	4.205 FITTING PIPE CAP (CS)			
1		CSA FITTINGS	INDIA	
2		DEE DEVELOPMENT ENGINEERS LIMITED	INDIA	
3		NAVKAR PIPE FITTINGS & FORGINGS PVT LTD	INDIA	
4		P.K. TUBES & FITTINGS PVT LTD	INDIA	
5		PARAS ENGINEERING WORKS (MUMBAI) PVT LTD	INDIA	
6		SAWAN ENGINEERS PVT LTD	INDIA	
7		SIDDHARTH & GAUTAM ENGINEERS PVT LTD	INDIA	
8		TEEKAY TUBES PVT LTD	INDIA	
9		TOPAZ PIPING INDUSTRIES	INDIA	
10		TUBE INNOVATIVES (INDIA)	INDIA	
11		TUBE TURN (INDIA) PVT LTD	INDIA	
	4.206 FITTING PIPE CAP (AS)			
1		CSA FITTINGS	INDIA	
2		DEE DEVELOPMENT ENGINEERS LIMITED	INDIA	
3		NAVKAR PIPE FITTINGS & FORGINGS PVT LTD	INDIA	
4		P.K. TUBES & FITTINGS PVT LTD	INDIA	
5		PARAS ENGINEERING WORKS (MUMBAI) PVT LTD	INDIA	
6		SAWAN ENGINEERS PVT LTD	INDIA	

SL No	Category	Vendor Name	Country	Remarks
7		SIDDHARTH & GAUTAM ENGINEERS PVT LTD	INDIA	
8		TEEKAY TUBES PVT LTD	INDIA	
9		TOPAZ PIPING INDUSTRIES	INDIA	
10		TUBE INNOVATIVES (INDIA)	INDIA	
11		TUBE TURN (INDIA) PVT LTD	INDIA	
	4.207 FITTING PIPE CAP (SS)			
1		CSA FITTINGS	INDIA	
2		DEE DEVELOPMENT ENGINEERS LIMITED	INDIA	
3		NAVKAR PIPE FITTINGS & FORGINGS PVT LTD	INDIA	
4		P.K. TUBES & FITTINGS PVT LTD	INDIA	
5		PARAS ENGINEERING WORKS (MUMBAI) PVT LTD	INDIA	
6		SAWAN ENGINEERS PVT LTD	INDIA	
7		SIDDHARTH & GAUTAM ENGINEERS PVT LTD	INDIA	
8		TEEKAY TUBES PVT LTD	INDIA	
9		TOPAZ PIPING INDUSTRIES	INDIA	
10		TUBE INNOVATIVES (INDIA)	INDIA	
11		TUBE TURN (INDIA) PVT LTD	INDIA	
	4.208 FITTING TO IS-1239			
1		CSA FITTINGS	INDIA	
2		M.S. FITTINGS MFG CO PVT LTD	INDIA	
3		NAVKAR PIPE FITTINGS & FORGINGS PVT LTD	INDIA	
4		PARAS ENGINEERING WORKS (MUMBAI) PVT LTD	INDIA	
5		TUBE INNOVATIVES (INDIA)	INDIA	
6		TUBE TURN (INDIA) PVT LTD	INDIA	
	4.209 FITTINGS FROM SEAMLSS PIPE - EXOTIC MATERIALS			
1		ALLIED INTERNATIONAL SRL	ITALY	
2		ERNE FITTINGS GMBH	AUSTRIA	
3		RACCORTUBI SPA	ITALY	
4		SAWAN ENGINEERS PVT LTD	INDIA	

SL No	Category	Vendor Name	Country	Remarks
5		SIDDHARTH & GAUTAM ENGINEERS PVT LTD	INDIA	
6		SUNGKWANG BEND CO LTD	SOUTH KOREA	
7		TOPAZ PIPING INDUSTRIES	INDIA	
8		WILH SCHULZ GMBH	GERMANY	
	4.210 FITTINGS CROSS - FROM SEAMLESS PIPES			
1		M.S FITTINGS MFG CO. PVT LTD.	INDIA	
2		VALVITALIA SPA- TECHNOFORGE DIVISION	ITALY	
	4.211 FITTINGS - FRP			
1		CARBORUNDUM UNIVERSAL LTD-PRODORITE DIVISION	INDIA	
2		CHEMICAL PROCESS EQPTS PVT LTD	INDIA	
3		COMPOSITE PIPES INDUSTRY LLC	INDIA	
4		DOLF INDUSTRIES	INDIA	
5		EPP COMPOSITE PVT LTD	INDIA	
6		GANDHI & ASSOCIATES	INDIA	
7		INDUSTRIAL SERVICES	INDIA	
8		POLY PLAST CHEMI-PLANT (I) PVT LTD	INDIA	
9		STRATEGIC ENGINEERING PVT LTD	INDIA	
10		SUNRISE INDUSTRIES (INDIA) LTD	INDIA	
	4.212 FITTINGS PIPE CAP - EXOTIC			
1		RACCORTUBI SPA	ITALY	
2		SUNGKWANG BEND CO LTD	SOUTH KOREA	
	4.213 EXPANSION JOINTS - RUBBER			
1		CORI ENGINEERS PVT LTD	INDIA	
2		FLEXOCON ENGINEERS PVT LTD	INDIA	
3		MIL INDUSTRIES	INDIA	
4		RM APPLIED ENGINEERS	INDIA	
5		RRD DECORS PVT LTD	INDIA	
6		SRM EXOFLEX PVT LTD	INDIA	
	4.214 SAMPLE COOLER			

SL No	Category	Vendor Name	Country	Remarks
1		AERO ENGINEERS	INDIA	
2		CHEMTRON SCIENCE LABORATORIES PVT LTD	INDIA	
3		ENPRO INDUSTRIES PVT LTD	INDIA	
4		FLOWLINE INSTRUMENTATION PVT LTD	INDIA	
5		FORBES MARSHALL PVT LTD	INDIA	
6		GRAND PRIX ENGINEERING PVT LTD	INDIA	
7		GRASIM INDUSTRIES	INDIA	
8		MEENAKSHI ASSOCIATES PVT LTD	INDIA	
9		RELIANCE FABRICATIONS PVT LTD	INDIA	
10		TUBE WELD ENGINEERING WORKS LTD	INDIA	
	4.215 DUR 'O' LOK COUPLING			
1		BETE FOG NOZZLE INC	USA	
	4.216 EXPANSION JOINT - METALLIC			
1		FLEXATHERM EXPANLLOW PVT LTD	INDIA	
2		FLEXICAN BELLOWS AND HOSES PVT LTD	INDIA	
3		FLEXOCON ENGINEERS PVT LTD	INDIA	
4		LONESTAR INDUSTRIES	INDIA	
5		METALLIC BELLOWS (INDIA) PVT LTD	INDIA	
6		WITZENMANN INDIA PVT LTD	INDIA	
7		RATNAFLEX ENGINEERING PRIVATE LIMITED	INDIA	P5-Addition
8		EAGLEBURGMANN INDIA PVT LTD	INDIA / INTERNATIONAL	P5-Addition
	4.217 METAL SEATED VALVES			
1		KROMBACH	USA / GERMANY	
2		NELES (FORMERLY METSO)	USA	
3		MOGAS INDUSTRIES	USA	
	4.218 CATALYST ISOLATION VALVES			
1		FISCHER CONTROLS	USA	
2		KTM	JAPAN / USA	
3		EVERLASTING VALVE CO	USA	

SL No	Category	Vendor Name	Country	Remarks
	4.219 CERAMIC BALLS			
1		KHYATI CERAMICS	INDIA	
2		FULLMOON INDUSTRIAL CERAMICS PVT LTD	INDIA	
3		FILTRA CATALYST & CHEMICALS LTD	INDIA	
4		NILGIRI CHEMICAL STONEWARE CO PVT LTD	INDIA	
5		OXIDE (INDIA) PVT LTD	INDIA	
6		TOPACK CERAMICS PVT LTD	INDIA	
7		DEVSON INSULATORS PVT LTD	INDIA	
8		EXCEL MICRON POONA PVT LTD	INDIA	
	4.220 VALVE GATE - GUNMETAL/BRASS/BRONZE			
1		ATAM VALVES PVT LTD	INDIA	
2		AV VALVES LTD	INDIA	
3		H.SARKER & COMPANY	INDIA	
4		LEADER VALVES LTD	INDIA	
5		NITON VALVE INDUSTRIES PVT LTD	INDIA	
6		SANT VALVES PVT LTD	INDIA	
7		ZOLOTO INDUSTRIES	INDIA	
	4.221 VALVE GLOBE - GUNMETAL/BRASS/BRONZE			
1		AV VALVES LTD	INDIA	
2		H.SARKER & COMPANY	INDIA	
3		LEADER VALVES LTD	INDIA	
4		NITON VALVE INDUSTRIES PVT LTD	INDIA	
5		SANT VALVES PVT LTD	INDIA	
6		ZOLOTO INDUSTRIES	INDIA	
	4.222 CATHODIC PROTECTION SYSTEM			
1		BSS TECH CP INDIA PVT LTD	INDIA	
2		CATHODIC CONTROL COMPANY PVT LTD	INDIA	
3		CORROSION CONTROL SERVICES (B) PVT LTD	INDIA	
4		CORROSION TECHNOLOGY SERVICES INDIA PVT LTD	INDIA	

SL No	Category	Vendor Name	Country	Remarks
5		CORRTECH INTERNATIONAL PVT LTD	INDIA	
6		CRYSTAL INDUSTRIAL SYNDICATE PVT LTD	INDIA	
7		RAYCHEM RPG PVT LTD	INDIA	
8		SARK EPC PROJECTS PVT LTD	INDIA	
9		SCIENTIFIC METAL ENGINEERS PVT LTD	INDIA	
	4.223 HDPE PIPES/FITTINGS/FLANGES			
1		ANJNEY TUBES INDIA	INDIA	
2		GODAVARI PIPES PVT LTD	INDIA	
3		KIRAN INFRA TECH	INDIA	
4		KISAN MOULDINGS LTD	INDIA	
5		KRITI INDUSTRIES (INDIA) LTD	INDIA	
6		SANGIR PLASTICS PVT LTD	INDIA	
7		TIME TECHNOPLAST LTD	INDIA	
8		TIRUPATI PLASTOMATICS PVT LTD	INDIA	
9		TIRUPATI STRUCTURALS LTD	INDIA	
	4.224 TUBE - COPPER & ALLOYS			
1		ACCENT METALS PVT LTD	INDIA	
2		CUBEX TUBING PVT LTD	INDIA	
3		INDUSTRIAL TUBES MANUFACTURERS PVT LTD	INDIA	
4		MEHTA TUBES LIMITED	INDIA	
5		METAL ALLOYS CORPORATION	INDIA	
6		MULTIMETALS LIMITED	INDIA	
	4.225 PIPE - TITANIUM			
1		RIVIT SPA	ITALY	
2		SHANGHAI HUAXIA INTERNATIONAL TRADING CO	CHINA	
3		XUYI TITAN AND MATERIAL CO LTD	CHINA	
	4.226 TUBE - TITANIUM			
1		BAOJI TITANIUM INDUSTRY CO LTD	CHINA	
2		HAILONG (ZHANGJIAGANG) INDUSTRY CO LTD	CHINA	

SL No	Category	Vendor Name	Country	Remarks
3		NIPPON STEEL AND SUMITOMO METAL CORPORATION	JAPAN	
4		OSCAR PRODUCTION GROUP LTD	UKRAINE	
5		SHANGHAI HUAXIA INTERNATIONAL TRADING CO	CHINA	
6		XUYI TITAN AND MATERIAL CO LTD	CHINA	
7		ZHANGJIAGANG HUAYU NONFERROUS METAL	CHINA	
	4.227 TITANIUM / HASTELLOY PIPING COMPONENTS			
1		D.K. CORPORATION	INDIA	
2		LARSEN & TURBO LTD	INDIA	
3		NEEKA TUBES	INDIA	
4		SAI TITANIUM PRODUCTS PVT LTD	INDIA	
5		SANGHVI BOTHRA ENGINEERING CO PVT LTD	INDIA	
6		SHALCO INDUSTRIES PVT LTD	INDIA	
7		TINITA ENGINEERING PVT LTD	INDIA	
8		TITANIUM TANTALUM PRODUCTS LTD	INDIA	
	4.228 FITTINGS - GRE			
1		COMPOSITE PIPES INDUSTRY LLC	OMAN	
	4.229 SAMPLE BOXES - CLOSED SAMPLING SYSTEMS			
1		CHEMTROLS ENGINEERING LTD	INDIA	
2		CHEMTRON SCIENCE LAB PVT LTD	INDIA	
3		FLOWLINE INSTRUMENTATION PVT LTD	INDIA	
4		FORBES MARSHALL PVT LTD	INDIA	
	4.230 SEAMLESS PIPES COATED (INTERNAL EPOXY AND EXTERNAL 3LPE)			P4-New category
1		BHARAT ENTERPRISES	INDIA	
2		BHARAT HEAVY ELECTRICALS LTD	INDIA	
3		EVERGREEN SEAMLESS PIPES & TUBES PVT LTD	INDIA	
4		HEAVY METAL & TUBES LTD	INDIA	
5		HI-TECH METAL & TUBES	INDIA	
6		INDUSTRIAL METAL CORPORATION	INDIA	
7		JINDAL SAW LTD (KOSI WORKS)	INDIA	

SL No	Category	Vendor Name	Country	Remarks
8		MAHARASHTRA SEAMLESS LTD	INDIA	
9		MAITRI METALS PRIVATE LIMITED	INDIA	
10		MOTILAL LAXMICHAND SANGHVI	INDIA	
11		N-PIPE SOLUTION INC	INDIA	
12		RAJENDRA PIPING & FITTINGS	INDIA	
13		SADAF TRADING COMPANY	INDIA	
14		VENUS TRADING CO	INDIA	
	4.231 WELDED PIPES COATED (INTERNAL EPOXY AND EXTERNAL 3LPE)			P4-New category
1		AM/NS INDIA (FORMERLY ESSAR STEEL INDIA LTD)	INDIA	
2		BHARAT ENTERPRISES	INDIA	
3		EVERGREEN SEAMLESS PIPES & TUBES PVT LTD	INDIA	
4		HI-TECH METAL & TUBES	INDIA	
5		INDUSTRIAL METAL CORPORATION	INDIA	
6		LALIT PIPES AND PIPES LTD	INDIA	
7		MAITRI METALS PRIVATE LIMITED	INDIA	
8		MAN INDUSTRIES (INDIA) LTD	INDIA	
9		MOTILAL LAXMICHAND SANGHVI	INDIA	
10		MUKAT TANKS & VESSELS PVT LTD	INDIA	
11		N-PIPE SOLUTION INC	INDIA	
12		RAJENDRA PIPING & FITTINGS	INDIA	
13		RATNAMANI METALS AND TUBES LTD	INDIA	
14		SADAF TRADING COMPANY	INDIA	
15		VENUS TRADING CO	INDIA	
16		WELSPUN CORP LTD	INDIA	