1709695/2023/ISG-MECHANICAL

BHARAT HEAVY ELECTRICALS LIMITED INDUSTRIAL SYSTEMS GROUP, BANGALORE-560012 PRE-QUALIFICATION REQUIREMENT (PQR) FOR BIDDERS	
Indent Ref.	IS-1-19-2005/022
Project	3x200 MW NTPC Ramagundam Stg.I ESP R&M
Scope of supply	Supply of Cast Iron Pipes for Ash handling System

A. Pre-Qualification Requirement: (Technical)

1. The bidder should have manufactured, tested, inspected & supplied Cast Iron Pipes of size 200NB or above as per IS 1536 / BS 1211 for a cumulative length of minimum 650 meters during the last ten (10) years prior to the date of Techno-commercial bid opening.
2. The Bidder should have his own manufacturing setup with relevant equipment's and facilities for manufacturing and testing of 200 NB size or higher and the manufacturing setup should have been in operation for at least two (2) years prior to the date of Techno-Commercial bid opening.
3. Bidders should be able to offer the Pipes for inspection and testing to BHEL//Authorized agency/NTPC at manufacturing works only.
4. Bidder shall submit requisite Documentary evidence of previous supplies with aforesaid criteria, properly indexed along with the offer such as:
   4.1. Letter of Award (Purchase order copies).
   4.2. End–user's address and contact details (ph. no., emails) to be furnished.
   4.3. Performance Certificate from End-user. In case end-user certificate is not available, date of completion of supplies in terms of dispatch documents or completion certificate of supplies from end customers or material receipt certificates can also be furnished.
   4.4. Bidder shall submit the details of manufacturing facilities and equipment, personnel for the production of Cast Iron Pipes. Bidder to submit Inspection certificates/Dispatch clearances/MRCs/LR copies or any other document in support of Manufacturing facility in operation condition.
5. Bidder's experience list in the format enclosed as Annexure-1 should be submitted by bidder.

B. Pre-Qualification Requirement: (Financial)

1. Bidder should have a minimum average annual turnover of Rs.20 Lakh during last 3 financial years (FY 2020-21, 2021-22 & 2022-23) ending 31st March 2023 and should submit Annual reports (Audited balance sheets for two year and audited /Unaudited balance sheet for 3rd year Profit & Loss Accounts).
2. Other income shall not be considered for arriving Annual Turnover/Sales.

General Notes to the Bidder:

1. The word “executed” means bidder should have achieved the criteria specified in the above QR even if the total contract is not completed/closed.
2. All Foreign language documents shall be translated to English language either by a certified agency or translated verification by an authorized agency.
3. Bidder has to submit all credentials/ details, required by the end-user for seeking approval of end-user. In case end-user does not approve the credentials of the bidder, the bidder’s offer will be rejected.
4. Bidder shall submit the point wise confirmation to the PQR clauses, properly indexed along with the offer..
5. BHEL reserves the right to:
    i. Accept or reject any bid received at its discretion without assigning any reasons whatsoever.
    ii. Postpone the scheduled date without assigning any reason whatsoever.
    iii. May ask for further qualification during techno commercial scrutiny of bids received and bidder will comply.
    iv. Evaluation of bidder at their works.
6. If any bidder is black listed or put on hold by BHEL/ customer, such bidders will not be eligible for this tender and their bids shall not be accepted.

ANNEXURE-1 OF PQR OF CI PIPE EXPERIENCE LIST					
Sl. No.	PROJECT NAME	CUSTOMER & PO REFERENCE	PARAMETERS	YEAR OF SUPPLY	PERFORMANCE FEEDBACK CERTIFICATE DATE (IF ENCLOSED)

ENQUIRY TECHNICAL SPECIFICATION

FOR

CAST IRON PIPES FOR ASH HANDLING SYSTEM

NTPC RAMAGUNDAM STPS STAGE-I (3x200MW)

BHARAT HEAVY ELECTRICALS LIMITED

INDUSTRIAL SYSTEMS GROUP

BANGALORE

Section	Prepared by	Checked by	Approved by
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ISG, BANGALORE	ENQUIRY TECHNICAL SPECIFICATION FOR CAST IRON PIPES FOR ASH HANDLING SYSTEM RAMAGUNDAM STPS STAGE-I (3x200MW)	Specification No. IS-1-19-2005/CI/TS

CONTENTS

A. LIST OF ANNEXURES ENCLOSED

Annexure No	Description
Annexure-A:	Project Information
Annexure-B:	Data sheet & QAP
Annexure-C:	Surface Preparation and Painting

ISG, BANGALORE	ENQUIRY TECHNICAL SPECIFICATION FOR CAST IRON PIPES FOR ASH HANDLING SYSTEM RAMAGUNDAM STPS STAGE-I (3x200MW)	Specification No. IS-1-19-2005/CI/TS

SECTION – 1.0

1.0 PROJECT INFORMATION:

The specification has been prepared for supply of Cast Iron pipes for 3x200 MW Ramagundam Super Thermal Power Project(RSTPP). NTPC Ramagundam (RSTPS) is a pit-head thermal power station based on the coal supplied from the nearby Singareni Mines of M/s. SCCL and water from Pochampad Dam.The plant site is approximately at a height of 156m from the mean sea level. The power station today has seven coal fired units having a total installed capacity of 2600 MW consisting of 3 units of 200 MW capacity in stage-I, three units of 500 MW in stage-II and one unit of 500 MW capacity in stage-III. NTPC Intends taking up Renovation & Modernisation (R&M) work on these existing ESP's of (3x200MW) units, along with on refurbishing the existing ESPs and augmenting the collection area. This specification is intended for such R&M of three (03) sets Electrostatic Precipitators of 3x200 MW units of RSTPS. BHEL is the principal contractor who is responsible for the establishment of the project. Industrial Systems Group (ISG) of BHEL located at Bengaluru will be executing the Ash Handling system.

SYNOPSIS	
Location	51 km from district headquarter Karimnagar and at about 1 km near Ramagundam village. The site is well connected through NH-07 and NH-16 through (Hyderabad-Mancherial Road popularly known as Rajiv Rahadari).
Nearest Railway station	Ramagundam about 5 km from the plant which lies on the main Kazipet-Balarshah Broad Gauge line of South Central Railway.
Nearest commercial Airport	Hyderabad at a distance of about 210 km.
Available land	About 250 acre
Water	The expected source of water for the project is from Yellampally Barrage, on Godavari River, at a distance of about 12 km from the proposed plant.
Capacity	3x200 MW

NOTE:

- **Vendor should refer Annexure-A for complete project information.**

ISG, BANGALORE	ENQUIRY TECHNICAL SPECIFICATION FOR CAST IRON PIPES FOR ASH HANDLING SYSTEM RAMAGUNDAM STPS STAGE-I (3x200MW)	Specification No. IS-1-19-2005/CI/TS

SECTION – 2.0

2.1 Scope of Supply and Services:

The Scope of supply & services includes Engineering, Manufacturing, Inspection, shop floor testing, shop floor painting, packing & transportation to site including customs clearance / port clearance.

The scope of supply includes the following item:

Sl. No.	Item	Quantity
1	200NB Cast Iron Pipes as per IS 1536, Class D. (Outer Dia-222 mm, Thickness-12.88mm)	900 meters

Note: The bidder shall be acceptable subject to customer's (NTPC) approval.

2.2. Delivery Conditions:

a) All the pipes shall be plain end suitable for sleeve coupling.
b) All pipes shall be supplied with lengths of 5-6 meters. However, maximum 10% of the total pipes may be supplied with shorter length.
c) Tolerance on overall quantity on each size of pipes is 0/+20 meters.
d) These pipes shall be required to carry dry fly ash through pneumatic conveying system.
e) Bidder shall ensure safe transportation of the pipes through proper packing

2.3 Surface preparation & Painting

a) The pipes shall be painted as specified below:-
   1) Surface Preparation: Power Tool cleaning - SP-3
   2) Painting on the outer surface shall be Bituminous black paint as per IS:158 of 250 microns DFT (minimum) which is suitable for the application up to 200 Deg C.
   3) Refer Annexure-C for Painting specification.

SECTION – 3.0

3. 1 INSPECTIONS & TESTING:

a) The inspection and testing shall be carried out as per customer Standard QAP (Quality Assurance Plan) attached as Annexure-B. All the documents (MTC/IR) have to be submitted in line with the approved QAP.

Based on the QAP, Inspection and Testing will be carried out by NTPC/BHEL/BHEL's representatives at manufacturer's works only.

3.2 TECHNICAL INPUTS TO BE FURNISHED/CONFIRMED ALONG WITH THE OFFER:

a) Signed copy of the technical enquiry specification along with all Annexure/enclosures.
b) Method of end protection and packing.
c) Storage recommendations to avoid distortion of pipes stacked.
d) No deviation certificate shall be furnished along with the offer.
e) Size (diameter, thickness, length of each pipe), quantity & weight per meter of the offered Pipes are to be furnished.

3.3 DRAWING/DOCUMENTS REQUIRED AFTER RECEIVING L.O.I.:

Successful bidder shall furnish the following in proper drawing/document format within **10 days** of LOI for approval from BHEL/Customer/customer's Consultant.

SL. NO.	DRAWING DESCRIPTION
1.	QAP of Cast Iron Pipe

Successful bidder shall submit all the above with proper title block within a week of receipt of LOI. Bidder's LD on account of delay on submission and revised submission of these documents/drawings shall not be entertained.

The approval time for Drawings/ Documents from BHEL/Customer shall be considered by bidder as three weeks for their planning of supply of equipment within time frame.

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Annexure-A

Project Information

CLAUSE NO.	INTENT OF SPECIFICATION
1.00.00	**PREAMBLE**
1.01.00	NTPC Ramagundam (RSTPS) is a pit-head thermal power station based on the coal supplied from the nearby Singareni Mines of M/s. SCCL and water from Pochampad Dam. The station is located in the Karimnagar district of Andhra Pradesh about 60 kms from Karimnagar town and 100 kms from Warangal. Ramagundam Railway station is on the Delhi - Chennai main line. Ramagundam is well connected to Hyderabad by Rajiv Rahadari state highway. There are seven units with a total installed capacity of 2600 MW consisting of 3 units of 200 MW capacity in stage-I, three units of 500 MW in stage-II and one unit of 500 MW capacity in stage-III. The RSTPS Stage-I units (1, 2 & 3)) were commissioned from the year 1982 to 1984 and have completed 34 to 32 years of operation.
1.02.00	The ESPs of Stage-I units were supplied by M/s Flakt Italiana SpA under the main plant package awarded to M/s Ansaldo, Italy. Each unit has two (02) electrostatic precipitators, Flakt type FAA, with the size code – FAA(45)-4x45-2x75-135-A2. Later these ESPs were modified in the year 1995-1996 by BHEL. The modification was done by filling up the dummy fields with one additional field to increase the collection area.
1.03.00	The consent (renewal) order for operation (CFO) dated 12.01.2015 of TSPCB (Telangana State Pollution Control Board) valid provided for stack emission standards of 115 mg/Nm3 for particulate matter (SPM) at RSTPS. Further, TSPCB consent order (CFO) requires the station to examine to reduce PM emission level to 100 mg/Nm3. As per the new notification of MOEF dated 07.12.2015, SPM limit of 100 mg/Nm3 is applicable to Ramagundam Stage-I as all the units of Stage-I were commissioned before 31.12.2003 and the notification required the units to meet the specified limits within two years from the date of publication of the notification.
1.04.00	While the present SPM emission norm of TSPCB for 200 MW units of RSPTS is 115 mg/Nm^3 which will get further reduced to 100 mg/Nm^3 in line with the new notification by MOEF dated 07.12.2015, NTPC proposes to enhance the performance of existing ESPs to achieve much lower emission level of 50 mg/Nm^3 to adequately address further reduction in norms in the future.
1.05.00	In line with the above, NTPC intends taking up Renovation & Modernization (R&M) work on these existing ESP's of (3x200 MW) units, along with on refurbishing the existing ESPs and augmenting the collection area. This specification is intended for such R&M of three (03) sets Electrostatic Precipitators of 3x200 MW units of RSTPS.
2.00.00	**INTENT OF SPECIFICATION**
2.01.00	The intent of this specification is to enhance the efficiency of dust collection of the existing ESPs by R&M work which shall include augmentation of existing collection area along with technology upgradation and redesign / resize the existing ESP so as to meet the objective of R&M work as indicated in Clause No. 5.00.00 of this Chapter and satisfy other guarantee / design requirements specified elsewhere in the specification.

Annexure SG-02

CLAUSE NO.	EXISTING PLANT DETAILS	एनटीपीसी NTPC
9.00.00	Climatological Data	

जलवायवी सारणी
CLIMATOLOGICAL TABLE

स्टेशन : रामगुंडम STATION : Ramgundam — अक्षांश LAT 18°46' N — देशांतर LONG 79°26' E — समुद्री तल माध्य से ऊँचाई HEIGHT ABOVE M S L 156 मीटर METRES

1951 से 1980 तक के प्रेक्षणों पर आधारित
BASED ON OBSERVATIONS FROM 1951 TO 1980

माह MONTH	स्टेशन का सतह दाब STATION LEVEL PRESSURE (एच. पी. ए. hPa)	AIR TEMPERATURE (वायु तापमान) MEAN (माध्य): शुष्क बल्ब DRY BULB (°C)	नम बल्ब WET BULB (°C)	दैनिक अधिकतम DAILY MAX (°C)	दैनिक न्यूनतम DAILY MIN (°C)	माह में उच्चतम HIGHEST IN THE MONTH (°C)	माह में निम्नतम LOWEST IN THE MONTH (°C)	EXTREMES (चरम): उच्चतम HIGHEST (°C)	दिनांक और वर्ष DATE AND YEAR	निम्नतम LOWEST (°C)	दिनांक और वर्ष DATE AND YEAR	HUMIDITY (आर्द्रता): सापेक्ष आर्द्रता RELATIVE HUMIDITY (प्रतिशत %)	वाष्प दाब VAPOUR PRESSURE (एच.पी.ए. hPa)	CLOUD AMOUNT (मेघ की मात्रा): समस्त मेघ ALL CLOUDS (आकाश के अष्टमांश Oktas of sky)	निम्न मेघ LOW CLOUDS (Oktas of sky)	RAINFALL (वर्षा): मासिक योग MONTHLY TOTAL (मि.मि. mm)	वर्षा के दिनों की संख्या NO. OF RAINY DAYS	वर्षसहित सबसे नम महीने का योग TOTAL IN WETTEST MONTH WITH YEAR (मि.मि. mm)	वर्षसहित शुष्कतम महीने का योग TOTAL IN DRIEST MONTH WITH YEAR (मि.मि. mm)	24 घंटों की सबसे भारी वर्षा HEAVIEST FALL IN 24 HOURS (मि.मि. mm)	दिनांक और वर्ष DATE AND YEAR	माध्य पवन गति MEAN WIND SPEED (कि.मी. प्र. घं. Kmph)
जनवरी JAN I II	996.1 994.1	20.0 26.8	16.4 19.2	30.6	15.8	33.3	10.9	35.3	28 1974	6.4	10 1972	68 37	15.9 14.5	1.7 1.6	0.8 0.7	7.6	0.5	53.0 1966	0.0	47.8	20 1979	4.5
फरवरी FEB I II	996.2 991.9	23.0 32.3	16.0 20.3	33.9	16.8	37.1	13.6	39.4	29 1960	9.4	08 1949	60 30	16.8 14.1	1.7 1.6	0.9 0.8	5.1	0.6	32.4 1975	0.0	24.0	21 1968	5.3
मार्च MAR I II	994.4 989.5	26.6 35.9	20.2 21.8	37.5	22.3	40.6	17.4	42.8	27 1953	13.0	11 1979	53 25	18.3 14.1	1.7 1.8	0.8 1.0	12.0	1.0	71.6 1951	0.0	38.2	05 1970	6.4
अप्रैल APR I II	991.6 986.3	30.2 36.6	23.1 23.5	40.3	26.2	43.6	21.5	45.6	29 1973	15.4	20 1671	53 25	22.5 16.6	2.3 3.2	0.7 1.7	16.7	1.1	68.6 1962	0.0	62.0	24 1961	7.9
मई MAY I II	987.8 982.6	32.9 40.4	23.9 24.6	42.4	29.0	45.6	23.8	47.2	19 1948	20.4	01 1977	48 25	22.3 17.9	2.6 3.6	0.9 2.1	29.4	2.0	142.2 1977	0.0	111.2	01 1977	7.9
जून JUN I II	985.4 981.2	30.0 35.5	24.3 25.4	37.8	27.1	43.8	22.4	47.2	08 1953	19.4	03 1973	63 45	25.7 24.1	5.3 5.7	2.3 3.5	171.3	6.4	386.8 1956	0.0	140.7	20 1953	8.4
जुलाई JUL I II	985.4 882.2	27.0 30.7	24.2 25.4	32.5	24.5	36.8	22.0	41.0	06 1966	16.8	14 1973	79 65	28.0 28.0	6.8 6.8	3.6 3.9	309.2	15.2	699.8 1976	104.3 1970	130.7	23 1977	7.0
अगस्त AUG I II	986.4 983.3	26.4 29.8	24.1 25.2	31.8	24.2	35.0	22.2	37.4	28 1960	19.8	31 1965	82 68	28.1 28.2	6.4 6.5	3.6 3.9	243.8	13.8	487.4 1953	59.6 1988	104.4	21 1980	5.8
सितम्बर SEP I II	989.0 985.5	26.9 30.2	24.3 25.1	32.5	24.1	35.7	21.8	38.0	02 1968	17.8	30 1972	80 66	28.4 27.7	5.1 5.7	2.3 3.2	190.7	9.2	404.8 1968	65.8 1971	126.0	20 1969	4.8
अक्तूबर OCT I II	993.1 989.5	26.1 30.4	22.6 23.4	33.1	22.3	35.9	18.1	38.4	11 1957	15.4	14 1972	75 55	25.2 23.2	3.1 3.9	1.2 2.1	94.5	4.4	539.6 1973	0.0	135.8	24 1973	3.9
नवम्बर NOV I II	996.7 993.3	22.8 28.4	19.0 20.5	31.2	18.1	33.9	13.8	36.6	08 1977	9.0	30 1970	69 46	19.1 17.7	2.2 2.8	0.7 0.9	18.8	1.2	118.0 1962	0.0	70.2	05 1961	3.5
दिसम्बर DEC I II	998.5 994.8	19.7 27.3	16.3 18.8	29.9	14.9	32.6	11.0	34.5	26 1976	7.8	10 1970	69 41	16.0 14.9	1.7 2.0	0.5 0.4	9.7	0.8	109.4 1962	0.0	101.2	02 1968	3.2
वार्षिक योग या माध्य ANNUAL TOTAL OR MEAN I II	991.9 987.9	26.0 32.4	21.4 22.8	34.5	22.3	45.7	9.9	47.2		7.8		66 44	22.2 20.1	[illegible] 3.7	1.5 2.0	1107.0	58.0	1672.8 1973	585.2 1952	140.7		5.7
वर्षों की सं. NUMBER OF YEARS I II	30 30	30 30	30 30	30	30	30	30	33		33		30 30	30 30	30 30	24 24	30	30	33	33	33		24

Annexure-B

Data sheet & QAP

DATA SHEET OF CI PIPE FOR FLY ASH CONVEYING

SL No	Application	Pipe Size	Thickness (mm)	Total Length (m)	Type of end	Weight /Kg	Site Hydro Test Pressure	Standard
A	**Fly ash Conveying Pipes**							
1	Fly ash Conveying Pipes (Pressure conveying)	200 NB	IS:1536 Class D	900 mtr. Approx.	Plain	49.1 Kg/ Mtr. (approx.)	2.0 times working pressure or 1.5 times shut off head whichever is higher = 8 Kg/cm2 (see Note 4& 5)	IS:1536

Notes:

1. The testing & inspection shall be as per NTPC approved QAP.
2. Tolerance of Pipes shall be as per the IS:1536 Class-D.
3. Testing shall be as per IS:1536.
4. Hydro test Pressure shall be as per IS:1536.
5. Pressure testing for Pipes shall be done at site after erection as per the approved Field Quality Plan.
6. Painting shall be Bituminous Black Paint as per IS:158 of 250 DFT (minimum) by manufacturer, which is suitable for the application up to 200 Deg C.
7. Cast Iron Pipe shall be Plain End and joint pipe-to-pipe sleeve coupling and cast basalt bend to pipe by half coupling.
8. The above size pipes are required for all the three Units (3x200MW).
9. Cast Iron Pipe is required for Fly Ash Conveying application.
10. The wall thickness of above pipes shall be as per IS-1536 Class-D.
11. The CI Pipe shall be supplied from NTPC approved vendor list.
12. Type of Joint – through Sleeve Coupling.
13. Nut & Bolts of the sleeve coupling shall be hot dip galvanized as per IS: 4759.

एनटीपीसी NTPC	ITEM (MATERIAL, CLASS, GRADE, RATING, RANGE, SIZE ETC.) : CI SPUN PIPES	STANDARD QUALITY PLAN CONFORMING TO CODE: AS PER IS 1536 -2001 / BS 1211 - 1958	QP NO.: 0000-999-QOM- S -095 REV. NO.: 00 DATE : 27/11/2017 PAGE 1 OF 1 VALID UPTO : 26/11/2020	REVIEWED BY: M KHALIQUZZAMA K J RAO R K JHA	APPROVED BY: K K OJHA

SI NO	COMPONENT & OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT #	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
					M	C/N					M	C	N	
1	2	3	4	5	6		7	8	9	D*	** 10			11
I.0	**RAW MATERIAL INSPECTION**													
1.1	Raw Materials Like Pig Iron & Scrap	Material Compliance	MR	Chemical Check	One / Lot	One / Lot	As per Manufacturer Std		M.T.C	-	P	V	V	
	Rubber gaskets for socket & spigot ends pipes **	Conformance to IS 1536 requirements	MI	Visual	One / Lot	One / Lot	IS 5382 & IS 12820		IR	-	P	V		** If applicable
2.0	**IN PROCESS INSPECTION**													
2.1	Pipe Spinning	Surface Condition	MR	Visual Check	100%	100%	IS 1536 / BS 1211		IR	-	P	V	V	
		Thickness of pipe	MR	Measurement	100%	100%	IS 1536 / BS 1211		IR	-	P	V	V	
2.2	Heat Treatment	Verification of Heat Treatment	CR	Review	100%	100%	IS 1536 / WI -701		HT Certificate	√	P	V	V	
2.3	Pipes after heat treatment	Major Dimensions	MR	By gauges	Every Hour	Every Hour	IS 1536 / WI - 1001		IR	-	P	V	V	
3.0	**FINAL INSPECTION**													
3.1	Physical Testing	Mechanical Test	CR	Modulus of Rupture / Tensile test	IS 1536	1/Batch	NTPC Approved drawing /Data Sheet/ / IS 1536 / BS 1211		IR	√	P	W	W	
		Brinell Hardness	CR	Hardness Measurement	IS 1536	1/Batch	NTPC Approved drawing /Data Sheet/ / IS 1536 / BS 1211		IR	√	P	W	W	
3.2	Dimensions	OD, Thickness, Ovality, Straightness, Length and Socket & Spigot Dimensions	MR	By GO Gauges, Caliper, Measuring Tape	IS 1536	10%	NTPC Approved drawing /Data Sheet/ / IS 1536 / BS 1211		IR	√	P	W	W	See Note 1 & Note 2
3.3	Hydrostatic Test	Soundness of Pipe	MA	Hydraulic Test	100%	5%	NTPC Approved drawing /Data Sheet/ / IS 1536 / BS 1211		IR	√	P	W	W	
3.4	Tar Coating	Coating Adherence	MR	Adherence test	**IS 1536**	**IS 1536**	NTPC Approved drawing /Data Sheet/ / IS 1536 / BS 1211		IR	√	P	V	V	
3.5	Marking	Compliance to governing Standard	MA	Verification	IS 1536	IS 1536	NTPC Approved drawing /Data Sheet/ / IS 1536 / BS 1211		IR		P	V	V	

Note 1: Socket & Spigot dimensions are applicable for socket & spigot end pipes only.
Note 2: Tolerance on dimensions as per NTPC Approved Drg/DS / IS:1536/01/BS 1211.

LEGEND: * **RECORDS**, INDENTIFIED WITH "TICK" (√) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.
** M: MANUFACTURER/SUB-SUPPLIER **C:** MAIN SUPPLIER, **N:** NTPC **P:** PERFORM **W:** WITNESS AND **V:** VERIFICATION. AS APPROPRIATE, **CHP:** CUSTOMER HOLD POINT - NTPC SHALL IDENTIFY IN COLUMN "N" AS 'W

Annexure-C

Surface Preparation and Painting

CLAUSE NO.	TECHNICAL REQUIREMENTS
	SURFACE PREPARATION AND PAINTING
1.00.00	**GENERAL**
1.01.00	This section defines the requirements for surface preparation and protective coating by paint application of structural steel supports, pipe work systems, steel tanks and other mechanical and electrical equipment, for work carried out in supplier's works and on site.
1.02.00	Contractor's scope of work covers supply and delivery of all materials, furnishing services of skilled and unskilled labour, supervisors, arranging scaffolding, tools and any other equipment required to arrange a complete painting job.
2.00.00	**CODES AND STANDARDS**
2.01.00	The surface preparation and protective coating by paint application shall comply with all currently applicable statutes, regulations and safety codes in the locality where the painting is to be carried out. The surface preparation and painting shall alos conform to leatest applicable Indian/British /American standards. Other internationally acceptable standard, which ensure, equal or higher performance than those specified, shall also be accepted. Nothing in this specification shall be construed to relieve the Contractor of the required statutory responsibility. In particular the surface preparation and application of paints shall conform to the latest edition of the following: (a.) British Code of practice, BS:5493:1977 "Protection of Iron and steel Structures form Corrosion". (b.) Swedish Standard SIS:055 900-1967. (c.) Steel Structures Painting Council Standards (SSPC) (d) DIN 55928 (e) ASTM D 2200 (f) Other publications to be taken into account are: (g) Paint manufacturers product data sheets and instructions for paint and use of paint. (h) Statutory regulations concerning safety of storage and handling and use of paint.
3.00.00	**PAINT MATERIALS**
3.01.01	Paint materials shall be of the type as specified in the painting schedule.

CLAUSE NO.	TECHNICAL REQUIREMENTS
3.01.02	Contractor shall submit his painting procedure plan in accordance to (with) this specification and shall take the approval from the OWNER/ENGINEER, giving the name of manufacture, name of each product and technical literature of each product offered by him.
3.01.03	All paint shall be delivered to job site in manufacturer's sealed containers. Each container shall be labelled by the manufacture with the manufacturer's name, type of paint, number and colour.
3.01.04	The material noted herein shall not be applied on surfaces that will exceed 82°C at any time, as noted otherwise.
3.02.00	**SURFACE PREPARATION**
3.02.01	The surface preparation to be used for each item shall be as specified.
3.02.02	Steel/Surfaces to be painted shall be cleaned in accordance with the latest edition of the following steel structures painting council surface preparation specification: Solvent cleaning. : SSPC-SP-1 Hand cleaning : SSPC-SP-2 Power tool cleaning : SSPC-SP-3 Commercial Blast : SSPC-SP-4 (37 to 75 cleaning Micron Anchor Pattern).
3.02.03	All surfaces to be painted shall be thoroughly cleaned of oil grease and other foreign matter. Surface shall be free of moisture and contamination from chemicals and solvents.
3.02.04	Any additional surface preparation specified by the paint manufacturer shall be considered a part of this specifications.
3.03.00	**Application**
3.03.01	The paint manufacturer's instructions covering thinning, mixing, method of application, handling and drying time shall be strictly followed and considered a part of this specification.
3.03.02	Paint shall not be applied to damp surfaces or in raining weather of when the temperature is below 13°C or above 32°C, except when specifically permitted to do so by the manufacturer's instructions.

CLAUSE NO.	TECHNICAL REQUIREMENTS
3.03.03	Spray painting at the job site shall be permitted only at times and location approved by the OWNER/ENGINEER.
3.03.04	The prime coat shall be applied by brushing, rolling or spraying and on the same day as the surface is prepared.
3.03.05	Under coats, intermediate coats and finish coats shall be applied by brush, roller or spray with the specified amount of time allowed between coats.
3.03.06	The colour of each coat shall contract with the previous coats colour or avoid skip and holidays. Finish Colours shall be specified in the painting schedule.
3.03.07	The quality of workmanship shall be that best available. finish work shall be uniform, smooth and free from runs, sags, defective bursching and clogging.
3.03.08	At completion finish shall be touched up, restored, and left in good condition, where damaged.
3.03.09	Steel surfaces that will be connected by building walls shall primed and finish painted before the wall is erected.
3.03.10	Steel surfaces that will be concealed by building floors shall be primed and finish painted before the floor is cast.
3.03.11	Adequate covers and drop clothes to protect the work of other trades and adjacent finishes from paint splatter shall be provided and maintained in place while painting. Any point spots or spillages which occur shall be promptly remoned.
3.03.12	Proper ventilation and circulation of air shall be taken care during application are recommended when spraying.
3.03.13	Newly painted surfaces shall be protected with "Wet Paint" sight
3.03.14	Apart from surface preparation of the piping etc. attention should be paid to the details, particularly the following: a) Sharp edges that may have a deleterious effects on coating should be removed. b) Burrs caused by removal of temporary lugs etc. should be ground flat. c) Welds should be dressed and weld spatter removed by grinding. d) Nuts and bolts should be properly treated. e) Fasteners, such as pipe hangers clamp etc., should be treated before being mixed to the main structure.

CLAUSE NO.	TECHNICAL REQUIREMENTS			एनटीपीसी NTPC
3.04.00	**PAINTING REQUIREMENTS**			
3.04.01	**GENERAL**			
3.04.02	Where the prime coat has been applied in the shop, the prime coat shall be carefully examined, cleaned and spot primed by one coat of the primer specified before applying the intermediate and finish coats.			
3.04.03	On the insulated equipment or piping, surfaces such as lugs, flanges, supports, etc. that protrude beyond the insulation shall be painted the same as uninsulated equipment or piping.			
3.05.00	**Painting Schedule**			
3.05.01	All equipments, like pumps, blowers, compressors, vacuum pumps, valves, airlocks/pump tanks, all types of tanks/buffer hopper/collector tank/storage silos (excluding the supporting steel structure), equipment base plate etc.			
	a)	Surface Preparation	:	Commercial Blast Clean
	b)	Primer	:	Conforming to BS: 5493, Table-4F Part-2, Reference FP-3A.
		Binder	:	Alkyd or modified alkyd
		Main Pigment	:	Zinc Phosphate
		Nominal coating thickness	:	70 microns
	c)	Under Coats	:	Conforming to BS : 5493, Table-4F, Part-3, Reference FU-2A.
		Binder	:	Alkyd of modified alkyd
		Main Pigments	:	Coloured pigments (full colours) suitably extended.
		Nominal coating thickness	:	70 to 80 microns
	d)	Finish Coats	:	Conforming to BS : 5493, Table-4F, Part-4 Reference FF-38.
		Binder	:	Alkyd or modified Alkyd
		Main Pigment	:	Fade-resistant coloured pigments.
		Nominal Coating thickness	:	50 to 80 microns

CLAUSE NO.	TECHNICAL REQUIREMENTS			एनटीपीसी NTPC
	e) Dry film thickness of system	:	190 to 240 microns	
3.05.02	For all water/air piping, ash slurry piping, pipe clamps/hangers etc. the following shall be applicable.			
	a) Surface Preparation	:	Power Tool Clean	
	b) Primer	:	Conforming to BS: 5493, Table-4F Part-2, Reference FP-2A.	
	Binder	:	Drying oil modified with phenolic or phenolic modified resin.	
	Main Pigment	:	Zinc Phosphate	
	Nominal thickness coating	:	70 microns	
	c) Under Coats	:	Conforming to BS : 5493, Table-4F, Part-3, Reference FUIA.	
	Binder	:	Drying oil modified with phenolic or phenolic modified resin.	
	Main Pigments	:	Coloured pigments (full colours) suitably extended.	
	Nominal Coating thickness	:	25 to 40 microns	
	D) Finish Coats	:	Conforming to BS : 5493, Table-4F, Part-4 Reference FFIA.	
	Binder	:	Drying oil modified with phenolic or phenolic modified resin.	
	Main Pigment	:	Fade-resistant coloured pigments.	
	E) Dry film thickness of system	:	120 to 150 microns	
3.06.00	Surfaces not to be painted (unless otherwise) specified.			

CLAUSE NO.	TECHNICAL REQUIREMENTS
	(a.) Surface of insulation. (b.) Stainless steel, nickel, copper brass, monel, aluminium, hastealloy, lead galvanished steel. (c.) Valve stem, pump shafts, gauges. (d.) Bearing and control surfaces, lined or clad surfaces.
3.06.01	For fly ash extraction and transportation piping, bituminous paint of IS:158 grade of minimum 250 micron thickness shall be provided.
3.07.00	**Colour code for Identification**
3.07.01	The pipes shall be colour painted/banned for identification as per the color coding scheme of NTPC. These sheets shall be furnished during detailed engineering stage.

1709303/2023/ISG-MECHANICAL

BILL OF QUANTITY			
PROJECT	**3x200MW NTPC RAMAGUNDAM STG.I R&M**		
PACKAGE	**CAST IRON PIPES FOR ASH HANDLING SYSTEM**		
Enquiry Specification No: IS-1-19-2005/CI/TS			
BOQ NO:- IS-1-19-2005/022/BOQ REV-0 Date: 30.09.2023			
Sl. No.	**Description**	**Unit**	**Quantity**
[1]	[2]	[3]	[4]
1	Engineering, Manufacturing, Inspection , shop floor testing, shop floor painting, packing & transportation to site including customs clearance/ port clearance of 200NB Cast Iron Pipes as per IS:1536 , Class D	meter	900

NOTE:

Quantity variation up to +30% is applicable. The quoted Unit rate shall be valid till the end of the contract period.

KAHALGAON SUPER THERMAL POWER STATION STAGE-1 (4x210MW)

SUPPLY of CI Pipe for Ash Handling System - UNPRICE BID

Date: 13.10.2023

ITEM :	**SUPPLY of CI Pipe for Ash Handling System**
PROJECT:	**KAHALGAON SUPER THERMAL POWER STATION STAGE-1 (4x210MW)**

S. NO.	DESCRIPTION	UOM	QTY	Unit	Qty.(A)	Unit price (inclusive of packing & forwarding charges,freight & GST) (B)	Total Ex works price (inclusive of packing & forwarding charges, freight & GST) (C=A*B)
1	Engineering, Manufacturing, Inspection , shop floor testing, shop floor painting, packing & transportation to site including customs clearance/ port clearance of 200NB Cast Iron Pipes as per IS:1536 , Class D	Mtrs	900	**Quoted**	**Quoted**	**Quoted**	**Quoted**
GRAND TOTAL (In Rs.)							**Quoted**

Note:	Transit Insurance is in BHEL Scope . Prior Dispatch intimation shall be issued to Insurance agency about the value of consignment, dispatch details, along with one set of documents consisting of LR / RR copy, Packing List, Challan indicating the items dispatched (with their weights). A copy of above should be sent to the following : a) BHEL. Site office (Address same as Consignee address) b) Sh. D K Basha, Dy. Engineer, BHEL-ISG, Prof CNR Rao Circle, IISc Post, Malleswaram, Bangalore- 560 012

Vendor Signature with Stamp

R&M of NTPC Kahalgaon TPS, 4X210MW	
SUPPLY OF CI Pipe for Ash Handling System - NO DEVIATION CERTIFICATE	
Date: 13.10.2023	
ITEM :	Supply of CI Pipe for Ash Handling System
PROJECT:	R&M of NTPC Kahalgaon TPS, 4X210MW
BIDDER DETAILS	
TECHNICAL DEVIATION	
COMMERCIAL DEVIATION	
Vendor Signature with Stamp	