

Enqslno	Materialcode	Description	Lot no	Qty	Unit	Dely dt	Destination	Bidder Response
1	RFW803310001	ABSORBER AGITATOR TANK WITH ALL COMPLETE ACCESSORIES AS PER TECHNICAL SPECIFICATION NO: MAUDA:FGD:AGITATORS: R00.	1	6	ST	24-Feb-20	NTPC/MOUDA STPP/MOUDA	
2	RFW803310002	AUXILIARY ABSORBENT TANK AGITATOR WITH ALL COMPLETE ACCESSORIES AS PER THE TECHNICAL SPECIFICATION NO. MOUDA:FGD:AGITATOR:R00.	1	1	ST	24-Feb-20	NTPC/MOUDA STPP/MOUDA	
3	RFW803310003	FILTER WATER TANK AGITATOR WITH ALL COMPLETE ACCESSORIES AS PER TECHNICAL SPECIFICATION NO. MAUDA:FGD:AGITATORS :R00.	1	1	ST	24-Feb-20	NTPC/MOUDA STPP/MOUDA	
4	RFW803310004	SECONDARY HYDROCYCLONE FEED TANK AGITATOR WITH ALL COMPLETE ACCESSORIES AS PER THE TECHNICAL SPECIFICATION NO.MAUDA:FGD:AGITATOR: R00.	1	1	ST	24-Feb-20	NTPC/MOUDA STPP/MOUDA	
5	RFW803310005	WASTE WATER TANK AGITATOR WITH ALL COMPLETE ACCESSORIES AS PER THE TECHNIAL SPECIFICATION NO:- MAUDA :FGD:AGITATORS:R00.	1	1	ST	24-Feb-20	NTPC/MOUDA STPP/MOUDA	
6	RFW803310006	LIMESTONE SLURRY STORAGE TANK AGITATOR WITH ALLCOMPLETE ACCESSORIES AS PER TECHNICAL SPECIFICATION NO:- MOUDA:FGD:AGITATORS:R00.	1	2	ST	24-Feb-20	NTPC/MOUDA STPP/MOUDA	
7	RFW803310007	PRIMARY HYDROCYCLONE FEED TANK AGITATOR WITH ALL COMPLETE ACCESSORIES AS PER THE TECHNICAL SPECIFICATION NO:- MAUDA:FGD :AGITATOR :R00.	1	1	ST	24-Feb-20	NTPC/MOUDA STPP/MOUDA	
8	RFW803310008	ABSORBER AREA DRAIN SUMP AGITATOR WITH ALL COMPLETE ACCESSORIES AS PER TECHNICAL SPECIFICATION NO:- MAUDA:FGD:AGITATORS:R00.	1	2	ST	24-Feb-20	NTPC/MOUDA STPP/MOUDA	
9	RFW803310009	GYPSUM AREA DRAIN SUMP AGITATOR WITH ALL COMPLETE ACCESSORIES AS PER THE TECHNICAL SPECIFICATION NO:- MAUDA:FGD:AGITATORS:R00.	1	1	ST	24-Feb-20	NTPC/MOUDA STPP/MOUDA	
10	RFW803310010	LIMESTONE AREA DRAIN SUMP AGITATOR WITH ALL COMPLETE ACCESSORIES AS PER THE TECHNICAL SPECIFICATION NO:- MAUDA:FGD:AGITATORS:R00	1	1	ST	24-Feb-20	NTPC/MOUDA STPP/MOUDA	
11	RFW803310011	SUPERVISION AND E&C OF ALL AGITATORS FOR VARIOUS TANKS AS PER TECHNICAL SPECIFICATION MAUDA:FGD:AGITATORS: R00.	1	1	ST	24-Feb-20	NTPC/MOUDA STPP/MOUDA	
12	RFW803720001	MANDATORY SPARES OF AGITATOROF ABSORBER TANK, AUXILIARY ABSORBENT TANK/ EMERGENCY TANK.	1	1	ST	24-Dec-20	STORES/BHEL/RANIPET-6	
13	RFW803720002	MANDATORY SPARE FOR AGITATOROF ALL OTHER TANKS	1	1	ST	24-Dec-20	STORES/BHEL/RANIPET-6	

Enq sno	Material code	Item Description	Qty	Unit	Quoted Currency	Exchange Rate	Unit rate in Quoted Currency	Unit rate in INR	Total rate in INR
1	RFW803310001	ABSORBER AGITATOR TANK WITH ALL COMPLETE ACCESSORIES AS PER TECHNICAL SPECIFICATION NO: MAUDA:FGD:AGITATORS: R00.	6	ST					
2	RFW803310002	AUXILIARY ABSORBENT TANK AGITATOR WITH ALL COMPLETE ACCESSORIES AS PER THE TECHNICAL SPECIFICATION NO. MOUDA:FGD:AGITATOR:R00.	1	ST					
3	RFW803310003	FILTER WATER TANK AGITATOR WITH ALL COMPLETE ACCESSORIES AS PER TECHNICAL SPECIFICATION NO. MAUDA:FGD:AGITATORS :R00.	1	ST					
4	RFW803310004	SECONDARY HYDROCYCLONE FEED TANK AGITATOR WITH ALL COMPLETE ACCESSORIES AS PER THE TECHNICAL SPECIFICATION NO.MAUDA:FGD:AGITATOR: R00.	1	ST					
5	RFW803310005	WASTE WATER TANK AGITATOR WITH ALL COMPLETE ACCESSORIES AS PER THE TECHNIAL SPECIFICATION NO:- MAUDA :FGD:AGITATORS:R00.	1	ST					
6	RFW803310006	LIMESTONE SLURRY STORAGE TANK AGITATOR WITH ALLCOMPLETE ACCESSORIES AS PER TECHNICAL SPECIFICATION NO:- MOUDA:FGD:AGITATORS:R00.	2	ST					
7	RFW803310007	PRIMARY HYDROCYCLONE FEED TANK AGITATOR WITH ALL COMPLETE ACCESSORIES AS PER THE TECHNICAL SPECIFICATION NO:- MAUDA:FGD :AGITATOR :R00.	1	ST					
8	RFW803310008	ABSORBER AREA DRAIN SUMP AGITATOR WITH ALL COMPLETE ACCESSORIES AS PER TECHNICAL SPECIFICATION NO:- MAUDA:FGD:AGITATORS:R00.	2	ST					
9	RFW803310009	GYPSUM AREA DRAIN SUMP AGITATOR WITH ALL COMPLETE ACCESSORIES AS PER THE TECHNICAL SPECIFICATION NO:- MAUDA:FGD:AGITATORS:R00.	1	ST					
10	RFW803310010	LIMESTONE AREA DRAIN SUMP AGITATOR WITH ALL COMPLETE ACCESSORIES AS PER THE TECHNICAL SPECIFICATION NO:- MAUDA:FGD:AGITATORS:R00	1	ST					
11	RFW803310011	SUPERVISION AND E&C OF ALL AGITATORS FOR VARIOUS TANKS AS PER TECHNICAL SPECIFICATION MAUDA:FGD:AGITATORS: R00.	1	ST					
12	RFW803720001	MANDATORY SPARES OF AGITATOROF ABSORBER TANK, AUXILIARY ABSORBENT TANK/ EMERGENCY TANK.	1	ST					
13	RFW803720002	MANDATORY SPARE FOR AGITATOROF ALL OTHER TANKS	1	ST					

TECHNICAL SPECIFICATION FOR AGITATORS

CONFIDENTIAL

CUSTOMER : NATIONAL THERMAL POWER CORPORATION
PROJECT : MAUDA (2x500MW)
APPLICATION : FLUE GAS DESULPHURIZATION SYSTEM



BHARAT HEAVY ELECTRICALS LIMITED
(A GOVT OF INDIA UNDERTAKING)
Flue Gas Desulphurization Group
Ranipet



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

TECHNICAL SPECIFICATION FOR AGITATORS

Prepared by	Checked by	Approved by
 Shanmuga Sundaram S DM-FGD	 Yuvaraj R DM-FGD	 J.K. Bisoi AGM-FGD
	 Naveen Reddy Mgr-FGD	
Revision – 00 Dated 09-03-19		
COMMENTS : -----		

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TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

CONTENTS

MAIN SUPPLY	
1.0	PROJECT INFORMATION
2.0	APPLICABLE CODES & REGULATIONS
3.0	INTENT OF SPECIFICATION
4.0	PROVENNESS CRITERIA
5.0	TECHNICAL INFORMATION
6.0	SCOPE OF SUPPLY
7.0	GENERAL REQUIREMENTS
8.0	PACKING & FORWARDING
9.0	SUPERVISION OF ERECTION, TESTING & COMMISSIONING
10.0	EXCLUSION
11.0	INSPECTION AND TESTING
12.0	PAINTING
13.0	SPARES, TOOLS & TACKLES
14.0	PERFORMANCE GUARANTEE
15.0	BID EVALUATION CRITERIA FOR POWER CONSUMPTION
16.0	LIQUIDATED DAMAGES FOR POWER CONSUMPTION
17.0	DEFECT LIABILITY
18.0	FIRST FILL OF CONSUMABLES
19.0	TRAINING
20.0	DELIVERY CONDITION
21.0	DOCUMENTATION
22.0	REFERENCES DOCUMENTS
23.0	ANNEXURES



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

1.0 PROJECT INFORMATION:

Mauda Thermal Power Project (Coal Based) to be set up by NTPC near Mauda in Nagpur district of Maharashtra State, India.

The capacity of the project is 1000 MW comprising of two (2) units of 500 MW each

a.	Owner	NTPC
b.	Buyer	BHEL, Ranipet
c.	Process/Application	Flue Gas Desulphurization

A) SITE CONDITIONS

Guarantee point

1.	Ambient Temperature and Relative Humidity		
	Ambient Temperature	:	27 deg C
	Relative Humidity	:	60 %

Design point

2.	Ambient Temperature and Relative Humidity		
	Ambient Temperature (Design)	:	45 deg C
	Relative Humidity	:	60 %

Note:

- 1) Guarantee point site conditions shall apply for the Guarantee Values as well as for the Guarantee test/Performance test
- 2) Equipment and Material must be suitable for the range of ambient site conditions.

B) PROJECT LOCATION AND APPROACH

The power project is proposed to be located in Mauda Tehsil, Nagpur district of Maharashtra. Mauda town is located at a distance of approx. 4 kms from the plant.

a.	State/Division	Maharashtra
b.	District	Nagpur

2.0 APPLICABLE CODES & REGULATIONS

The design and materials shall conform to the requirements of applicable codes and regulations of the latest edition. The design, manufacture, installation and testing of the Agitator shall follow the latest applicable Indian/International (AISI / ASME/EN/Japanese) Standards. GB standards are not acceptable.

3.0 INTENT OF SPECIFICATION

This specification covers the minimum requirements for the complete design, material, manufacturing, shop inspection, testing at the manufacturer's works, supervision of erection & performance testing at bidder's works/ site of Agitators along with accessories which is furnished



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

in the Flue Gas Desulphurization plant of MAUDA 2 x 500 MW FGD system. The following points may be noted.

- a. There are 2 units of each 500 MW and each unit is envisaged with one FGD system. Agitators are envisaged in various tanks, details of which are given in technical information Clause 5.
- b. Bidder shall assume full unit responsibility for the entire equipment assembly and make all possible efforts to comply strictly with the requirements of this specification and other specifications/attachments to inquiry/order.
- c. The Bidder shall offer only proven design which meets the Provenness criteria indicated in the **Annexure-I**. Necessary document evidences as per **Attachment-3K for qualification** shall be submitted along with the bid. If bidder doesn't meet the specified provenness criteria, they are denied to participate in this tender.
- d. In case, deviations are considered essential by the Bidder (after exhausting all possible efforts), the same shall be separately listed in the Bidder's proposal under separate section, titled as "List of Deviations/Exceptions to the Enquiry Document (**Annexure-V**)".
- e. Any deviation, not listed under the above section, even if reflected in any other portion of the proposal, shall not be considered applicable.
- f. No deviation or exception shall be permitted without the written approval of the purchaser.
- g. Compliance to this specification shall not relieve the Bidder of the responsibility of furnishing equipment and accessories/auxiliaries of proper design, materials and workmanship to meet the specified start up and operating conditions.
- h. In case, the Bidder considers requirement of additional instrumentation, controls, safety devices and any other accessories/auxiliaries essential for safe and satisfactory operation of the equipment, the same shall be recommended along with reasons in a separate section and include the same in scope of supply.
- i. All accessories, items of work, though not indicated but required to make the system complete for its safe, efficient, reliable and trouble free operation and maintenance shall also be in supplier's scope unless specifically excluded.

4.0 PROVENNESS CRITERIA:

The Bidders are required to meet the Qualification Requirement (QR) for Agitators as per **Annexure-I & submit the Annexure to qualification requirement (Attachment-3K)** . Bidders not meeting the qualification requirement are denied to participate in the tender

5.0 TECHNICAL INFORMATION

DETAILS OF AGITATORS ARE GIVEN BELOW:

5.1 AGITATOR DETAILS:



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

TABLE-A- AGITATOR DETAILS FOR ABSORBER TANKS

A. ABSORBER AGITATOR		
S.No	Description	Requirement
1.	Parameters	
	Type	Marine Propeller – Horizontal Type (Side Entry)
	Medium to be handled	Gypsum slurry
	Seal Type	Mechanical Seal (Flush less)
	Location	Outdoor
	Operation	Whenever Recirculation Pumps are not running.
	Absorber Bottom Tank	
	a. Capacity of slurry	1010 m ³ at normal liquid level.
	b. Dimensions	20400mmWX9900mmLX5000mmH (Rectangular)
	c. MOC of Agitator	Agitator Shaft (which is continuously in contact with slurry) and blades shall be made with Alloy 926 or better material
	d. Minimum liquid level in the tank	3.2 m
	e. Normal liquid level in the tank	5.0 m
	f. Maximum liquid level in the tank	6.0 m
	g. Quantity of Agitators per Tank	2 No's +1 No
	h. Total Quantity for two units	6 No's
2.	Slurry Analysis	
	Slurry to be handled	Gypsum slurry
	Maximum solid particle size	200 mesh (75 micron)
	Normal solid particle size, d50	325 mesh (43 micron)
	Solid to be handled	Gypsum along with Lime Stone and other impurities
	Chloride concentration	21100 ppm (max)
	Hardness of particle	5-7 (Mho scale)
	Slurry concentration	30 wt%
	Sp. Gravity of slurry	1.212
	Sp. Gravity of Lime Stone & Gypsum	2.32 (Avg)
	Viscosity of Slurry	10cp
	pH	4-8
	SiO ₂ Content	4 to 6 g/l
	Temperature	Normal: 55-65 Deg C Design: 70 Deg C



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

TABLE-B- AGITATOR DETAILS FOR AUXILIARY ABSORBENT TANK

B	AUXILIARY ABSORBENT TANK AGITATOR	
S.No	Description	Requirement
1.	Parameters	
	Type	Vertical Type- (Center Mounted)
	Medium to be handled	Gypsum slurry
	Duty	Continuous
	Location	Outdoor
	Operation	Whenever FGD is under maintenance
	Auxiliary Absorbent Tank	
	a. Capacity of slurry	1236 m ³
	b. Dimensions	11500 mm Dia X 12700 mm H (Circular)
	c. MOC of Agitator	Agitator blades shall be made with Alloy 926 or better material & Agitator shaft can be carbon steel rubber lined .
	d. Minimum liquid level in the tank	0 m
	e. Normal liquid level in the tank	11.7 m
	f. Maximum liquid level in the tank	11.9 m
	g. Quantity of Agitators per Tank	1 No
	h. Total Quantity for two units	1 No
2.	Slurry Analysis	
	Slurry to be handled	Gypsum slurry / limestone slurry
	Maximum solid particle size	200 mesh (75 micron)
	Normal solid particle size, d50	325 mesh (43 micron)
	Solid to be handled	Limestone (or) gypsum (or) mixture of two
	Chloride concentration	21100 ppm (max)
	Hardness of particle	5-7 (Mho scale)
	Slurry concentration	30 wt%
	Sp. Gravity of slurry	1.215
	Sp. Gravity of Lime Stone & Gypsum	2.32 to 2.71 (avg)
	Viscosity of Slurry	10 to 30 CP
	pH	4-8
	SiO ₂ Content	4 to 6 g/l
	Temperature	Normal: 55-65 Deg C Design: 70 Deg C



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

TABLE-C- AGITATOR DETAILS FOR SLURRY TANKS

C.	FILTRATE WATER TANK AGITATOR	
S. No	Description	Requirement
1.	Parameters	
	Type	Vertical Type – (Center Mounted)
	Medium to be handled	Gypsum slurry
	Duty	Continuous
	Location	Outdoor
	Operation	Continuous.
	Filtrate Water Tank	
	a. Capacity of slurry	73.16 m ³ at maximum liquid level.
	b. Dimensions	4500 mm Dia X 5100 mm H (Circular)
	c. MOC of Agitator	Agitator blades shall be made with Alloy 926 or better material & Agitator shaft can be carbon steel rubber lined .
	d. Minimum liquid level in the tank	1.2 m
	e. Normal liquid level in the tank	4.4 m
	f. Maximum liquid level in the tank	4.6 m
	g. Quantity of Agitators per Tank	1 No
	h. Total Quantity for two units	1 No
2.	Slurry Analysis	
	Slurry to be handled	Gypsum slurry
	Maximum solid particle size	200 mesh (75 micron)
	Normal solid particle size, d50	325 mesh (43 micron)
	Solid to be handled	Gypsum along with Lime Stone and other impurities
	Chloride concentration	21100 ppm (max)
	Hardness of particle	5-7 (Mho scale)
	Slurry concentration	11.1 wt%
	Sp. Gravity of slurry	1.067
	Sp. Gravity of Lime Stone & Gypsum	2.32 (Avg)
	Viscosity of Slurry	3 cP
	pH	4-8
	SiO ₂ Content	4 to 6 g/l
	Temperature	Normal: 55-65 Deg C Design: 70 Deg C



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

TABLE-C- AGITATOR DETAILS FOR SLURRY TANKS

D.		
SECONDARY HYDROCYCLONE FEED TANK AGITATOR (WASTE WATER HYDROCYCLONE FEED TANK AGITATOR)		
S.No	Description	Requirement
1.	Parameters	
	Type	Vertical Type – (Center Mounted)
	Medium to be handled	Gypsum slurry
	Duty	Continuous
	Location	Outdoor
	Operation	Continuous.
	Waste Water Hydro cyclone Feed Tank	
	a. Capacity of slurry	88.36 m ³ at maximum liquid level.
	b. Dimensions	5000 mm Dia X 5000 mm H (Circular)
	c. MOC of Agitator	Agitator blades shall be made with Alloy 926 or better material & Agitator shaft can be carbon steel rubber lined .
	d. Minimum liquid level in the tank	1.0 m
	e. Normal liquid level in the tank	4.3 m
	f. Maximum liquid level in the tank	4.5 m
	g. Quantity of Agitators per Tank	1 No.
	h. Total Quantity for two units	1 No.
2.	Slurry Analysis	
	Slurry to be handled	Gypsum slurry
	Maximum solid particle size	200 mesh (75 micron)
	Normal solid particle size, d50	325 mesh (43 micron)
	Solid to be handled	Gypsum along with Lime Stone and other impurities
	Chloride concentration	21100 ppm (max)
	Hardness of particle	5-7 (Mho scale)
	Slurry concentration	16.6 wt%
	Sp. Gravity of slurry	1.108
	Sp. Gravity of Lime Stone & Gypsum	2.32 (Avg)
	Viscosity of Slurry	4CP
	pH	4-8
	SiO ₂ Content	4 to 6 g/l
	Temperature	Normal: 55-65 Deg C Design: 70 Deg C



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

TABLE-D- AGITATOR DETAILS FOR SLURRY TANKS

E.	WASTE WATER TANK AGITATOR	
S.No	Description	Requirement
1.	Parameters	
	Type	Vertical Type – (Center Mounted)
	Medium to be handled	Gypsum slurry
	Duty	Continuous
	Location	Outdoor
	Operation	Continuous.
	Waste Water Tank	
	a. Capacity of slurry	205.6 m ³ at maximum liquid level
	b. Dimensions	6500 mm Dia X 6700 mm H (Circular)
	c. MOC of Agitator	Agitator blades shall be made with Alloy 926 or better material & Agitator shaft can be carbon steel rubber lined .
	d. Minimum liquid level in the tank	1.0 m
	e. Normal liquid level in the tank	6.0 m
	f. Maximum liquid level in the tank	6.2 m
	g. Quantity of Agitators per Tank	1 No.
	h. Total Quantity for two units	1 No.
2.	Slurry Analysis	
	Slurry to be handled	Gypsum slurry
	Maximum solid particle size	200 mesh (75 micron)
	Normal solid particle size, d50	325 mesh (43 micron)
	Solid to be handled	Gypsum along with Lime Stone and other impurities
	Chloride concentration	21100 ppm (max)
	Hardness of particle	5-7 (Mho scale)
	Slurry concentration	3 wt%
	Sp. Gravity of slurry	1.019
	Sp. Gravity of Lime Stone & Gypsum	2.32 (Avg)
	Viscosity of Slurry	3 cP
	pH	4-8
	SiO ₂ Content	4 to 6 g/l
	Temperature	Normal: 55-65 Deg C Design: 70 Deg C



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

TABLE-A- AGITATOR DETAILS FOR SLURRY TANKS

F.	LIMESONE SLURRY STORAGE TANK AGITATOR	
S.No	Description	Requirement
1.	Parameters	
	Type	Vertical Type – (Center Mounted)
	Medium to be handled	Limestone slurry
	Duty	Continuous
	Location	Outdoor
	Operation	Continuous.
	Limestone Slurry Storage Tank	
	a. Capacity of slurry	1101.8m ³ at maximum liquid level.
	b. Dimensions	12400 mm Dia X 12400 mm H (Circular)
	c. MOC of Agitator	Agitator blades shall be made with Alloy 926 or better material & Agitator shaft can be rubber lined .
	d. Minimum liquid level in the tank	1.0m
	e. Normal liquid level in the tank	11.4m
	f. Maximum liquid level in the tank	11.6m
	g. Quantity of Agitators per Tank	1 No
	h. Total Quantity for two units	2 No's
2.	Slurry Analysis	
	Slurry to be handled	Limestone slurry
	Maximum solid particle size	200 mesh (75 micron)
	Normal solid particle size, d50	325 mesh (43 micron)
	Solid to be handled	Lime Stone and other impurities
	Chloride concentration	1000 ppm (max)
	Hardness of particle	5-7 (Mho scale)
	Slurry concentration	30 wt%
	Sp. Gravity of slurry	1.215
	Sp. Gravity of Lime Stone & Gypsum	2.71 (Avg)
	Viscosity of Slurry	30 cP
	pH	4-8
	SiO ₂ Content	4 to 6 g/l
	Temperature	Normal: 35-45 Deg C Design: 70 Deg C



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

TABLE-B- AGITATOR DETAILS FOR SLURRY TANKS

G. PRIMARY HYDROCYCLONE FEED TANK AGITATOR		
S.No	Description	Requirement
1.	Parameters	
	Type	Vertical Type – (Center Mounted)
	Medium to be handled	Gypsum slurry
	Duty	Continuous
	Location	Outdoor
	Operation	Continuous.
	Waste Water Hydro cyclone Feed Tank	
	a. Capacity of slurry	144.9 m ³ at maximum liquid level.
	b. Dimensions	5500 mm Dia X 6600 mm H (Circular)
	c. MOC of Agitator	Agitator blades shall be made with Alloy 926 or better material & Agitator shaft can be carbon steel rubber lined rubber lined
	d. Minimum liquid level in the tank	1.2 m
	e. Normal liquid level in the tank	5.9 m
	f. Maximum liquid level in the tank	6.1 m
	g. Quantity of Agitators per Tank	1 No.
	h. Total Quantity for two units	1 No.
2.	Slurry Analysis	
	Slurry to be handled	Gypsum slurry
	Maximum solid particle size	200 mesh (75 micron)
	Normal solid particle size, d50	325 mesh (43 micron)
	Solid to be handled	Gypsum along with Lime Stone and other impurities
	Chloride concentration	21100 ppm (max)
	Hardness of particle	5-7 (Mho scale)
	Slurry concentration	30 wt%
	Sp. Gravity of slurry	1.2
	Sp. Gravity of Lime Stone & Gypsum	2.32 (Avg)
	Viscosity of Slurry	10CP
	pH	4-8
	SiO ₂ Content	4 to 6 g/l
	Temperature	Normal: 55-65Deg C Design: 70 Deg C



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

TABLE-C- AGITATOR DETAILS FOR DRAIN SUMP

H.	ABSORBER AREA DRAIN SUMP AGITATOR	
S.No	Description	Requirement
1.	Parameters	
	Type	Vertical Type – (Center Mounted)
	Medium to be handled	Gypsum slurry
	Duty	Continuous
	Location	Outdoor
	Operation	Continuous.
	Absorber Area Drain Sump	
	a. Capacity of slurry	56 m ³
	b. Dimensions	4000 mmW X4000 mm LX 4000 mm H (Rectangular Pit)
	c. MOC of Agitator	Agitator blades shall be made with Alloy 926 or better material & Agitator shaft can be rubber lined
	d. Minimum liquid level in the tank	1.4 m
	e. Normal liquid level in the tank	3.3 m
	f. Maximum liquid level in the tank	3.5 m
	g. Quantity of Agitators per Sump	1 No
	h. Total Quantity for two units	2 No's
2.	Slurry Analysis	
	Slurry to be handled	Gypsum slurry
	Maximum solid particle size	200 mesh (75 micron)
	Normal solid particle size, d50	325 mesh (43 micron)
	Solid to be handled	Gypsum along with Lime Stone and other impurities
	Chloride concentration	21100 ppm (max)
	Hardness of particle	5-7 (Mho scale)
	Slurry concentration	30 wt%
	Sp. Gravity of slurry	1.212
	Sp. Gravity of Lime Stone & Gypsum	2.32 (Avg)
	Viscosity of Slurry	10CP
	pH	4-8
	SiO ₂ Content	4 to 6 g/l
	Temperature	Normal: 55-65Deg C Design: 70 Deg C



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

TABLE-D- AGITATOR DETAILS DRAIN SUMPS

I. GYPSUM AREA DRAIN SUMP AGITATOR		
S.No	Description	Requirement
1.	Parameters	
	Type	Vertical Type – (Center Mounted)
	Medium to be handled	Gypsum slurry
	Duty	Continuous
	Location	Outdoor
	Operation	Continuous.
	Gypsum Area Drain Sump	
	a. Capacity of slurry	56 m ³
	b. Dimensions	4000 mmW X4000 mm LX 4000 mm H (Rectangular Pit)
	c. MOC of Agitator	Agitator blades shall be made with Alloy 926 or better material & Agitator shaft can be rubber lined
	d. Minimum liquid level in the tank	1.4 m
	e. Normal liquid level in the tank	3.3 m
	f. Maximum liquid level in the tank	3.5 m
	g. Quantity of Agitators per Sump	1 No
	h. Total Quantity for two units	1 No
2.	Slurry Analysis	
	Slurry to be handled	Gypsum slurry
	Maximum solid particle size	200 mesh (75 micron)
	Normal solid particle size, d50	325 mesh (43 micron)
	Solid to be handled	Gypsum along with Lime Stone and other impurities
	Chloride concentration	21100 ppm (max)
	Hardness of particle	5-7 (Mho scale)
	Slurry concentration	30 wt%
	Sp. Gravity of slurry	1.212
	Sp. Gravity of Lime Stone & Gypsum	2.32 (Avg)
	Viscosity of Slurry	10 cP
	pH	4-8
	SiO ₂ Content	4 to 6 g/l
	Temperature	Normal: 55-65Deg C Design: 70 Deg C



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

TABLE-D- AGITATOR DETAILS DRAIN SUMPS

J.	LIMESTONE AREA DRAIN SUMP AGITATOR	
S.No	Description	Requirement
1.	Parameters	
	Type	Vertical Type – (Center Mounted)
	Medium to be handled	Limestone slurry
	Duty	Continuous
	Location	Outdoor
	Operation	Continuous.
	Limestone Area Drain Sump	
	a. Capacity of slurry	56 m ³
	b. Dimensions	4000 mmW X4000 mm LX 4000 mm H (Rectangular Pit)
	c. MOC of Agitator	Agitator blades shall be made with Alloy 926 or better material & Agitator shaft can be carbon steel rubber lined
	d. Minimum liquid level in the tank	1.4 m
	e. Normal liquid level in the tank	3.3 m
	f. Maximum liquid level in the tank	3.5 m
	g. Quantity of Agitators per Sump	1 No
	h. Total Quantity for two units	1 No
2.	Slurry Analysis	
	Slurry to be handled	Limestone slurry
	Maximum solid particle size	200 mesh (75 micron)
	Normal solid particle size, d50	325 mesh (43 micron)
	Solid to be handled	Lime Stone and other impurities
	Chloride concentration	1000 ppm (max)
	Hardness of particle	5-7 (Mho scale)
	Slurry concentration	30 wt%
	Sp. Gravity of slurry	1.215
	Sp. Gravity of Lime Stone & Gypsum	2.71 (Avg)
	Viscosity of Slurry	30 cP
	pH	4-8
	SiO ₂ Content	4 to 6 g/l
	Temperature	Normal: 35-45 Deg C Design: 70 Deg C



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

5.2 POWER SUPPLY DETAILS:

1.	POWER SUPPLY	
	The following voltage levels shall apply:	
	3 phase, 3.3 kV AC ,50 Hz	Voltage for motors equal to / bigger than 200KW and for power distribution within the plant.
	3 phase, 415 V, AC , 50 Hz	Standard voltage for power supplies to electric power consumers and motors Above 0.2 KW and upto 200 kW.
	240V AC / 3 phase 415 V AC, 50 Hz	Standard voltage for power supplies to electric power consumers and motors Upto 0.2 kW.
	1. All equipments shall be suitable for rated frequency of 50 Hz with a variation of + 3% & -5%, and 10 % combined variation of voltage and frequency unless specifically brought out in the specification. 2. Bidder shall design and supply the equipment suitable for satisfactory operation under above mentioned power supply condition.	

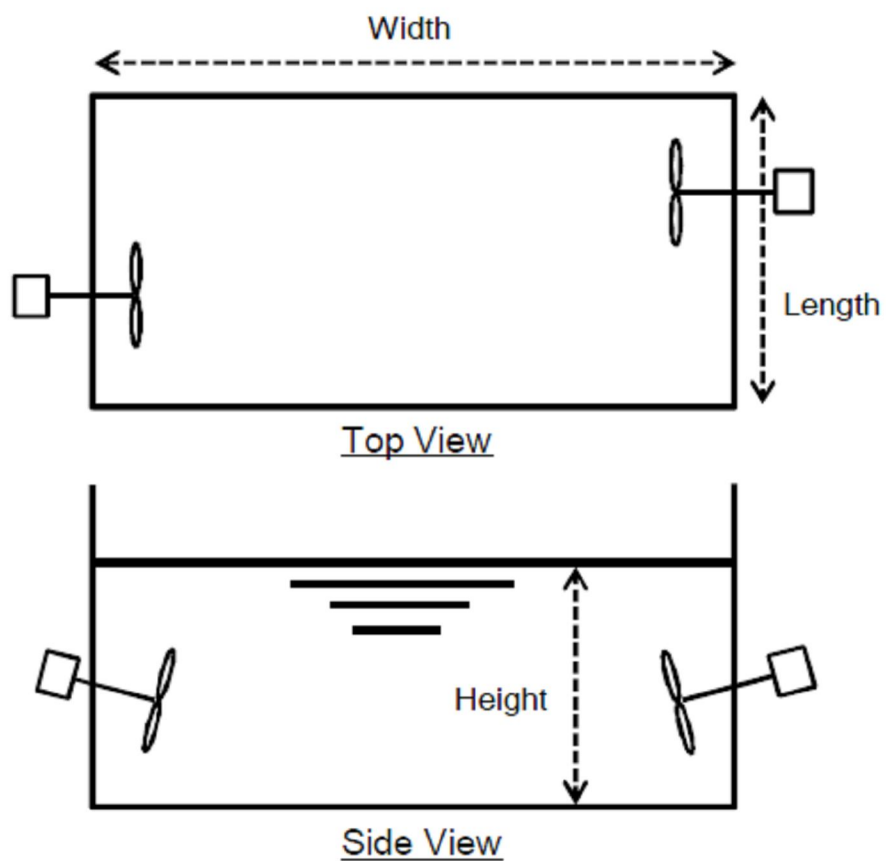
5.3 AGITATOR ARRANGEMENTS:

(1) Absorber Agitators:

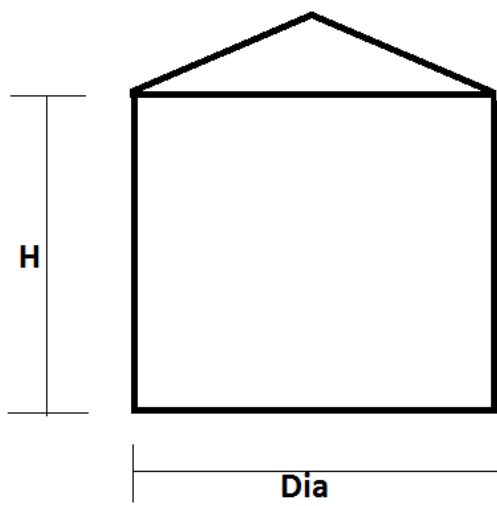
- a. The absorber agitators are Side Mounted / Horizontal type. The Dimensions of Each Absorber bottom tank as per Table A of Clause 5.1.
Dimensions: Width: 24.9 m x Length: 10.9 m x Height: 5.0 m.

The arrangement of Agitators in Absorber as per Sketch-1 shown below.

SKETCH - 1

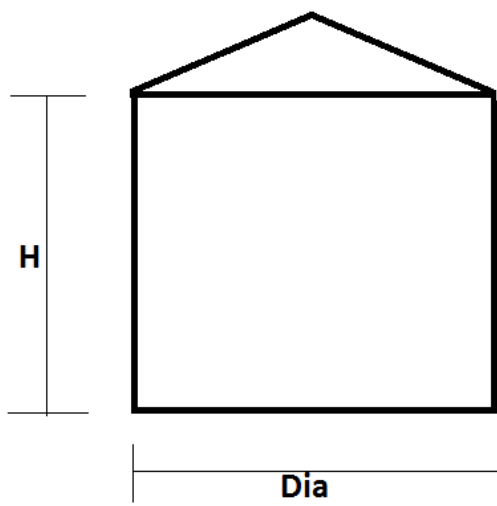


(2) Aux Absorbent Tank Agitators:



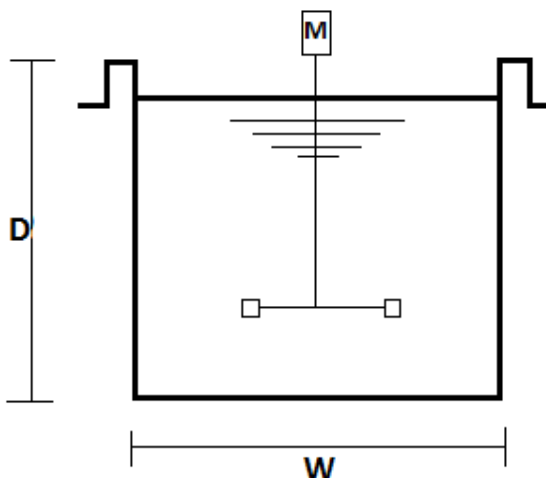
These Agitators will operate continuously when Limestone / Gypsum Slurry is evacuated from Absorber for any Absorber maintenance work. The Aux Absorbent Tank details as per Clause no: 5.1 Table -B.

(3) Slurry Tank Agitators:



These Agitators will operate continuously for FGD system operation. The Slurry Tanks details as per Clause no: 5.1 Table -C.

(4) Drain Pit Tank Agitators:



These Agitators will operate continuously for FGD system operation. The Drain Pit Tank details as per Clause no: 5.1 Table -D.

6.0 SCOPE OF SUPPLY

Scope for the bidders shall include Design, Manufacturing, Supply, and Supervision of Erection & Commissioning

Design: Includes basic engineering, detail engineering, preparation and submission of engineering drawings/calculations/datasheets/quality assurance documents/field quality plans, storage instructions, commissioning procedures, operation & maintenance manuals, performance guarantee test procedures and assisting BHEL in obtaining time bound approval from NTPC.

Supply: Includes manufacturing/fabrication, shop floor testing, stage inspections, final inspections, painting & packing.

Supervision of Erection & commissioning: Includes supervision of erection & commissioning, supervision of trial operation, training of customer's O&M Personnel.

The scope of supply for AGITATORS shall include but not limited to the following:

A) ABSORBER TANK AGITATORS:

Sl. No	Scope
1.	AGITATOR complete with
	i. AGITATOR Blades
	ii. AGITATOR Shafts



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

Sl. No	Scope
	iii. Coupling arrangement (Flexible)
	iv. Single Mechanical Seals
	v. Shaft Sleeve
	vi. Lanterns/ Stools (Bearing Housing), Safety Guard
	vii. Bearings
	viii. AGITATOR Mounting Flanges with gaskets and fasteners
	ix. Drive Motor with gearbox arrangement
	x. Supporting arrangement of Side Entry Agitator on Absorber Wall.Vessel Nozzle and mating flange for supporting on the Absorber wall
	xi. Flushing system for start up.
	xii. Foundation plate with foundation bolts, vessel nozzle
	xiii. Painting and Rust Prevention during shipment and construction
	xiv. Supervision of Erection & commissioning at site
	xv. Special tools & tackles as applicable
	xvi. Start-up spares as applicable
	xvii. Installation, operation and maintenance manuals
	xviii. Any other items required for completeness of the equipment except the items covered in the exclusions.

B) AUXILIARY ABSORBENT TANK, SLURRY TANK & DRAIN PIT TANK AGITATORS:

Sl. No	Scope
2.	AGITATOR complete with
	i. AGITATOR Blades
	ii. AGITATOR Shafts
	xix. Coupling arrangement (Flexible)
	xx. Single Mechanical Seals
	xxi. Shaft Sleeve
	xxii. Lanterns/ Stools (Bearing Housing), Safety Guard
	xxiii. Bearings
	xxiv. AGITATOR Mounting Flanges with gaskets and fasteners
	xxv. Drive Motor with gearbox arrangement
	xxvi. Supporting arrangement of Side Entry Agitator .Vessel Nozzle and mating flange for supporting on the tank wall
	xxvii. Flushing system for start up.
	xxviii. Foundation plate with foundation bolts, vessel nozzle
	xxix. Painting and Rust Prevention during shipment and construction
	xxx. Supervision of Erection & commissioning at site
	xxxi. Special tools & tackles as applicable
	xxxii. Start-up spares as applicable
	xxxiii. Installation, operation and maintenance manuals
	xxxiv. Any other items required for completeness of the equipment except the items covered in the exclusions.



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

6.1	TECHNICAL REQUIREMENTS	Vendor to confirm
1.	Agitators shall be supplied in tanks and vessels to prevent caking and settlement of particles out of the slurry, e.g. in the absorber vessel, limestone mill recycle tanks, limestone slurry tank, Auxiliary Absorbent tank, and sumps etc.	
2.	All agitators shall be designed for continuous operation unless otherwise specified. The design of the agitators shall be of proven type.	
3.	Standard type agitators with suitable characteristics shall be used wherever practical. The agitators shall be complete with motor, gearbox, agitator shaft, coupling, safety guards, mechanical seal (for side entry agitators), impeller, support legs, agitator mounting flange including bolts nuts and gasket etc.	
4.	All agitator parts and accessories in contact with the stirred fluid shall be constructed of materials specifically designed for the conditions and nature of the stirred fluid and be resistant to erosion and corrosion.	
5.	The material for the shaft (which is continuously in contact with slurry) and agitator blades of the Absorber Agitators shall be made with Alloy 926 or better material. For Agitators in other tanks, agitator blades shall be made with Alloy 926 or better material and shaft can be rubber lined(minimum 6 mm thick Chlorobutyl Rubber) . This does not release the bidder of the responsibility for selecting the correct materials.	
6.	Each agitator and its associated equipment shall be arranged in such a manner as to permit easy access for operation, maintenance and agitator removal without interrupting plant operation. It shall be possible to remove the sealing devices of the Agitators of the absorber vessel without having to drain completely the absorber.	
7.	To prevent mechanical blocking load start-up after standstill of pumps, piping and agitators for slurries shall be applied with C-hose connection.	
8.	Lifting lugs and eyes and other special tackle shall be provided as necessary to permit easy handling of the agitators and their components.	
9.	Static and dynamic (as far as applicable) balancing of all agitators shall be carried out after assembly.	
10.	All agitator parts and components shall be designed and calculated for fatigue life, considering maximum bending loads, induced by fluctuating hydraulic forces and torsional loads, based on the installed motor power. For side entry agitators the alternating bending moment resulting from impeller and shaft weight has to be considered additionally.	
11.	All exposed moving parts shall be covered by guards.	
12.	Side entry agitator shall be flange mounted. Side entry agitators shall be provided with emergency flush start system	
13.	The shape of the impeller blades of side entry agitators shall be designed to avoid wear on the impellers which will affect the agitator performance as specified for a minimum period of 2 years of continuous operation under design conditions for the range of coal & limestone specified in the specification. In order to avoid excessive wear impeller tip speeds must not exceed 12 m/s	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

14.	Belt drives (if applied) shall be properly designed to provide a minimum lifetime of 2 years under design conditions	
15.	It shall be noted that all Agitators are meant for keeping the solid particles in suspended mode in liquid with “Full off-Bottom Suspension” of solid particles to 98% of liquid column to virtually “Uniform Solid Concentration”. No chemical reaction will takes place.	
16.	Maintaining a uniform concentration over the 95% of liquid column. Absolute sweeping of solid particle from tank bottom is a must for all Agitators. If speed is required to be increased to guarantee the above requirements; the same can be increased by vendor. Bidder's machines that consume less power will be in an advantageous position.	
17.	It is to be noted that in continuous process any deposit at tank bottom is the loss of material which are not getting converted as per process. Hence, total loss of material by sedimentation is a loss to FGD Process & determines the “In efficiency of the Agitator”.	
18.	Vendor should ensure nil settlement; utilization of solid material shall be a guaranteed parameter and will be assessed in percentage (%) term to net wet of solid mass of inflow or out flow. This is one of the guarantee parameter.	
19.	Agitator and its driver shall perform on the test stand at shop and on the Agitator's permanent location at site within vibration limit the vibration of combined unit will be the responsibility of Agitator manufacturer. Agitator manufacturer is to ensure that Site performance of vibration is one of the “Acceptance Criteria” of the equipment. Please note vibration at test stand can only be taken as for information.	
20.	Every Tank will have a pump whose suction line shall be connected to tank. These pumps are to operate continuously at the lowest operating level which is decided by Process requirement. Hence, the minimum operating level of liquid in every tank for every Agitator is a must to assess the combined operation of Agitator as well as that of pump alone. The Tank water level is indicated as per Clause 5 (Technical Information)	
21.	Agitator must have low-pitch propeller with low solidity ratio and Power Number of 0.3-0.35. The Maximum Input Power at motor terminal shall be considered as a guaranteed parameter under “Schedule of Guaranteed Parameters” in ANNEXURE -II and the same shall be calculated for maximum liquid level in tank. A calculation of power specifying the hydraulic power of Agitator, Seal loss, Gear box and Motor internal loss must be submitted along with the offer. A characteristics curve showing power versus liquid level should be submitted from the lowest liquid level, required for Agitator to maximum liquid level in the tank. Motor should be selected based on the highest power demand with a 10% margin at maximum liquid level, taking into account frequency variation.	
22.	In case Bidder provides a Vertical Agitator with hub design the same has to be of Alloy 926 or better material. Impeller hub material has to be Alloy 926 or better material	
6.2	CONSTRUCTIONAL FEATURES	
A)	BLADE AND HUB OF PROPELLER	
I)	The blades of the agitators shall be of Alloy 926 or better material.	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

II	The Blade design of the Agitator to be of most efficient design in order to offer least power consumption. The Agitator power consumption is part of the guarantee parameters.	
III	Although Agitator will have substantial low speed because of reduction Gear Box, hydraulic unbalance at impeller can cause severe vibration, hence it is mandatory that rotating assembly shall be dynamically balanced to its rated speed.	
IV	Impeller should be dynamically balanced to Gr: G16: ISO-1940 after rubber lining of shaft.	
B)	SEAL	
1.	<u>Horizontal / Side Entry Agitators for Absorber Tank</u>	
i.	Agitators should be provided with Single Stage mechanical seal. the mechanical seal should be as per ISO-21049 / API 682	
ii.	The Mechanical Seals shall be so arranged that repacking or fitting of replacement seals can be carried out with the minimum of disruption to plant operation.	
iii.	Design the mechanical seals chamber to have sufficient room to lubricate and get seal face cool with its own slurry.	
iv.	Provide requirements for periodical flushing to rinse the seal face for leaked slurry.	
v.	All mechanical seals, regardless of type or arrangement, shall be of the cartridge design. Hook sleeve cartridge should not be used.	
vi.	Requirement of flushing water, its quantity, and pressure to be indicated in data sheet.	
vii.	Zero leakage is the intension of this specification. However, quantity of leakage, if it is unavoidable, it should have a provision of collecting / or discharging back to the tank.	
viii.	Mechanical seals shall be fitted and installed in the Agitator before shipment and shall be clean. Mechanical seals shall be plugged with screw for shipping.	
ix.	Intention of the specification is not to specify Type of Seal, Seal design, Spring configuration, Seal configuration, Balanced or Unbalance type etc. Agitator manufacturer to decide the same along with seal manufacturer the best seal that is suitable for the offered Agitator	
x.	Seal life has to be guaranteed, taking into consideration all its components for 25000 hrs. If the seals fail before the completion of guaranteed period, the same should be replaced free of cost by the bidder.	
xi.	The sub-vendor of the seal shall be approved by NTPC during contract execution.	
2.	<u>Vertical Agitators for Auxiliary Absorbent Tank, Slurry Tanks & Drain Pit Tanks</u>	
	Agitator shall be supplied with stuffing box or any proven equivalent or superior sealing type. Mechanical and hydraulic conditions in the seal chamber, required to maintain a stable film at seal face, including temperature, pressure and flow, shall be jointly established by Agitator manufacturer and seal manufacturer, and shall be noted in data sheet submitted in tender. If mechanical seal is offered by bidder, the mechanical seal should be as per ISO-21049 / API 682.	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

C)	SHAFT	
	MOC of Shaft as per Clause 5.1 Table A-D suitable to the service. Use of dissimilar material at flange joint shall be avoided to eliminate any crevice corrosion. Spacing of the shaft joint should not be more than 3.0 m for easy assembly if it is more than 40kg. If welding is used for joining two tubes, welding joint must be 100% radio graphed.	
D)	BEARING & BEARING HOUSING IN GEAR BOX	
i.	Bearing shall be of rolling type radial and thrust bearing (FAG/SKF/Timken make only) as required. Thrust bearing shall be sized for continuous operation under all specified condition.	
ii.	Thrust bearing shall provide full load capability if the Agitator's normal direction of rotation is reversed. Up-thrust and Down-thrust load must be taken into account in sizing bearing. Life of the every anti-friction bearing, used in the bearing housing as per manufacturer's design, should have L10 of 25000 hr (minimum).	
iii.	Bearing housing should be grease/oil lubricated. If bearing is oil lubricated, constant-level sight-feed oiler of 100cc size or bigger capacity is to be provided. Bearing housing should have oil drain, constant oil level indicator. A provision of one(1) number G1/2" thread(ISO-228,Part-1)port is required for remote control of temperature of bearing housing oil bath RTD.	
iv.	If bearing housing requires cooling water, volume and pressure of cooling water is to be indicated in Technical Data Sheet.	
v.	Lubricating oil will be the responsibility of Gear Box manufacturer. Hence, manufacturer has to make arrangement of first fill of oil at installation and at commissioning stage. Quantity of oil and its grade is to be indicated in Drawing and Operation Manual.	
E)	MATERIALS	
i.	Agitator components designated as "Full Compliance Material" shall meet the requirements of the industry specification as listed for the material in the table as well as in the specification in the respective section.	
ii.	A detail quality plan is to be submitted along with offer for all items marked "Full Compliance Material".	
iii.	Final acceptance of the quality plan will be approved by ultimate user (hereafter called NTPC). Hence, it is expected that manufacturer to submit quality plan (QAP) along with the offer. The same shall be followed at post order stage also. QAP should be as per the best practice followed internationally to avoid any conflict of interest.	
F)	Driver (Motor)	
i.	Driver shall be sized to meet all specified operating conditions including bearing housing , seal, external gear box and coupling loss(if any).	
ii.	Motor shall be able to accelerate to speed at reduced voltage and frequency as specified in "Site Power Supply Condition" as per Clause: 5.2. Efficiency class for motors shall be IE3	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

iii.	It should meet Motor specification as per Clause No: 22, reference documents.	
G)	GEAR BOX	
	Gear box should be vertical flange mounted solid shaft type (Vertical Agitators), reducing speed type, specially designed for the requirement of Slurry mixing and to be manufactured by the Agitator supplier. Complete up-thrust and down-thrust, developed by Agitator shall be taken by thrust bearing housing of Gear Box. An auxiliary slow drive provision shall be provided in the Gear Box so that slurry is always kept in dynamic condition to avoid settling of slurry at bottom, in the event of Agitator is not operating at its rated speed. Rating of at Gear box shall be at least 1.5 times the rated torque of Agitator.	
H)	COUPLING & COUPLING GUARD	
i.	Coupling and coupling guard should be supplied between driver and driven equipment.	
ii.	Coupling should be designed taking into consideration adequate service factor.	
iii.	Design rating of the coupling (excluding service factor) should be indicated in data sheet.	
iv.	Coupling must be having locking screw so that it does not slide over shaft in due course operation.	
v.	Vertical Agitators - Coupling between Motor and Gear Box shall be Spacer-type flexible coupling, made of Cast Iron. Spacer length shall be of sufficient length so than Motor and Gear Box shall be able to run independently at no-load condition by detaching the respective coupling.	
vi.	It is desirable that for servicing of seal, coupling half should not be removed. Coupling should be dynamically balanced to Gr: G6.3, ISO-1940.	
vii.	Removable coupling guard shall conform to the requirements of all applicable national, industrial or statutory regulations.	
I)	PLATE AND FASTENING BOLTS	
I.	Base plate shall be interpreted as the component of Agitator assembly through which the whole load will be transmitted to the Sole Plate/Nozzle over which the equipment will be mounted. The Base plate shall be fabricated with mild steel of structural quality (UTS=42N/sq mm minimum) with anti-corrosive paint of sufficient dry-film thickness.	
II.	Base plate must have provision of leveling on its intended mounting place. Sole plate is not in the scope of supply of Agitator manufacturer. It should be noted that Sole plate will be rubber lined to prevent any leakage of corrosive gases	
III.	Alignment between Gear Head Shaft and Agitator shaft shall be within the permissible limit of Gear Box. Similarly, misalignment between Motor shaft and Gear Box Shaft shall be within 0.050 micron (radial) and 2 degree (angular) or better as per requirement of Motor and Gear Box	
IV.	Sole plate with desired number of hole, will be machined on one side. Sole Plate shall	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

	be welded to the structure after leveling, as recommended by Agitator manufacturer and rubber lining is completed before placing the equipment in its desired location.	
J)	OTHER COMPONENTS	
	All fasteners used in wetted condition must be of Alloy 926 or better material so that even if it comes in contact with liquid by swelling of rubber, thread remains unaffected. Raw material of fastener must undergo Inter-granular Corrosion test as per ISO-3651, Part-1 for Nitric Acid test.	
K)	ABSORBER AGITATORS:	
I.	All Agitators shall be designed for continuous operation.	
II.	The Absorber Agitators shall be of Horizontal / Side Entry type.	
III.	The Material of Construction (MOC) of Agitators shall be Alloy 926 or better material as per Clause No: 5.1 Table-A	
IV.	It should be of Flange mounted type.	
V.	The shape of the impeller blades of side entry agitators shall be designed to avoid wear on the impellers which will affect the agitator performance as specified for a minimum period of 2 years of continuous operation under design condition.	
VI.	Nozzle size, on which Agitator shall be mounted, shall have enough opening to Insert rotating assembly from side. Vendor to provide the nozzle along with the agitator.	
VII.	The Bidder to consider Gypsum Sedimentation during stoppage of Agitator.	
VIII.	The following information to be provided along with the bid: a) <u>Impeller Diameter</u> b) <u>Impeller Speed</u> c) <u>Agitator Pumping Capacity (m³/min)</u> d) <u>Volume per Agitator:</u>	
L)	<u>AUXILIARY ABSORBENT TANK , SLURRY TANK & DRAIN PIT Tank AGITATORS:</u>	
I.	All Agitators shall be designed for continuous operation.	
II.	The Material of Construction (MOC) of Agitators: Agitator blades shall be made with Alloy 926 or better material & Agitator shaft can be rubber lined as per Clause No: 5.1 Table-B,C&D.	
III.	It should be roof mounted.	
IV.	Agitators shall be vertical mounted type and shall be driven by motor with reducing speed gear box of rigid type, solid shaft coupling between gear box and agitator and flexible coupling of spacer type coupling between Motor and Gear Box. Both Gear Box and Motor should be vertically/horizontally flange mounted type with a common	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

	frame of the whole equipment. The entire thrust load of agitator should be transmitted to the thrust bearing of Gear box.	
V.	Cable entry to the Motor terminal box should preferably be from top when motor is vertically mounted at its position and it should be easily accessible.	
VI.	Nozzle size, on which Agitator shall be mounted, shall have enough opening to Insert rotating assembly from top. Vendor to provide the nozzle along with the agitator.	
VII.	In case Bidder provides a Vertical Agitator with hub design the same has to be of Alloy 926 or better material.	
VIII.	Impeller should be dynamically balanced to Gr: G16: ISO-1940 after rubber lining of shaft.	
IX.	Operation speed of the Agitator motor shall be at least 25% below the first critical speed.	
X.	Additional to the requirement of the critical speed of Agitator, as specified above. Agitator manufacturer is to analyze the torsional critical speed of combined system of Agitator, Gear Box and Motor to establish that the torsional critical speed is well off the operating speed by 20% from the operating speed.	

6.3 MOTOR

➤ Degree of Protection

Degree of protection for various enclosures shall be as follows:

- a) Outdoor motors : IP 55
- b) Cable box-Outdoor area : IP 55

➤ Codes and Standards

- a) Three phase induction motors : IS325
- b) Single phase AC : IEC 60034

➤ Painting

Paint shade shall be as per RAL5012

6.3.1 AC Motors Type

AC Motors:

All AC motor shall be Squirrel cage induction motor and, shall be suitable for direct –on-line starting. Rating of the motor should of Type S1 (Continuously rated) as per ISO-60034, Part-1. Rating of motor must be at least 10% above the maximum load demand of



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

the driven equipment under entire operating range including voltage and frequency variation.

- a. All motors, the maximum temperature rise shall be 70° C by resistance method for both class B & F insulation.
- b. For motors with starting time up to 20secs at minimum permissible voltage during starting, the locked rotor withstand time under hot condition at highest voltage limit shall be 3 second more than the starting time at minimum rated voltage (85%). For motors with starting time more than 20secs and up to 45secs at minimum voltage during starting, the locked rotor withstand time under hot condition at highest voltage limit shall be at least 5secs more than starting time at minimum rated voltage (85%). For motors with starting time more than 45secs at minimum permissible voltage during starting, the locked rotor withstand time under hot condition at high voltage limit shall be more than starting time at minimum rated voltage (85%) by at least 10% of the starting time. Speed switch mounted on the motor shall be provided in cases where above requirements are not met.
- c. Accelerating torque at any speed with the lowest permissible starting voltage shall be at least 10% motor full load torque. Pull-out torque at rated voltage shall not be less than 205% of full load torque.
- d. Starting voltage requirement will be 85% of rated voltage up to 1500kw rating motor.
- e. Single phase space heaters suitable for 240 v AC shall be provided on motors rated 30kw and above to maintain winding in dry condition when motor is standstill. Separate terminal box for space heater (As per clause no: 6.0.2) and RTDs shall be provided.
- f. All motors shall be Totally Enclosed Fan Cooled (TEFC), for Motors below 30 kw, winding shall be suitable for heating at 24v, 1 phase AC.
- g. Winding and Insulation shall be of type Non-hygroscopic, Oil and Flame resistant. It shall be capable two hot starts in succession with initially at normal running temperature. The insulation shall be Class B or better.
- h. Noise level of all motor shall be limited to 85 dB(A). Vibration shall be limited within the limit prescribed by IS12075, Part-14. Motor shall withstand the vibration produced by driven equipment. Combined vibration of the equipment at site shall only be accepted as per the Schedule of Guarantee Clause, as mentioned in the data sheet.
- i. Motor body shall have two earthing points on opposite side.
- j. inside the terminal box to suit the conductor size
 - Motors up to 1 kw - 8 SWG wire
 - 1kw - 30 kw - 25x3 mm GI flat
 - 30 kw - 60 kw - 25x6 mm GI flat
 - 60 kw & above - 30x 6 mm GI flat



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

6.3.2 Terminal Box

Motor MCR in KW	Minimum distance between centre of stud and gland plate in mm
UP to 3 KW	As per manufacturer's practice
Above 3 KW - upto 7 KW	85
Above 7 KW - upto 13 KW	115
Above 13 KW - upto 24 KW	167
Above 24 KW - upto 37 KW	196
Above 37 KW - upto 55 KW	249
Above 55 KW - upto 90 KW	277
Above 90 KW - upto 125 KW	331
Above 125 KW-upto 200 KW	203

Terminal boxes of LT motors 160 KW (& above) shall be capable of withstanding system fault level of 31 MVA for 0.12 second.

Ratio of locked rotor KVA at rated voltage to rated KW shall not exceed the following (without any tolerance)

- Upto 110KW : 11.0
- Above 110KW & upto 1500KW : 10.0
- Above 1500KW & upto 4000KW : 9.0
- Above 4000KW : 6 to 6.5

6.3.3 Testing of LT Motors

- a. LT Motors shall be of type tested quality. For each type and rating of LT Motors, rated above 50KW, the vendor shall submit for Owner's approval the report of all type tests as per relevant standards and carried out within last five (5) years from the date of Purchase Order(PO). These reports should be for the test conducted on the equipment's similar to those proposed to be supplied under this contract , and the tests should have been either conducted at an independent laboratory or should have been witnessed by client.
- b. In case vendor is not able to submit the report of the type tests, conducted within last five (5) years from the date of PO or in case the type tests report are not found to be meeting the specification requirements, the vendor shall conduct all such tests under this contract free of cost to the ultimate purchaser (NTPC in this case) and submit the reports for approval.
- c. All acceptance and routine tests as per the specification and relevant standards shall be carried out. Charges for these shall be deemed to be included in the equipment price.
- d. All Motors shall be so designed that maximum inrush currents and locked rotors and pull-out torque developed at extreme voltage and frequency variation do not endanger the motor and driven equipments.



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

- e. Terminal boxes of breaker operated LT Motors above 160kw shall be capable of withstanding system fault level 31MVA for 0.12 second.
- f. The size and number of cables to be intimated to successful bidder during detail engineering and the contractor shall provide terminal box suitable for the same.

1.0 GENERAL REQUIREMENTS:

S.No	Description	Vendor to confirm
1.	Metric unit shall be used in the drawings and in the any displays on the equipment's. Special attention should be taken that the unit of pressure shall be in dual scales of kPa and kg/cm ² G. For instance the pressure gauges should have dual unit's indication.	
2.	Descriptions in the drawings, in the documents, and in the displays shall be in English	
3.	All rotating parts such as coupling shall be covered with suitable protective guards. Guards shall be easily removable type.	
4.	The equipment shall be designed to withstand the corrosive and moist environment in which these are proposed to operate.	
5.	Noise level produced by any rotating equipment individually or collectively shall not exceed 85 dB measured at a distance of 1.0 meters from the source in any direction and 1.5m above operating floor.	
6.	The overall vibration level shall be as per ISO 10816.	
7.	Suitable drain connections shall be provided.	
8.	The equipment shall be suitable for stable operation continuously.	
9.	Corrosion allowance: Corrosion allowance for entire equipment shall be in accordance with latest applicable Indian / International standard.	
10.	Unless otherwise specified , flanges shall be in accordance with ANSI B16.5 Class 150	
11.	Name plate: All equipment shall be provided with nameplates indicating the item number and service name. Name plates shall be of 304 Stainless steel plate and placed at a readily visible location. Nameplate of main equipment shall have enough information, which will be confirmed during engineering phase. Stainless steel nameplates for all instruments and valves shall be provided.	
12.	Rotation arrows shall be cast in or attached with stainless steel plate on each item of rotation equipment at a readily visible location.	
13.	Unless otherwise specified, all equipment items where the weight exceeds 15 kg shall be provided with suitable lifting lugs, ears or ring bolts or tapped holes for lifting rings. Minimum shock factor for lifting lugs shall be minimum 2.0. The position of lifting lugs and reference dimension shall be shown on GA and/or outline drawings. NDT shall be conducted for lifting lugs. When any spreader bars are required for lifting and laydown,	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

S.No	Description	Vendor to confirm
	the bidder shall provide spreader bar with equipment.	
14.	Skid Mount/Transportation: Equipment shall be fabricated as skid mount design as much as practical to minimize erection at the site.	
15.	If the driver/driven equipment train is in the resonance condition or any vibration problems occur, the bidder shall solve the problems in a timely manner.	
16.	Bidder shall provide the necessary gaskets.	
17.	All the surfaces of the carbon steel should be rust prevented before shipment for the period of at least 12 months for storage and construction.	
18.	Bidder to provide capacity of crane or hoist required for material handling and the details of heaviest component to be handled.	
19.	The list of all Bought out items with makes and country of origin to be mentioned along with offer to be submitted.	
20.	Quality Plan to be submitted along with the offer.	
21.	Cost towards the participation in discussions/meetings, providing technical assistance during technical discussions/meetings with customer for approval of drawing/documents etc. TA/DA, boarding and lodging to attend these meetings shall be borne by the bidder and shall be inclusive in supply portion.	
22.	Material of construction for all equipment/components shall be subject to NTPC/ BHEL approval during detail engineering. Accordingly bidder shall consider MOC for all equipment/component as per best engineering practice, global standard and global references.	
23.	Bidder to provide sub vendor list and Bidder shall strictly adhere to NTPC approved vendor list. In case bidder proposes an additional vendor for an item or vendor approval is required for any new item, acceptance shall be subject to approval by NTPC/ BHEL before placing order and bidder shall submit relevant documents as per Attachment-VI-Sub-Supplier Questionnaire .	
24.	It shall be the complete responsibility of the successful bidders to obtain "Sub Vendor Approval" from BHEL / NTPC for all equipment's & components. Any delay in sub vendor's approval should not affect the project schedule. If any of the sub vendors does not have the approval of NTPC/ BHEL, the same may be replaced with another NTPC/BHEL approved sub-vendor only, without any price implications to BHEL.	
25.	The modalities of inspection (Stage, Final, In-process) shall be finalized during detail engineering after submission of quality assurance plan (QAP). It shall be reviewed by the BIFPCL/ BIFPCL's consultant and BHEL. Bidder shall follow the procedures of inspection as per the approved QAP. Bidder has to submit the following documents along with inspection call and if any other documents required as per approved QAP. - Raw material inspection certificate - Internal test reports	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

S.No	Description	Vendor to confirm
	- Statutory certificates as required. - All inspection & testing shall be carried out based on the following documents: b. Relevant Standards c. Specifications d. Approved drawings e. Data Sheets f. Calibration certificate for all the measuring instruments g. Bidder should also coordinate in getting the MDCC's (Material Dispatch clearance certificate) and all types of IC's (Inspection Certificates) from the NTPC along with BHEL.	
26.	During detail engineering, bidder to strictly adhere to BHEL/NTPC drawing formats, document numbering, quality plan & FQP formats	
27.	The identification and numbering of equipment, systems, items, etc. of supply, as well as of all documents and drawings shall be in accordance with reference Designation System for Power Plants - KKS system.	
28.	Complete detail engineering drawings, calculations, selection of components etc. shall be reviewed & subject to approval of BHEL/NTPC during detail engineering	
29.	Bidder shall furnish necessary inputs & drawings of all equipment in editable Auto CAD/ MS-Word /Excel format.	
30.	During detail engineering, successful bidder shall ensure flow of drawings/documents as per schedule. Any comments from BHEL/NTPC should be addressed timely by the bidder.	
31.	Bidder to note that list above is not exhaustive and any work /items required for completing the smooth operation and ensuring satisfactory running of the machines till final hand over to the end user shall also be in the scope of the bidder.	
32.	Bidder shall submit the signed and stamped copy of all the pages which constitutes this technical enquiry specification signed by authorized signatory and clearly mentioning each clause under following two categories to avoid any ambiguity in scope understanding & the scope division along with technical offer. a. "Accepted without deviation and considered in scope of work" b. "Not considered in scope of work"	
8.0	PACKING AND FORWARDING	
1.	Proper packing to be ensured. Indigenous Supply: Agitator & sub system assembly shall be wrapped in polythene bags & packed in a strong rigid wooden crate. Rain water should not enter into the Agitator internals during storage in the outer yard of power plant.	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

S.No	Description	Vendor to confirm
	Imported Supply: All imported supply should be packed as per Sea worthy packing standards Annexure - VII. All imported items should have Sea worthy packing. Liberal packing materials and struts shall be provided to arrest rolling and to protect from transit damages.	
2.	Equipment and process materials shall be packed and semi-knocked down, to the extent possible, to facilitate handling and storage and to protect bearings and other machine surfaces from oxidation. Each container, box, crate or bundle shall be reinforced with steel strapping in such a manner that breaking of one strap will not cause complete failure of packaging. The packing shall be of best standard to withstand rough handling and to provide suitable protection from tropical weather while in transit and while awaiting erection at the site.	
3.	Equipment and materials in wooden cases or crates shall be properly cushioned to withstand the abuse of handling, transportation and storage. Packing shall include preservatives suitable to tropical conditions. All machine surfaces and bearings shall be coated with oxidation preventive compounds. All parts subject to damage when in contact with water shall be coated with suitable grease and wrapped in heavy asphalt or tar impregnated paper.	
4.	Crates and packing material used for shipping will become the property of owner.(NTPC)	
5.	Packaging or shipping units shall be designed within the limitations of the unloading facilities of the receiving ports and the ship will be used. It shall be the bidder's responsibility to investigate these limitations and to provide suitable packaging and shipping to permit transportation to site.	
6.	Packing (tare) shall be part of the equipment cost and shall not be subject to return. The packing should ensure integrity and cohesiveness of each delivery batch of equipment during transportation. In case of equipment assemblies and unit's delivery in the packing of glass, plastics or paper the specification of packing with the material and weight characteristics are to be indicated.	
7.	Each package should have the following inscriptions and signs stenciled with an indelible ink legibly and clearly: a. Destination b. Package Number c. Gross and Net Weight d. Dimensions e. Lifting places f. Handling marks and the following delivery marking	
8.	Each package or shipping units shall be clearly marked or stenciled on at least two sides as follows. NTPC THERMAL POWER CORPORATION	

**TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)****MAUDA:FGD:AGITATORS:R00**

S.No	Description	Vendor to confirm
	MAUDA, 2 X 500 MW. MAUDA TEHSIL, NAGPUR DISTRICT MAHARASHTRA INDIA EPC CONTRACTOR: BHARAT HEAVY ELECTRICALS LIMITED, INDIA” In addition, each package or shipping unit shall have the symbol painted in red on at least two sides of the package, covering one fourth of the area of the side.	
9.	Each part of the equipment which is to be shipped as a separate piece or smaller parts packed within the same case shall be legibly marked to show the unit of which it is part, and match marked to show its relative position in the unit, to facilitate assembly in the field. Unit marks and match marks shall be made with steel stamps and with paint.	
10.	Each case shall contain a packing list showing the detailed contents of the package. When any technical documents are supplied together with the shipment of materials no single package shall contain more than one set of such documents. Shipping papers shall clearly indicate in which packages the technical documents are contained.	
11.	The case number shall be written in the form of a fraction, the numerator of which is the serial number of the case and the denominator the total number of case in which a complete unit of equipment is packed.	
12.	Wherever necessary besides usual inscriptions the cases shall bear special indication such as “Top”, “Do not turn over”, “Care” , “Keep Dry” etc. as well as indication of the center of gravity (with red vertical lines) and places for attaching slings (with chain marks)	
13.	Marking for Safe handling: To ensure safe handling, packing case shall be marked to show the following: a. Upright position b. Sling position and center of Gravity position c. Storage category d. Fragile components (to be marked properly with a clear warning for safe handling)	
14.	Each crate or package is to contain a packing list in a waterproof envelope. All items are to be clearly marked for easy identification against the packing List. All cases, packages etc. are to be clearly marked on the outside to indicate the total weight where the weight is bearing and the correct position of the slings are to bear an identification mark relating them to the appropriate shipping documents. All stencil marks on the outside of cases are either to be made in waterproof material or protected by shellac or varnish to prevent obliteration in transit.	
15.	The packing slip shall contain the following information: - Customer name, Name of the equipment, Purchase Order number with Date, Address of the delivery site, Name and Address of the Sender, Serial Number of Agitator, BHEL	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

S.No	Description	Vendor to confirm
	item Code, Gross Weight and Net weight of Supplied items.	
16.	Prior to transport from manufacturer's work to destination, components of the unit shall be completely cleaned to remove any foreign particles. Flange faces and other machined surfaces shall be protected by an easily removable rust preventive coating followed by suitable wrapping.	
17.	All necessary painting, corrosion protection & preservation measures shall be taken as specified in painting schedule. Supplier shall consider the coastal environment zone which is defined as "very severe" during final finishing/shipping.	
18.	Successful bidder shall furnish the detail packing /shipment box details with information like packing box size, type of packing, weight of each consignment, sequence no. of dispatch, no. of consignment for each deliverable item against each billing break up units/ billable blocks. Without these details the BBU shall not be approved during detail engineering. Also, complete billing break-up with above mentioned details shall be submitted within 10days of LOI.	
19.	All items/equipment shall be dispatched in properly packed condition (i.e. no item shall be dispatched in loose condition such that it becomes difficult to store/identify its location at site at a later stage).	
20.	Cases which cannot be marked as above shall have metal tags with the necessary markings on them. The metal tags shall be securely attached to the packages with strong steel binding wire. Each piece, Skid, Case or package shipped separately shall be labelled or tagged properly.	
9.0	SUPERVISION OF ERECTION, TESTING AND COMMISSIONING	
1.	The erection of Agitators will be done by owner as per Erection Manual and check List. However, the bidder shall make one visit per boiler for the supervision of erection, pre-commissioning & post- commissioning check-up, start-up, testing and trial runs of all the items covered under the scope of supply. Only supervision for Absorber Agitators are required for the 3 rd visit.	
2.	There will be one visit per boiler and totally there will be 2 visits for 2 boilers. The bidder will be informed well in advance for the visit. Bidder shall include 15 working days for first visit & 5 working days each for 2 nd visit in the offer.	
3.	TA/DA, boarding and lodging shall be borne by the bidder and shall be inclusive in supply portion.	
10.0	EXCLUSION	
	The following work associated with the Agitators will be by others: a. Walkways, platforms and ladders b. Element handling hoists.	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

S.No	Description	Vendor to confirm
11.0	INSPECTION AND TESTING	
	The General inspection requirements to be considered are as below:	
1.	Bidder shall furnish written copies of shop production, fabrication and quality test procedures and drawings to be used on the Agitators for review by BHEL/NTPC prior to manufacture.	
2.	The Bidder shall furnish performance test procedure along with standard. The test procedure will be reviewed and approved by the BHEL/NTPC.	
3.	Since there is no standard for “Acceptance Test Procedure” for Agitator, Agitator manufacturer is to submit a test procedure and Quality Plan, clearly indicating that equipment will meet the desired parameter.	
4.	Power consumption at motor terminal and vibration of equipment will be conducted at site. Vendor to indicate other material tests that are to be conducted as per their practice in their Quality plan.	
5.	No liquid should enter the tube through any flange joint. “O”-ring used in the flange joint will deteriorate at a highly chlorinated and acidic environment of medium at a maximum operating temperature unless right quality of rubber is used. Hydrostatic testing of tube assembly is required at a pressure of twice that of maximum liquid column in any tank or 30m whichever is higher. The hydro test duration will be for a minimum of 1 hr to check sweating at any flange. Hydrostatic test is meant in part for a check of equipment joint at new condition only. It is cannot be considered as a guarantee of functional objective of rubber used.	
6.	DYNAMICS	
7.1	CRITICAL SPEED	
7.1.1	Operation speed of the Agitator motor shall be at least 25% below the first critical speed	
7.1.2	Additional to the requirement of the critical speed of Agitator, as specified above. Agitator manufacturer is to analyze the torsional critical speed of combined system of Agitator, Gear Box and Motor to establish that the torsional critical speed is well off the operating speed by 20% from the operating speed.	
7.2	VIBRATION SEVERITY	
7.2.1	During performance test, unfiltered vibration measurements shall be made with running of Agitator in Air. Measurement shall be taken on the Gear Box thrust bearing housings as well in motor top.	
7.2.2	Guaranteed Site vibration of the equipment on its own pedestal, at commissioning with normal level of liquid and with maximum liquid at respective tank, Vibration limit at site will be as per ISO-10816, 1.5-2.3mm/sec even if Motor rating falls below 15kw.	

**TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)****MAUDA:FGD:AGITATORS:R00**

S.No	Description	Vendor to confirm
7.2.3	Vibration measurements of bearing housing shall be made in root mean square (RMS) velocity.	
7.2.5	Vibration levels measured on the non-rotating parts shall not exceed the zone limit "B" as defined in ISO 10816 at steady conditions and shall not exceed the zone limit "C" as defined in ISO 10816 at transient conditions.	
8.	For surfaces with rubber lining Welding shall be visually inspected to verify the absence of rough area and unacceptable transition between surfaces which prevent the adequate adherence of rubber. The acceptance criteria shall be as per latest standard.	
9.	For surfaces with rubber lining, degree of cleaning shall be visually checked before the application of the coating. There must be no area with oxidation, dirt or partially or generalized corrosion defects.	
10.	Test certificates shall be issued for each lot of raw material used in the coating, corresponding to specific weight and traction resistance.	
11.	For surfaces with rubber lining, adherence test shall be conducted on production samples. Adherence test shall be conducted on the actual surface through hammering. In order to verify the absence of air packets (or) surface without adherence.	
12.	For surfaces with rubber lining, Coating thickness shall be checked at 100%. A High voltage porosity test will be conducted on 100 % of the coated surface.	
13.	Out of all Agitators One Number of each type will be inspected at the Bidder's works before dispatch or where the test facilities are available.	
14.	The Bidder shall conduct performance test for the remaining Agitators and submit the reports.	
15.	Contract shaft mechanical seals shall be used during shop tests, unless the seal design is unsuitable for the shop-test condition, if applicable.	
16.	Agitators shall not be released for shipment, until shop tests data and performance tests curves have been approved by Owner.	
17.	Bidder should furnish performance guarantee as per applicable standard guarantee for the design, manufacture, material and safe operation of the equipment's.	
18.	BHEL shall witness the test at Bidder's works and a notice of minimum three (3) weeks shall be given for attending the inspection.	
19.	Bidder to arrange all calibrated gauges, Instruments during inspection.	
20.	Mechanical running and the performance test shall be carried out. Bidder to arrange Motor of same / higher rating for the shop test and inspection.	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

S.No	Description	Vendor to confirm
12.0	PAINTING	
1.	Painting details for agitator support:- Surface Preparation : Blast Cleaning SA 2.5 PRIMER COAT: a. Primer: One coat of Two component moisture curing zinc (ethyl) silicate primer coat (Min 80% metallic zinc content in dry film, solid by volume minimum 60% ± 2). Zinc dust composition and properties shall be as per Type II as per ASTM D520-00 DFT- 70μ Intermediate : One coat of Two component polyamide cured epoxy with MIO content (containing lamellar MIO Min 30% on pigment, solid by volume min. 80%± 2) DFT- 100μ . FINISH COAT: Two coats of two pack aliphatic isocyanate cured acrylic polyurethane paint to IS 13213 solid by volume min.55%± 2) DFT- 35μ/ coat With gloss retention (SSPC paint spec no.36, ASTM D4587, D2244, D523 of level 2 after min. 1000 hrs exposure, gloss less than 30 and colour change less than 2.0Δ E) COLOUR CODE Base: To be informed during contract stage Lettering: To be informed during contract stage	
2.	Rust preventive paint after inspection at shop floor before dispatch shall be in bidder's scope	
3.	Corrosion protection, coating and galvanizing, painting shall be taken care by the bidder. Bidder shall submit the painting scheme during detail Engg in line with the specification and shall be subject to approval of BHEL / NTPC.	
13.0	SPARES,TOOLS & TACKLES	
	Any special tools & tackles required for the entire equipment to disassemble, assemble or maintain the units, they shall be included in the quotation and furnished as part of the initial supply of the machine. List of special tools & tackles shall be decided by bidder as per his proven practice. When special tools are provided, they shall be packaged in separate, boxes with lugs and marked as "Special Tools for (tag / item number)."Each tool shall be stamped or tagged to indicate its intended usage. Levers and eye bolts for the removal of parts to be serviced shall be submitted with special tools.	
13.1	START UP & COMMISSIONING SPARES Start-up & Commissioning Spares shall be part of the main supply of the Agitators. Start-up & commissioning spares are those spares which may be required during the start- up and commissioning of the equipment/system. All spares required for successful operation till commissioning of Agitator shall come under this category. Bidder shall provide an adequate stock of such start up and commissioning spares to be brought by him to the site for the equipment erection and commissioning. The spares must be available at site before the equipment's are energized. The List of such spares	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

S.No	Description	Vendor to confirm																																																			
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13.2	FINAL SPARES(RECOMMENDED SPARES)																																																				
	Bidders shall also furnish the Final Spares Part List (i.e. recommended spares list) along with the offer required for 3 years of normal operation of the plant and should be independent of the list of the mandatory spares. Prices of recommended spares will not be used for evaluation of the bids. The price of these spares will remain valid up to 6 months after placement of Notification of Award for the main equipment.																																																				
13.3	INITIAL SPARE PARTS (MANDATORY SPARES):																																																				
	Bidder to quote for below mentioned mandatory spares with break up price: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3">Agitators (for Absorber Tank, Auxiliary Absorbent Tank/Emergency Tank)</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">1</td><td>Impeller Assembly</td><td>1 no. of each type and size</td></tr> <tr><td style="text-align: center;">2</td><td>Bearing Assembly</td><td>1 no. of each type and size</td></tr> <tr><td style="text-align: center;">3</td><td>Motor</td><td>1 no. of each type and size</td></tr> <tr><td style="text-align: center;">4</td><td>Belt and Pulley (If applicable)</td><td>1 no. of each type and size</td></tr> <tr><td style="text-align: center;">5</td><td>Gear Box Assembly (If Applicable)</td><td>1 no. of each type and size</td></tr> <tr><td style="text-align: center;">6</td><td>Agitator Shaft Assembly</td><td>1 no. of each type and size</td></tr> <tr><td style="text-align: center;">7</td><td>Shaft Seal</td><td>1 no. of each type and size</td></tr> <tr><td style="text-align: center;">8</td><td>Complete Agitator Assembly</td><td>1 no. of each type and size</td></tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3">Agitators (for Limestone Slurry Storage Tank, Secondary hydrocyclone feed, Waste water, Filtrate tank and any other tank provided with agitators)</th> </tr> </thead> <tbody> <tr><td style="text-align: center;">1</td><td>Impeller Assembly</td><td>1 no. of each type and size</td></tr> <tr><td style="text-align: center;">2</td><td>Bearing Assembly</td><td>1 no. of each type and size</td></tr> <tr><td style="text-align: center;">3</td><td>Motor</td><td>1 no. of each type and size</td></tr> <tr><td style="text-align: center;">4</td><td>Belt and Pulley (If applicable)</td><td>1 no. of each type and size</td></tr> <tr><td style="text-align: center;">5</td><td>Gear Box Assembly (If Applicable)</td><td>1 no. of each type and size</td></tr> <tr><td style="text-align: center;">6</td><td>Shaft Seal</td><td>1 no. of each type and size</td></tr> <tr><td style="text-align: center;">7</td><td>Complete Agitator Assembly</td><td>1 no. of each type and size</td></tr> </tbody> </table> Bidder shall quote for the “Initial Spares Part List”, and it will be considered for L1 evaluation. Initial spare parts items shall be handed over separately and shall not be mixed with the supply of the main equipment parts. Spares shall be sent in pre-decided lots in containers/secure boxes. All boxes/containers are to be distinctly marked in red color with boldly written “S” mark on each face of the containers. Spares shall not be dispatched before dispatch of corresponding main equipment’s. Each item shall be labelled in English and be packed against damage and sealed to prevent deterioration from corrosion. The protection shall be sufficient for a minimum of 10 years’ storage in a dry weatherproof building.	Agitators (for Absorber Tank, Auxiliary Absorbent Tank/Emergency Tank)			1	Impeller Assembly	1 no. of each type and size	2	Bearing Assembly	1 no. of each type and size	3	Motor	1 no. of each type and size	4	Belt and Pulley (If applicable)	1 no. of each type and size	5	Gear Box Assembly (If Applicable)	1 no. of each type and size	6	Agitator Shaft Assembly	1 no. of each type and size	7	Shaft Seal	1 no. of each type and size	8	Complete Agitator Assembly	1 no. of each type and size	Agitators (for Limestone Slurry Storage Tank, Secondary hydrocyclone feed, Waste water, Filtrate tank and any other tank provided with agitators)			1	Impeller Assembly	1 no. of each type and size	2	Bearing Assembly	1 no. of each type and size	3	Motor	1 no. of each type and size	4	Belt and Pulley (If applicable)	1 no. of each type and size	5	Gear Box Assembly (If Applicable)	1 no. of each type and size	6	Shaft Seal	1 no. of each type and size	7	Complete Agitator Assembly	1 no. of each type and size	
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**TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)****MAUDA:FGD:AGITATORS:R00**

S.No	Description	Vendor to confirm
	All spares supplied under this contract shall be strictly inter-changeable with the parts for which they are intended for replacements. All the Initial spares shall be manufactures along with the main equipment components as a continuous operation as per same specification and quality plan. Any special tools & tackles required for the entire equipment to disassemble, assemble or maintain the units, they shall be included in the quotation and furnished as part of the initial supply of the machine. List of special tools & tackles shall be decided by bidder as per his proven practice. When special tools are provided, they shall be packaged in separate, boxes with lugs and marked as "Special Tools for (tag / item number)." Each tool shall be stamped or tagged to indicate its intended usage. Levers and eye bolts for the removal of parts to be serviced shall be submitted with special tools.	
14.0	PERFORMANCE GUARANTEE	
	All performance tests for Agitators shall be carried out in accordance with any latest international codes/standards. Bidder shall furnish Performance guarantee for the design, manufacture, material, safe and trouble-free operation of the Agitators and its accessories The Bidder shall ensure a design of the equipment to achieve an average target availability of 98% for 120 days and average target availability of 95% for 1 year. Noise level ≤ 85 dB (A) at 1m horizontal distance from equipment/enclosures and 1.5m above operating floor is to be guaranteed. Vibration levels measured on the non-rotating parts shall not exceed the zone limit "B" as defined in ISO 10816 at steady conditions and shall not exceed the zone limit "C" as defined in ISO 10816 at transient conditions. Acceptance tests to be carried out as per the procedure defined by the bidder which shall be submitted for BHEL/ NTPC approval. In the event that the performance test is unsuccessful, bidder shall take necessary remedial action at his cost and the performance test shall be repeated.	
15.0	BID EVALUATION CRITERIA FOR POWER CONSUMPTION:	
1.	POWER GUARANTEE Bidder to specify the total guaranteed power per Agitators operating at the rated capacity in their offer	
2.	BID EVALUATION CRITERIA FOR POWER CONSUMPTION: The following agitators will be considered for power consumption: 1) Filtrate Water Tank Agitator 2) Waste Water Hydrocyclone Feed Tank Agitator	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

S.No	Description	Vendor to confirm
	3) Waste Water Tank Agitator 4) Limestone Slurry Storage Tank Agitator 5) Primary Hydrocyclone Feed Tank Agitator The best of the parameter for auxiliary power consumption quoted by any qualified bidder shall be taken as the base or ceiling value. Bid prices of other bidders will be loaded for every KW excess over the ceiling value as per the formula given below. Adjustment factor for excess power consumption = $(GPC-CV) \times PL \times \text{No's of Working Agitators}$ GPC- Guaranteed Power Consumption quoted by bidder in KW CV- base Value i.e. lowest quoted power consumption in KW PL- Power Loading @ 115960 INR per KW	
16.0	LIQUIDATED DAMAGES FOR POWER CONSUMPTION	
	If actual Power Consumption during prove out (or) PG Test operating at the duty point exceeds the value guaranteed by the bidder, liquidated damages for shortfall in performance shall be deducted from contract price as per the formula given below Liquidated damage deductible in INR = $(APC-GPC) \times P \times \text{Total no of working agitators}$ Where GPC- Guaranteed Power Consumption quoted by bidder in KW APC- Actual Power Consumption in KW N- Total Number of Agitators P- Penalty @139360 INR per KW	
17.0	WARRANTY\DEFECT LIABILITY	
1.	The Bidder warrants that the equipment's/items shall be free from defects in the design, engineering, materials and workmanship of the Plant and Equipment supplied and of the work executed. The Warranty period shall be 36 months from the date of supply or 24 months from the date of commissioning, whichever first occurs. If during the Defect Liability Period any defect should be found in the design, engineering, materials and workmanship of the Plant and Equipment supplied or of the work executed by the Bidder, the Bidder shall promptly, in consultation and agreement with BHEL regarding appropriate remedying of the defects, and at its cost, repair, replace or otherwise make good (as the Bidder shall, at its discretion, determine) such defect as well as any damage to the Facilities caused by such defect.	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

S.No	Description	Vendor to confirm
2.	In case of failure of the equipment to meet the guarantee, NTPC/BHEL reserves the right to reject the equipment. However, NTPC/BHEL reserves the right to use the equipment until new equipment supplied by bidder meets the guaranteed requirement .	
18.0	FIRST FILL OF CONSUMABLES:	
1.	Bidder's scope shall also include supply and filling of all chemicals, reagents, resins, lubricants, grease, filters and consumable items for operation up to commissioning including top up requirements. All lubricants proposed for the plant operation shall be suitable for all operating and environmental conditions that will be met on site consistent with good maintenance procedures as instructed in the maintenance manuals.	
2.	Detailed specifications for the lubricating oil, grease, gases, servo fluids, control fluids, chemicals including items qualities and quantities required per month of the plant operation for the NTPC/BHEL's approval herein shall be furnished within 2 months of placement of Order. On completion of erection complete list of bearings/equipment giving their location and identification marks shall be furnished to BHEL along with lubrication requirements. All types of consumables, lubricants and grease shall be readily obtainable locally and the number of different types shall be kept to a minimum. For each type and grade of lubricant recommended, bidder shall list at least three equivalent lubricants manufactured by alternative companies.	
19.0	TRAINING	
	Successful bidder shall provide comprehensive training for NTPC/BHEL Engineering, O&M, Erection & Commissioning staffs at site covering all aspects of the Agitators - Operation & Maintenance, Troubleshooting etc.	
20.0	CONFLICT	
	Bidder's equipment shall be designed for and shall meet the service, performance and minimum level of quality requirements specified. Bidder shall be solely responsible for advising BIFPCL in writing of any conflicts between the specifications and Bidder's design, including performance and levels of quality. Bidder agrees that its obligations, liabilities and warranties shall not be diminished or extinguished due to its meeting the requirements of the Specification.	
21.0	DOCUMENTATION	
A	DOCUMENTS TO BE SUBMITTED ALONG WITH THE OFFER	
	The Bidder shall submit all documents, drawings, diagrams and all such information, which are necessary to fully understand the offer for techno – commercial evaluation as per Annexure VI. Annexure VI documents are required for proper evaluation purpose	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

S.No	Description	Vendor to confirm
	and vendors are requested to comply with above in all respect.	
B	DOCUMENTS TO BE SUBMITTED AFTER AWARD OF CONTRACT	
	The Successful bidder shall submit necessary data, documents and drawings for review, approval as specified under Annexure VI. Drawings that are reviewed by the NTPC/ BHEL will be returned to bidder with a transmittal letter with any comments and / or questions marked on the drawings or noted in the letter. All comments and questions must be resolved before a resubmission of drawings / documents. If the design has not developed enough to resolve some of the comments or questions, bidder shall place a “hold” on those items or areas of design. NTPC/ BHEL reserves the right to return drawings unprocessed to bidder if there exists any evidence that bidder has not acknowledged all comments and questions. All necessary GA drawings, sections, sub-assembly drawings, specifications of main and sub components and necessary set of operation & maintenance manual as asked by NTPC must be furnished by bidder in soft and hard copy forms. For all documents softcopy format shall be searchable pdf, however in addition all drawings, diagrams shall be supplied in ACAD or other editable format and all lists in Excel format. Further break up of technical documents will be discussed during finalization of the purchase contract. Unless agreed otherwise, Ten (10) hard copies and five (05) sets of electronic copies of all documents are to be submitted in the English language. Electronic Copies shall be submitted in primary original data format (e.g. DOC, XLS, DWG) as well as in a printable non-proprietary document format (e.g. PDF). Especially P&IDs shall be submitted as DWG files and PDF files. Bidder to ensure submission of hard copies as per NTPC requirement for all engineering drg/doc and for all subsequent revisions along with a soft copy through email to concerned project team.	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

22. REFERENCE DOCUMENTS

NTPC MOTOR SPECIFICATION



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

23.0 ANNEXURES

ANNEXURE-I Qualification requirement

(REFER QR WITH ATTACHMENT 3K)



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

ANNEXURE – II- TECHNICAL DATA SHEET (To Be filled for each type of Agitator)

Sl.no	General	Units		Description
1.1	Project		:	Mauda 2x500MW,NTPC
1.2	End Customer		:	NTPC
1.3	Location		:	Flue Gas Desulphurization (FGD) Plant
1.4	Order Number/Enquiry No		:	
1.5	Agitator Name		:	
1.6	Service		:	
1.7	Installation		:	
1.8	No. of Agitator per Tank		:	
1.9	Total No's of Agitator for both the units.		:	
1.10	Type of Agitator		:	
1.11	Model Number		:	
1.12	No of Stage(No of propeller per Agitator)		:	
1.13	Mounting of Agitator		:	
1.14	Mounting of Gear Head		:	
1.15	Mounting of Motor		:	
2	Performance Details		:	
a.	Input power at Motor terminal at highest frequency and Maximum liquid level in tank	KW	:	
b.	Input power at Motor terminal at Normal frequency (50Hz) and Normal liquid level in tank	KW	:	
c.	Motor rating	KW	:	
d.	Rated speed	rpm	:	
e.	Direction of rotation of Motor and Gear box viewed from Motor non-driving end		:	Motor (CW/CCW) & GH(CW/CCW)
f.	Direction of rotation of Agitator viewed from Gear head end		:	(CW/CCW)
g.	Minimum submergence required over blade centre line for continuous operation	mm	:	###
h.	Impeller diameter	mm	:	
i.	Minimum clearance required below impeller centre line	mm	:	
j.	Maximum liquid level over propeller centre line up to which Agitator can work without overloading of motor at 50Hz	mm	:	
3	Construction Features		:	
3.1	Impeller		:	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

	a) Type		:	
	b) Diameter(tip to tip)	mm	:	
	c) Hub diameter	mm	:	
	d) No of blade per Impeller		:	
	e) Thickness of blade	mm	:	
3.2	Tube thickness, if any	mm	:	
3.3	Shaft diameter at coupling (GH-Agitator)	mm	:	
3.4	Length of Top shaft	mm	:	
3.5	Connection Details			
	• Blade to Hub:		:	
	• Hub to Shaft/Tube		:	
	• Line Shaft to Line shaft		:	
	• Line shaft to top shaft		:	
3.6	Bearings in Gear Head			
	Thrust bearings Housing			
	a) Type		:	
	b) Make		:	
	Bearing Number			
	• Radial Bearing		:	
	• Radial Bearing		:	
	• Thrust Bearing		:	
	c) Type of lubrication		:	
	d) Lubricator		:	
3.7	Coupling between Agitator & Gear Head			
	a) Type		:	
	c) Rating	KW/rp m	:	
3.8	Stuffing Box/Mechanical Seal			
	a) Type		:	
	b) Details of gland packing		:	
	c) No of packing		:	
	d) Cooling water		:	
	e) Lubrication type		:	
	f) Qty of grease and interval of lubrication.		:	
4	Material of Construction			
a.	Blade of Impeller		:	
b.	Hub of Impeller		:	
c.	Base Plate/Gear head Stand		:	
d.	Line Shaft & Line shaft Coupling		:	
e.	Impeller Shaft		:	
f.	Top Shaft		:	
g.	Gland Sleeve		:	
h.	Location of Thrust bearing		:	
i.	Coupling guard		:	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

j.	Fasteners in Wet region		:	
k.	Fasteners in Dry region		:	
l.	Stuffing Box		:	
m.	Gland		:	
n.	Gland packing		:	
5	Weight			
	a) Bare Agitator weight	Kgs	:	###
	b)Rotating Assembly weight	Kgs	:	###
	c) Motor weight	Kgs	:	###
	d) Gear Head weight	Kgs	:	###
	e)Wt. of the equipment, (a+c+d)		:	###
	f) Heaviest single piece component of Agitator to be handled.	Kgs	:	###

SIGNATURE OF BIDDER -----

NAME -----

DESIGNATION -----

BIDDER SIGN WITH SEAL AND DATE:



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

ANNEXURE III- SCHEDULE OF GUARANTEES TO BE FILLED INDEPENDENTLY FOR EACH TANK'S (AGITATORS)

Sl. No.	Description	Unit	Data
1	Rated Input Power at Motor Terminal at Normal water level and at Normal voltage and Frequency (*)	KW	###
2	Possible Rate of deposit of solid particles at tank bottom of total solid particle inflow/outflow	%	###
2	Noise level at a distance of 1.0 meter from the equipment at site	dB(A)	85
3	Maximum vibration velocity at site) (RMS)	mm/sec	2.3
4	Life of Agitator components parts from the date of Commissioning for continuous operation		24 months
	Anti-friction Bearing		25000 hrs.

Note:

- (*) -Any excess KW at motor terminal will be liable to charge (Power Loading) (###) –Data to be filled up by vendor

SIGNATURE OF VENDOR

NAME

DESIGNATION

BIDDER SIGN WITH SEAL AND DATE:



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

ANNEXURE – IV

a) REFERENCE LIST as per format shown below. (Atleast two reference plant details)

S.No	Project Name , Customer & Plant capacity	Coal fired Yes/No	Wet Limest one Based FGD Yes/No	Model	Size of Tank	Type / Hor / Vertical	Speed rpm	Year of Commg	Qty

SIGNATURE OF BIDDER -----

NAME -----

DESIGNATION -----

BIDDER SIGN WITH SEAL AND DATE:



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

ANNEXURE – V- LIST OF DEVIATIONS/EXCEPTIONS TO THE ENQUIRY DOCUMENT

Sl No	Clause No	Page No	Description of Deviation

Note: Enlarge the table to incorporate items

SIGNATURE OF BIDDER -----

NAME -----

DESIGNATION -----

BIDDER SIGN WITH SEAL AND DATE:



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

ANNEXURE -VI

A) DOCUMENTS TO BE SUBMITTED ALONG WITH THE OFFER / AWARD OF CONTRACT:

Sl. No.	Description	With Proposal	After Award Of Contract
1.	Compliance of specification	yes	--
2.	Deviation List	Yes	--
3.	Performance Curve	yes	Yes
4.	General Assembly Drawing	Yes	Yes
5.	Motor Sizing Calculation	Yes	--
6.	Cross-sectional Drawing	Yes	Yes
7.	Data Sheet	Yes	Yes
8.	Sub-Vendor List	yes	Yes
9.	Material Test Certificates	--	yes
10.	Erection check list	--	yes
11.	Pre Commissioning Check List	--	yes
12.	Scope of Supply	Yes	--
13.	Quality Plan	yes	Yes
14.	Operation & Maintenance Manual	--	10 copies + CD
15.	Spare List (Mandatory., Recommended)	Yes	Yes
16.	Start-up & Commissioning Spare	yes	Yes
17.	List of Special Tools	Yes	Yes
18.	Delivery Schedule	yes	yes
19.	Test Arrangement	Yes	Yes
20.	T-N curve	Yes	Yes
21.	Motor Drawing	Yes	Yes
22.	Curve of Motor (T-N, Efficiency, time etc.)	Yes	Yes
23.	Catalogue	Yes	--

SIGNATURE OF VENDOR _____

NAME _____

DESIGNATION _____



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

ANNEXURE-VII

TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING (APPLICABLE FOR SUPPLIES FROM OUTSIDE INDIA)

Refer to Specification No: PE-TS-888-100-A001 for detailed specification on Seaworthy packing.

SIGNATURE OF BIDDER -----

NAME -----

DESIGNATION -----



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

ANNEXURE-VIII

INSPECTION & TESTING

Inspection and testing will be done as per NTPC approved Quality Plan. In case of order placed on foreign Vendor, Vendor shall engage and appoint at their cost of any reputed Third Party Inspection Agencies having international presence for carrying out inspection of equipment's and material at vendor's & sub vendors works. Sample QP(indicative) is attached herewith for reference, however any change during final approval shall be accepted by vendor.

Note:

- Enlarge the table to incorporate items
- Set to be interpreted as a complete unit

SIGNATURE OF BIDDER _____

NAME _____

DESIGNATION _____

BIDDER SIGN WITH SEAL AND DATE:



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

ANNEXURE-IX

LT MOTOR DATASHEET

NTPC format- LT motor Data sheet

DE-1	LT MOTORS	
A.	GENERAL	
1.	Manufacturer & Country of origin.	
2.	Equipment driven by motor	
3.	Motor type	
4.	Quantity	
B.	DESIGN AND PERFORMANCE DATA	
1.	Frame size	
2.	Type of duty	
3.	Type of enclosure /Method of cooling/ Degree of protection	
4.	Applicable standard to which motor generally conforms	
5.	Efficiency class as per IS 12615(IE3)	
6.	(a)Whether motor is flame proof	
	(b)If yes, the gas group to which it conforms as per IS:2148	
7.	Type of mounting	
8.	Direction of rotation as viewed from DE END	
9.	Standard continuous rating at 40 deg.C. Ambient temp. as per Indian Standard (KW)	
10.	Derated rating for specified normal condition i.e. 50 deg. C ambient temperature (KW)	
11.	Maximum continuous load demand of driven equipment in KW	
12.	Rated Voltage (volts)	
13.	Permissible variation of :	
	a. Voltage (Volts)	
	b. Frequency (Hz)	
	c. Combined voltage and frequency	
14.	Rated speed at rated voltage and frequency(RPM)	
15.	At rated Voltage and frequency:	
	a. Full load current	
	b. No load current	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

16.	Power Factor at	
	a. 100%/75%/50% load	
	b. NO load	
	c. Starting.	
17.	Efficiency at rated voltage and frequency,	
	a. 100% load	
	b. 75% load	
	c. 50% load	
18.	Starting current (amps) at	
	a. 100 % voltage	
	b. 85% voltage	
	c. 80% voltage	
19.	Minimum permissible starting Voltage (Volts)	
20.	Starting time with minimum permissible voltage/80%/ 100%/ 110%	
	a. Without driven equipment coupled	
	b. With driven equipment coupled	
21.	Safe stall time with 100% ,110% & 80% of rated voltage	
	a. From hot condition	
	b. From cold condition	
22.	Torques :	
	a. Starting torque at min. permissible voltage(kg-mtr.)/ rated voltage	
	b. Pull up torque at rated voltage.	
	c. Pull out torque	
	d. Min accelerating torque (kg.m) available at lowest permissible starting voltage	
	e. Rated torque (kg.m)	
23.	Stator winding resistance per phase (ohms at 20 Deg.C.)	
24.	GD ² value of motors	
25.	No of permissible successive starts when motor is in hot	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

26.	Locked Rotor KVA Input	
27.	Locked Rotor KVA/KW	
28.	Vibration limit :Velocity (mm/s)	
29.	Noise level limit (dBA)	
C.	CONSTRUCTIONAL FEATURES	
1.	Stator winding insulation	
	a. Class & Type	
	b. Winding Insulation Process	
	c. Tropicalised (Yes/No)	
	d. Temperature rise over specified maximum ambient temperature of 50 deg C	
	e. Method of temperature measurement	
	f. Stator winding connection	
2.	Main Terminal Box	
	a. Type	
	b. Location(viewed from NDE side)	
	c. Entry of cables(bottom/side)	
	d. Recommended cable size(To be matched with cable size envisaged by owner)	
	e. Fault level (MVA),Fault level duration(sec)	
	f. Cable glands & lugs details (shall be suitable for power cable)	
3.	Type of DE/NDE Bearing	
4.	Motor Paint shade	
5.	Weight of	
	a. Motor stator (KG)	
	b. Motor Rotor (KG)	
	c. Total weight (KG)	
D.	List of accessories.	
1. 3.	Space Heaters (Nos./Power in watts/supply voltage)	
2.	Terminal Box for Space Heater (Yes/No)	



TECHNICAL SPECIFICATION OF AGITATORS –MAUDA (2X500MW)

MAUDA:FGD:AGITATORS:R00

3.	Speed switch (Yes/No) No of contacts and contact ratings of speed switch	
4.	Insulation of bearing (Yes/No)	
5.	Noise reducer(Yes/No)	
6.	Grounding pads	
	i) No and size on motor body	
	ii) Nos on terminal Box	
7.	Any other fitments	
E.	List of curves.	
1.	Torque speed characteristic of the motor	
2.	Thermal withstand characteristic	
3.	Starting. current Vs. Time	
4.	Starting. current Vs speed	
5.	P.F. and Effi. Vs Load	

SIGNATURE OF BIDDER -----

NAME -----

DESIGNATION -----

BIDDER SIGN WITH SEAL AND DATE:

**CLAUSE 22. NTPC MOTOR
SPECIFICATION**

CLAUSE NO.	SPECIFICATION		एनटीपीसी NTPC
TECHNICAL REQUIREMENTS			
MOTORS			
1.00.00	GENERAL REQUIREMENTS		
1.01.00	For the purpose of design of equipment/systems, an ambient temperature of 50 deg. Centigrade and relative humidity of 95% (at 40 deg C) shall be considered. The equipment shall operate in a highly polluted environment.		
1.02.00	All equipment's shall be suitable for rated frequency of 50 Hz with a variation of +3% & -5%, and 10% combined variation of voltage and frequency unless specifically brought out in the specification.		
1.03.00	Contactor shall provide fully compatible electrical system, equipment's, accessories and services.		
1.04.00	All the equipment, material and systems shall, in general, conform to the latest edition of relevant National and international Codes & Standards, especially the Indian Statutory Regulations.		
1.05.00	Paint shade shall be as per RAL 5012 (Blue) for indoor and outdoor equipment.		
1.06.00	The responsibility of coordination with electrical agencies and obtaining all necessary clearances for Contactors equipment and systems shall be under the Contactor scope.		
1.07.00	Degree of Protection		
	Degree of protection for various enclosures as per IEC60034-05 shall be as follows :-		
	i) Indoor motors	-	IP 54
	ii) Outdoor motors	-	IP 55
	iii) Cable box-indoor area	-	IP 54
	iv) Cable box-Outdoor area	-	IP 55
2.00.00	CODES AND STANDARDS		
	1) Three phase induction motors	:	IS/IEC:60034
	2) Single phase AC motors	:	IS/ IEC:60034
	3) Crane duty motors	:	IS:3177, IS/IEC:60034
	4) DC motors/generators	:	IS:4722, IS/IEC:60034
	5) Energy Efficient motors	:	IS 12615, IEC:60034-30

CLAUSE NO.	TECHNICAL REQUIREMENTS 
6.01.03	For motors with starting time more than 45 secs. at minimum permissible voltage during starting, the locked rotor withstand time under hot condition at highest voltage limit shall be more than starting time by at least 10% of the starting time.
6.01.04	Speed switches mounted on the motor shaft shall be provided in cases where above requirements are not met.
6.02.00	Torque Requirements
6.02.01	Accelerating torque at any speed with the lowest permissible starting voltage shall be at least 10% motor full load torque.
6.02.02	Pull out torque at rated voltage shall not be less than 205% of full load torque. It shall be 275% for crane duty motors.
6.03.00	Starting voltage requirement (a) Up to 85% of rated voltage for ratings below 110 KW (b) Up to 80% of rated voltage for ratings from 110 KW to 200 KW (c) Up to 85% of rated voltage for ratings from 201 KW to 1000 KW (d) Up to 80% of rated voltage for ratings from 1001 KW to 4000 KW (e) Up to 75 % of rated voltage for ratings above 4000KW
7.00.00	DESIGN AND CONSTRUCTIONAL FEATURES
7.01.00	Suitable single phase space heaters shall be provided on motors rated 30KW and above to maintain windings in dry condition when motor is standstill. Separate terminal box for space heaters & RTDs shall be provided. However for flame proof motors, space heater terminals inside the main terminal box may be acceptable.
7.02.00	All motors shall be either Totally enclosed fan cooled (TEFC) or totally enclosed tube ventilated (TETV) or Closed air circuit air cooled (CACA) type. However, motors rated 3000KW or above can be Closed air circuit water cooled (CACW). The method of movement of primary and secondary coolant shall be self-circulated by fan or pump directly mounted on the rotor of the main motor as per IEC 60034-6. However VFD driven motors can be offered with forced cooling type with machine mounted fan or pump driven by separate electric motor. Motors and EPB located in hazardous areas shall have flame proof enclosures conforming to IS:2148 as detailed below (a) Fuel oil area : Group – IIB (b) Hydrogen generation : Group - IIC or (Group-I, Div-II as per plant area NEC) or (Class-1, Group-B, Div-II as per NEMA /IEC60034)



CLAUSE NO.	TECHNICAL REQUIREMENTS 
7.03.00	Winding and Insulation (a) Type : Non-hygroscopic, oil resistant, flame resistant (b) Starting duty : Two hot starts in succession, with motor initially at normal running temperature. (c) 11kV & 3.3 kV AC motors : Thermal class 155 (F) insulation. The winding insulation process shall be total Vacuum Pressure Impregnated i.e resin poor method. The lightning Impulse & interturn insulation surge withstand level shall be as per IEC-60034 part-15. (d) 240VAC, 415V AC & 220V DC motors : Thermal Class (B) or better
7.04.00	Motors rated above 1000KW shall have insulated bearings to prevent flow of shaft currents.
7.05.00	Motors with heat exchangers shall have dial type thermometer with adjustable alarm contacts to indicate inlet and outlet primary air temperature.
7.06.00	Noise level for all the motors shall be limited to 85 dB(A) except for BFP motor for which the maximum limit shall be 90dB(A). Vibration shall be limited within the limits prescribed in IS:12075 / IEC 60034-14 . Motors shall withstand vibrations produced by driven equipment. HT motor bearing housings shall have flat surfaces, in both X and Y directions, suitable for mounting 80mmX80mm vibration pads.
7.07.00	In HT motors, at least four numbers simplex / two numbers duplex platinum resistance type temperature detectors shall be provided in each phase stator winding. Each bearing of HT motor shall be provided with dial type thermometer with adjustable alarm contact and preferably 2 numbers duplex platinum resistance type temperature detectors.
7.08.00	Motor body shall have two earthing points on opposite sides.
7.09.00	11 KV motors shall be offered with Separable Insulated Connector (SIC) as per IEEE 386. The offered SIC terminations shall be provided with protective cover and trifurcating sleeves. SIC termination kit shall be suitable for fault level of 25 KA for 0.17 seconds.
7.10.00	3.3 KV motors shall be offered with dust tight phase separated double walled (metallic as well as insulated barrier) Terminal box. Employer shall provide termination kit for the offered Terminal box. The offered Terminal Box shall be suitable for fault level of 250 MVA for 0.12 sec. Removable gland plates of thickness 3 mm (hot/cold rolled sheet steel) or 4 mm (non magnetic material for single core cables) shall be provided.

CLAUSE NO.	TECHNICAL REQUIREMENTS																
7.11.00	The spacing between gland plate & centre of terminal stud shall be as per Table-I.																
7.12.00	All motors shall be so designed that maximum inrush currents and locked rotor and pullout torque developed by them at extreme voltage and frequency variations do not endanger the motor and driven equipment.																
7.13.00	The motors shall be suitable for bus transfer schemes provided on the 11kV, 3.3 kV /415V systems without any injurious effect on its life.																
7.14.00	For motors rated 2000 KW & above, neutral current transformers of PS class shall be provided on each phase in a separate neutral terminal box.																
7.15.00	The size and number of cables (for HT motors) to be intimated to the successful Contactor during detailed engineering and the Contactor shall provide terminal box suitable for the same.																
8.00.00	The ratio of locked rotor KVA at rated voltage to rated KW shall not exceed the following (without any further tolerance): <table><tr><td>(a) From 50KW & upto 110KW</td><td>:</td><td>11.0</td></tr><tr><td>(b) From 110 KW & upto 200 KW</td><td>:</td><td>9.0</td></tr><tr><td>(c) Above 200 KW & upto 1000KW</td><td>:</td><td>10.0</td></tr><tr><td>(d) From 1001KW & upto 4000KW</td><td>:</td><td>9.0</td></tr><tr><td>(e) Above 4000KW</td><td>:</td><td>6 to 6.5</td></tr></table>	(a) From 50KW & upto 110KW	:	11.0	(b) From 110 KW & upto 200 KW	:	9.0	(c) Above 200 KW & upto 1000KW	:	10.0	(d) From 1001KW & upto 4000KW	:	9.0	(e) Above 4000KW	:	6 to 6.5	
(a) From 50KW & upto 110KW	:	11.0															
(b) From 110 KW & upto 200 KW	:	9.0															
(c) Above 200 KW & upto 1000KW	:	10.0															
(d) From 1001KW & upto 4000KW	:	9.0															
(e) Above 4000KW	:	6 to 6.5															
10.00.00	TYPE TEST																
10.01.00	HT MOTORS																
10.01.01	The Contactor shall carry out the type tests as listed in this specification on the equipment to be supplied under this contract. The Contactor shall indicate the charges for each of these type tests separately in the relevant schedule of Section - VII- (BPS) and the same shall be considered for the evaluation of the bids. The type tests charges shall be paid only for the test(s) actually conducted successfully under this contract and upon certification by the Employer's engineer.																
10.01.02	The type tests shall be carried out in presence of the Employer's representative, for which minimum 15 days notice shall be given by the Contactor. The Contactor shall obtain the Employer's approval for the type test procedure before conducting the type test. The type test procedure shall clearly specify the test set-up, instruments to be used, procedure, acceptance norms, recording of different parameters, interval of recording, precautions to be taken etc. for the type test(s) to be carried out.																
10.01.03	In case the Contactor has conducted such specified type test(s) within last ten years as on the date of bid opening, he may submit during detailed engineering																

CLAUSE NO.	TECHNICAL REQUIREMENTS
10.01.04 10.01.05 10.01.06	the type test reports to the Employer for waiver of conductance of such test(s). These reports should be for the tests conducted on the equipment similar to those proposed to be supplied under this contract and test(s) should have been either conducted at an independent laboratory or should have been witnessed by a client. The Employer reserves the right to waive conducting of any or all the specified type test(s) under this contract. In case type tests are waived, the type test charges shall not be payable to the Contactor. Further the Contactor shall only submit the reports of the type tests as listed in "LIST OF TESTS FOR WHICH REPORTS HAVE TO BE SUBMITTED" and carried out within last ten years from the date of bid opening. These reports should be for the test conducted on the equipment similar to those proposed to be supplied under this contract and the test(s) should have been either conducted at an independent laboratory or should have been witnessed by a client. However if the Contactor is not able to submit report of the type test(s) conducted within last ten years from the date of bid opening, or in the case of type test report(s) are not found to be meeting the specification requirements, the Contactor shall conduct all such tests under this contract at no additional cost to the Employer either at third party lab or in presence of client/Employers representative and submit the reports for approval. LIST OF TYPE TESTS TO BE CONDUCTED The following type tests shall be conducted on each type and rating of HT motor (a) No load saturation and loss curves upto approximately 115% of rated voltage (b) Measurement of noise at no load. (c) Momentary excess torque test (subject to test bed constraint). (d) Full load test(subject to test bed constraint) (e) Temperature rise test at rated conditions. During heat run test, bearing temp., winding temp.,coolant flow and its temp. shall also be measured. In case the temperature rise test is carried at load other than rated load, specific approval for the test method and procedure is required to be obtained. Wherever ETD's are provided, the temperature shall be measured by ETD's also for the record purpose. LIST OF TESTS FOR WHICH REPORTS HAVE TO BE SUBMITTED The following type test reports shall be submitted for each type and rating of HT motor (a) Degree of protection test for the enclosure followed by IR, HV and no load run test.

CLAUSE NO.	TECHNICAL REQUIREMENTS 
	(b) Terminal box-fault level withstand test for each type of terminal box of HT motors only. (c) Lightning Impulse withstand test on the sample coil shall be as per clause no. 4.3 IEC-60034, part-15 (d) Surge-withstand test on inter-turn insulation shall be as per clause no. 4.2 of IEC 60034, part-15
10.02.00	LT Motors
10.02.01	LT Motors supplied shall be of type tested design. During detailed engineering, the Contactor shall submit for Employer's approval the reports of all the type tests as listed in this specification and carried out within last <i>ten</i> years from the date of bid opening. These reports should be for the test conducted on the equipment similar to those proposed to be supplied under this contract and the test(s) should have been either conducted at an independent laboratory or should have been witnessed by a client.
10.02.02	However if the Contactor is not able to submit report of the type test(s) conducted within last ten years from the date of bid opening, or in the case of type test report(s) are not found to be meeting the specification requirements, the Contactor shall conduct all such tests under this contract at no additional cost to the Employer either at third party lab or in presence of client/Employers representative and submit the reports for approval.
10.02.03	LIST OF TESTS FOR WHICH REPORTS HAVE TO BE SUBMITTED The following type test reports shall be submitted for each type and rating of LT motor of above 50 KW only 1. Measurement of resistance of windings of stator and wound rotor. 2. No load test at rated voltage to determine input current power and speed 3. Open circuit voltage ratio of wound rotor motors (in case of Slip ring motors) 4. Full load test to determine efficiency power factor and slip 5. Temperature rise test 6. Momentary excess torque test. 7. High voltage test 8. Test for vibration severity of motor. 9. Test for noise levels of motor(Shall be limited as per clause no 7.06.00 of this section)

CLAUSE NO.	TECHNICAL REQUIREMENTS
10.03.00 10.04.00	10. Test for degree of protection and 11. Overspeed test. 12. Type test reports for motors located in fuel oil area having flame proof enclosures as per IS 2148 / IEC 60079-1 All acceptance and routine tests as per the specification and relevant standards shall be carried out. Charges for these shall be deemed to be included in the equipment price. The type test reports once approved for any projects shall be treated as reference. For subsequent projects of NTPC, an endorsement sheet will be furnished by the manufacturer confirming similarity and "No design Change". Minor changes if any shall be highlighted on the endorsement sheet.

TABLE - I

DIMENSIONS OF TERMINAL BOXES FOR LV MOTORS

Motor MCR in KW	Minimum distance between centre of
	stud and gland plate in mm
UP to 3 KW	As per manufacturer's practice.

Above 3 KW - upto 7 KW	85
Above 7 KW - upto 13 KW	115
Above 13 KW - upto 24 KW	167
Above 24 KW - upto 37 KW	196
Above 37 KW - upto 55 KW	249
Above 55 KW - upto 90 KW	277
Above 90 KW - upto 125 KW	331
Above 125 KW-upto 200 KW	203

For HT motors the distance between gland plate and the terminal studs shall not be less than 500 mm.

PHASE TO PHASE/ PHASE TO EARTH AIR CLEARANCE:

NOTE: Minimum inter-phase and phase-earth air clearances for LT motors with lugs installed shall be as follows:

Motor MCR in KW	Clearance
UP to 110 KW	10mm
Above 110 KW and upto 150 KW	12.5mm
Above 150 KW	19mm

CLAUSE NO.	INTENT OF SPECIFICATION			एनटीपीसी NTPC
ANNEXURE I (QUALIFICATION CRITERIA) The following terminology shall be followed for Annexure-I Bidder- means BHEL Bidder's subvendor - Agitator Manufacturer				
4.00.00	QUALIFYING REQUIREMENTS FOR EQUIPMENTS/SYSTEMS			
4.01.00	Provenness criteria for critical equipment, auxiliaries, systems and bought out items: The Bidder / Bidder's sub-vendor(s) is required to meet the provenness criteria and/or qualification requirement for critical equipment, auxiliaries, system and bought out items as per criteria stipulated below:			
4.01.01	Agitators for the Wet Limestone based Flue Gas Desulphurisation (FGD) System offered by the Bidder shall be only from such manufacturer(s) who has previously designed (either by itself or under collaboration / licensing agreement), manufactured / got manufactured the respective equipment(s) of the type, application and minimum equipment rating as			
LOT-IB PROJECTS FLUE GAS DESULPHURISATION (FGD) SYSTEM PACKAGE		TECHNICAL SPECIFICATION SECTION – VI, PART-A BID DOC. NO CS-0011-109-(1B)-9	SUB-SECTION-I INTENT OF SPECIFICATION	PAGE 6 OF 20

CLAUSE NO.	INTENT OF SPECIFICATION 																																											
	stipulated below such that the respective equipment(s) should have been in successful operation in at least one (1) plant for a period not less than one(1) year reckoned as on the date of consideration for approval but not later than : 18.03.2019 (i.e 18th March 2019) <u>Type and Rating for Qualification</u> <table border="1" data-bbox="327 488 1426 1980"> <thead> <tr> <th>Sl. No.</th><th>Name of Equipment</th><th>Type of Equipment</th><th>Application</th><th>Equipment Rating</th></tr> </thead> <tbody> <tr> <td>(a)</td><td>Booster Fans</td><td>Axial type with variable pitch control</td><td>Coal fired power plant</td><td>80% of the flow & 100% of the head of the offered Booster Fan with Fan Speed 900 rpm (maximum)</td></tr> <tr> <td>(b)</td><td>Slurry Recirculation Pumps</td><td>Centrifugal type</td><td>Wet Limestone based FGD application in Coal fired power plant</td><td>80% of the flow & 100% of the head of the offered Slurry Recirculation Pump</td></tr> <tr> <td>(c)</td><td>Oxidation Blowers</td><td>Centrifugal/ positive displacement type blower</td><td>Wet Limestone based FGD application in Coal fired power plant</td><td>80% of the flow & 100% of the head of the offered Oxidation Blower</td></tr> <tr> <td>(d)</td><td>Wet limestone Grinding mills</td><td>Horizontal Wet Ball mill</td><td>Wet Limestone based FGD application in Coal fired power plant</td><td>80% of the offered Ball mill capacity with pulverizing fineness not less than 90% thru 325 mesh</td></tr> <tr> <td>(e)</td><td>Slurry Pumps</td><td>Centrifugal type</td><td>Wet Limestone based FGD application or ash slurry application in Coal fired power plant</td><td>80% of the flow & 100% of the head of the offered Slurry Pump(s)</td></tr> <tr> <td>(f)</td><td>Agitators</td><td>Vertical/Horizontal</td><td>Wet Limestone based FGD application in Coal fired power plant</td><td>Agitator rating not less than that supplied for 500 MW or higher size unit for similar application</td></tr> <tr> <td>(g)</td><td>Vacuum Belt filters</td><td>Belt type</td><td>Wet Limestone based FGD application in</td><td>80% of the offered Vacuum Belt filter capacity</td></tr> </tbody> </table>				Sl. No.	Name of Equipment	Type of Equipment	Application	Equipment Rating	(a)	Booster Fans	Axial type with variable pitch control	Coal fired power plant	80% of the flow & 100% of the head of the offered Booster Fan with Fan Speed 900 rpm (maximum)	(b)	Slurry Recirculation Pumps	Centrifugal type	Wet Limestone based FGD application in Coal fired power plant	80% of the flow & 100% of the head of the offered Slurry Recirculation Pump	(c)	Oxidation Blowers	Centrifugal/ positive displacement type blower	Wet Limestone based FGD application in Coal fired power plant	80% of the flow & 100% of the head of the offered Oxidation Blower	(d)	Wet limestone Grinding mills	Horizontal Wet Ball mill	Wet Limestone based FGD application in Coal fired power plant	80% of the offered Ball mill capacity with pulverizing fineness not less than 90% thru 325 mesh	(e)	Slurry Pumps	Centrifugal type	Wet Limestone based FGD application or ash slurry application in Coal fired power plant	80% of the flow & 100% of the head of the offered Slurry Pump(s)	(f)	Agitators	Vertical/Horizontal	Wet Limestone based FGD application in Coal fired power plant	Agitator rating not less than that supplied for 500 MW or higher size unit for similar application	(g)	Vacuum Belt filters	Belt type	Wet Limestone based FGD application in	80% of the offered Vacuum Belt filter capacity
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LOT-IB PROJECTS FLUE GAS DESULPHURISATION (FGD) SYSTEM PACKAGE		TECHNICAL SPECIFICATION SECTION – VI, PART-A BID DOC. NO CS-0011-109-(1B)-9	SUB-SECTION-I INTENT OF SPECIFICATION	PAGE 7 OF 20																																								

CLAUSE NO.	INTENT OF SPECIFICATION				एनटीपीसी NTPC							
	Sl. No.	Name of Equipment	Type of Equipment	Application	Equipment Rating							
				Coal fired power plant								
	Bidder shall offer and supply only the type of the above equipment(s) for which he himself or the manufacturer proposed by the bidder for the above equipment(s) is qualified. The provenness criteria for equipment (Booster Fans) stipulated at Sl. No. 4.01.01 (a) above shall also be considered acceptable provided the rating parameters (i.e., flow, head and rated rpm) is covered within the operating regime of the respective fan performance curve of the reference plant equipment. 4.01.02 In case the Bidder or the proposed sub vendor is not manufacturer of proven Booster Fans as per clause 4.01.01 (a) above but is a manufacturer of such equipment for units of at least * MW rating, the Bidder or the proposed sub vendor can manufacture such equipment for ** MW units also, provided it has collaboration or valid licensing agreement for design, engineering, manufacturing, supply of such equipment in India with such manufacturer who meet the requirements stipulated at clause 1.2 (a) above for the Booster Fans. For value of * and ** refer table below. <table><tr><th>*</th><th>**</th></tr><tr><td>195</td><td>195 (In this case no separate collaboration or valid licensing agreement required)</td></tr><tr><td>200</td><td>500</td></tr><tr><td>500</td><td>660</td></tr></table>					*	**	195	195 (In this case no separate collaboration or valid licensing agreement required)	200	500	500
*	**											
195	195 (In this case no separate collaboration or valid licensing agreement required)											
200	500											
500	660											
4.01.03	A JV / Subsidiary Company formed for manufacturing and supply of equipment(s) as listed at clause no. 4.01.01 above in India, can also manufacture such equipment(s), provided that it has a valid collaboration or licensing agreement for design, engineering, manufacturing of such equipment(s) in India with a qualified equipment manufacturer who meets the requirements stipulated at clause 4.01.01 above (or the technology provider of the qualified equipment manufacturer) for the respective equipment(s). Before taking up the manufacturing of such equipment(s), the bidder/ his sub-vendor(s) must create /have created manufacturing facilities at his works as per collaborator's/licenser's design, manufacturing and quality control system for such equipment(s). Further, in such a case, such qualified equipment manufacturers should have, directly or indirectly through its holding company/ subsidiary company, at least 26% equity participation in the Indian Joint Venture Company/ Subsidiary Company, which shall be maintained for a lock-in period of seven (7) years from the date of											
LOT-IB PROJECTS FLUE GAS DESULPHURISATION (FGD) SYSTEM PACKAGE			TECHNICAL SPECIFICATION SECTION – VI, PART-A BID DOC. NO CS-0011-109-(1B)-9		SUB-SECTION-I INTENT OF SPECIFICATION PAGE 8 OF 20							

CLAUSE NO.	INTENT OF SPECIFICATION	
	incorporation of such Joint Venture/ Subsidiary or upto the end of defect liability period of the contract, whichever is later.	
4.01.04	In case the Bidder or the proposed sub-vendor is not manufacturer of proven Oxidation Blowers as per clause 4.01.01 (c) above but is a manufacturer of Blowers/compressors for minimum 50 NM³/min capacity, the Bidder or the proposed sub-vendor can also manufacture Oxidation Blowers, provided it has collaboration or valid licensing agreement for design, engineering, manufacturing, supply of such Oxidation Blowers in India with such manufacturer who meet the requirements stipulated at clause 4.01.01 (c) above for the Oxidation Blowers. Before taking up the manufacturing of such equipment, the bidder/ his sub-vendor must create /have created manufacturing facilities at his works as per collaborator's /licenser's design, manufacturing and quality control system for such equipments.	
4.01.05	(i) In case the Bidder or the proposed sub-vendor is not manufacturer of proven Wet limestone Grinding mills as per clause 4.01.01 (d) above but is a manufacturer of dry Grinding mills for power or cement industry of minimum 20 T/h capacity, the Bidder or the proposed sub-vendor can also manufacture Wet limestone Grinding mills, provided it has collaboration or valid licensing agreement for design, engineering, manufacturing, supply of such Wet limestone Grinding mills in India with such manufacturer who meet the requirements stipulated at clause 4.01.01 (d) above for the Wet limestone Grinding mills. Before taking up the manufacturing of such equipment, the bidder/ his sub-vendor must create /have created manufacturing facilities at his works as per collaborator's /licenser's design, manufacturing and quality control system for such equipments. In addition, the Bidder along with the qualified equipment manufacturer shall furnish DJU in which executant of the DJU shall be jointly and severally liable for the successful performance of the equipment as per the format enclosed in the bidding document. The DJU shall be submitted prior to the placement of order on the approved sub-vendor for Wet limestone Grinding mills. In case of award, each executant of the DJU except the Bidder shall be required to furnish an on demand bank guarantee for INR 10 Million (Indian Rupees Ten Million only) for each project. OR (ii) In case, the bidder or proposed sub-vendor is not a manufacturer of proven Wet Limestone Grinding Mills as per clause 4.01.01 (d) above, but have designed, manufactured & supplied dry Grinding Ball Tube mills for at least 500 MW pulverized coal fired power plant, the Bidder or the proposed sub-vendor can also manufacture Wet limestone Grinding Mills provided it has a licensing agreement with a Wet limestone Grinding mills manufacturer who meet the requirements stipulated at clause 4.01.01 (d) above for the Wet limestone Grinding mills and provides extended warranty of three (3) years for the Wet Limestone Grinding Mills. In such a case Bidder shall provide an additional on	
LOT-IB PROJECTS FLUE GAS DESULPHURISATION (FGD) SYSTEM PACKAGE	TECHNICAL SPECIFICATION SECTION – VI, PART-A BID DOC. NO CS-0011-109-(1B)-9	SUB-SECTION-I INTENT OF SPECIFICATION
	PAGE 9 OF 20	

CLAUSE NO.	INTENT OF SPECIFICATION			
	demand bank guarantee for INR 10 Million (Indian Rupees Ten Million only) for each project.			
4.01.06	In case the Bidder or the proposed sub-vendor is not manufacturer of proven Agitators as per clause 4.01.01 (f) above but is a manufacturer of Agitators for similar process/duty application in petrochemical or metals and mining industry, the Bidder or the proposed sub-vendor can also manufacture Agitators, provided it has collaboration or valid licensing agreement for design, engineering, manufacturing, supply of such Agitators in India with such manufacturer who meet the requirements stipulated at clause 4.01.01 (f) above for the Agitators. Before taking up the manufacturing of such equipment, the bidder/ his sub-vendor must create /have created manufacturing facilities at his works as per collaborator's /licenser's design, manufacturing and quality control system for such equipments.			
4.01.07	In case the Bidder or the proposed sub-vendor is a manufacturer of Slurry Pumps who meets the requirements stipulated at clause 4.01.01 (c) above, the Bidder or the proposed sub-vendor can also manufacture Slurry Recirculation Pumps, provided it has collaboration or valid licensing agreement for design, engineering, manufacturing, supply of such equipment in India with such manufacturer who meet the requirements stipulated at clause 4.01.01 (b) above for the Slurry Recirculation Pumps. Before taking up the manufacturing of such equipment, the bidder/ his sub-vendor must create /have created manufacturing facilities at his works as per collaborator's /licenser's design, manufacturing and quality control system for such equipment.			
4.01.08	Before taking up the manufacturing of such equipment(s) as per clause 4.01.02, 4.01.03, 4.01.04, 4.01.05(i), 4.01.06 & 4.01.07 above, the Bidder / its sub vendor(s) must create (or should have created) manufacturing and testing facilities at its works as per Collaborator / licenser's design, manufacturing and quality control system for such equipments duly certified by the Collaborator / licensor. Further, the Collaborator / Licensor shall provide (or should have provided) all design, design calculation, manufacturing drawings and must provide (or should have provided) technical and quality surveillance assistance and supervision during manufacturing, erection, testing, commissioning of equipments.			
4.01.09	Bidder shall offer and supply only the type of the above equipment(s) for which it, itself or the manufacturer / Collaborator(s) / Licensor(s) proposed by the Bidder for the above equipment(s) is qualified.			
4.01.10	The Employer reserves the right to fully satisfy himself regarding capability and capacity of Bidder / its sub-vendor(s) and the proposed arrangement and may prescribe additional requirement before allowing manufacture of the equipment listed above for this contract.			
	Note to clause 4.01.01			
LOT-IB PROJECTS FLUE GAS DESULPHURISATION (FGD) SYSTEM PACKAGE		TECHNICAL SPECIFICATION SECTION – VI, PART-A BID DOC. NO CS-0011-109-(1B)-9	SUB-SECTION-I INTENT OF SPECIFICATION	PAGE 10 OF 20

CLAUSE NO.	INTENT OF SPECIFICATION	एनटीपीसी NTPC		
	(1) Whenever the term 'coal fired' is appearing above, "Coal" shall be deemed to also include bituminous coal/brown coal/Anthracite Coal/lignite.			
LOT-IB PROJECTS FLUE GAS DESULPHURISATION (FGD) SYSTEM PACKAGE	TECHNICAL SPECIFICATION SECTION – VI, PART-A BID DOC. NO CS-0011-109-(1B)-9	SUB-SECTION-I INTENT OF SPECIFICATION	PAGE 11 OF 20	

**FLUE GAS DESULPHURISATION (FGD) SYSTEM PACKAGE
FOR
LOT-1B PROJECTS
BIDDING DOCUMENT NO. CS-0011-109(1B)-9**

Bidder's Name and Address:

To
Contract Services-II
NTPC Limited
Noida-201301

Summary of Critical Equipment indicated under clause 4.01.00, sub-section-I, Part-A of Section-VI.

Equipment Name	Sub-Vendor Name	Collaborator's Name, if applicable	Seeking Qualification as per clause..... Sub-Section-I, Part-A of Section-VI
Booster Fans			*4.01.01 /*4.01.02 /*4.01.03
*Slurry Recirculation Pumps			*4.01.01 /*4.01.03 /*4.01.07
Oxidation Blowers			*4.01.01 /*4.01.03 /*4.01.04
Wet limestone Grinding mills			*4.01.01 /*4.01.03 /*4.01.05 (i)/ 4.01.05 (ii)
Slurry Pumps			*4.01.01/*4.01.03
Agitators			*4.01.01 /*4.01.03 /*4.01.06
Vacuum Belt filters			*4.01.01 /*4.01.03

Note : *Strike-off whichever is not applicable.

1. If qualification sought as per clause 4.01.01, sub-section-I-A, Part-A of Section-VI then the details of the sub vendor (manufacturer) shall be filled by the bidder in the format A to G.

2. If the qualification sought as per the clause 4.01.02, sub-section-I-A, Part-A of Section-VI, then the details of proposed sub vendor (i.e manufacturer of such equipments for at least *195/*200/*500 MW unit rating) shall be filled individually by the bidder in the format A and the details of collaborator who meets the requirement stipulated at 4.01.01, sub-section-I-A, Part-A of Section-VI shall also be filled by the bidder in the format A separately. Further, in case of qualification vide clause 4.01.02, sub-section-I-A, Part-A of Section-VI a copy of valid ongoing collaboration and technology transfer agreement for design, engineering, manufacturing, supply of such equipment in India with the collaborator who meets the requirement stipulated at 4.01.01, sub-section-I-A, Part-A of Section-VI shall also be furnished.
3. If the qualification sought as per the clause 4.01.03, sub-section-I-A, Part-A of Section-VI then the details of JV/Subsidiary Company formed for manufacturing of such equipments in India shall be furnished individually for each equipment by the bidder such as,
 - i) Copy of document of incorporation of JV/Subsidiary company in India
 - ii) Copy of valid ongoing collaboration and technology transfer agreement for design, engineering, manufacturing, supply of such equipment in India with the collaborator who meets the requirement stipulated at 4.01.01, sub-section-I-A, Part-A of Section-VI.
 - iii) Copy of document of at least 26% equity participation of qualified equipment manufacturer in the Indian JV company/subsidiary company directly or indirectly through its holding company /Subsidiary company, which shall be maintained for a lock -in period of seven (7) years from the date of incorporation of such JV/subsidiary or up to the end of defect liability period of the contract which ever is later.

Further, the details of collaborator or technology provider of the qualified equipment manufacturer who meets the requirement stipulated at 4.01.01, sub-section-I-A, Part-A of Section-VI shall be filled by the Bidder in the format A to G (format given at 1.00.00). In addition to that, the sub vendor along with the Indian JV company/subsidiary company, qualified equipment manufacturer and its holding company/subsidiary company as applicable shall furnish the DJU.

*** strike out whichever is not applicable.**

- 1.00.00 (Applicable for Bidder/his sub vendors seeking qualification as per clause no. 4.01.01, Sub section-I, Part-A of Section-VI. Bidder shall furnish the required data only for those equipments / auxiliaries which are proposed to be sourced under this route.)

We, hereby furnish the data on proveness criteria for critical equipment, auxiliaries, systems and Bought Out Items such as Booster Fans, *Slurry Recirculation Pumps, Oxidation Blowers, Wet Limestone Grinding Mills, Slurry Pumps, & Agitators which have been designed (either by self manufacturer or under valid ongoing collaboration and technology transfer agreement), *manufactured/ *got manufactured and supplied by us /Manufacturer (or manufactured/ got manufactured & supplied by our proposed sub-vendors) and these are in successful operation in at least one (1) plant for a period not less than one year reckoned as on the date

of consideration for approval but not later than six months to award date of contract to the Main bidder. The details of type and minimum equipment rating of such equipment are given below :

- F. Agitators:** We declare that, we/our Sub-Vendor, have designed (either by itself or under collaboration / licensing agreement),*manufactured/*got manufactured and supplied at least one (1) number of Agitators with rating not less than that supplied for 500 MW or higher size unit for similar application, Vertical/Horizontal type working in Wet Limestone based FGD application in Coal fired power plant and which has been in successful operation for minimum one(1) year reckoned as on the date of consideration for approval but not later than six months to award date of contract to the Main bidder, as per the details furnished below::

Sl. No.	Description	Reference Work
1.	Name of the reference plant & location:	
2.	Client name and his address:	
3.	No. of units and capacity in MW of unit:	
4.	Whether power plant is coal fired	-*Yes/*No
5.	Whether operating in a Wet Limestone based FGD application in coal fired power plant	-*Yes/*No
6.	Name of equipment manufacturer & address:	
7.	Date of commission of the equipments:	
8.	Model no. of the equipment:	
9.	Brief Technical particulars of the equipments:	
10.	Agitators supplied for	MW unit size

Sl. No.	Description	Reference Work
11.	Whether the equipment(s) are in successful operation in atleast one(01) plant for a period not less than one(01) year reckoned as on the date of consideration for approval but not later than six months to award date of contract to the Main bidder	-*Yes/*No
12.	Flue gas Desulphurization system details:	*Technical extract/ *paper letter/ *email/ *Drwaing from user or *contract document or *scheme or *any document in public domain enclosed at annexure....to Attachment-3K
13.	Scope of Work:	*Letter of Award or *Contract or *P.O. enclosed at Annexure.....to Attachment-3K
14.	Performance details:	*Certificate/*Letter/*E-mail from End user enclosed at Annexure.....to Attachment-3K

* Strike off whichever is not applicable.

***2.00.00** **Applicable for Bidder/his sub vendors seeking provenness criteria as per clause no. 4.01.02, Sub section-I, Part-A of Section-VI.**

2.01.00 We, hereby confirm that we/our sub-vendors are a regular manufacturer of Booster Fan for units of atleast *195/*200/*500MW rating and the details in this regard on provenness criteria as per clause **4.01.01**, sub-section-I, Part-A, Section-VI are hereby furnished below:

***Bidder to strike off whichever is not applicable.**

(Data to be furnished in line with format given at 1.00.00 of this Attachment)

2.02.00 We further confirm that details in respect of collaboration / valid licencing agreement for the aforesaid equipment as per 2.01.00 above who meets the requirement stipulated at clause **4.01.01**, sub-section-I, Part-A, Section-VI are enclosed at **Annexure-.....** to this Attachment. The data in respect of proveneness criteria for these equipment which are in successful operation in at least one (1) plant for a period not less than one reckoned as on the date of consideration for approval but not later than six months to award date of contract to the Main bidder are furnished below. We further confirm that we/ our sub vendor(s) have created manufacturing and testing facilities at our/ their works as per collaborator's/ Licensor's design, manufacturing & quality control system for these equipment(s)/ Auxiliary(ies).

(Data to be furnished in line with format given at 1.00.00 of this Attachment)

***3.00.00 Applicable for JV Company/Subsidiary Company meeting provenness criteria as per clause no. 4.01.01, Sub section-IA, Part-A of Section-VI.**

3.01.00 We, hereby confirm that JV company/ Subsidiary company (Strike off whichever is not applicable) formed for manufacturing and supply of equipment(s) (*Booster Fans, *Slurry Recirculation Pumps, *Oxidation Blowers, *Wet Limestone Grinding Mills, *Slurry Pumps, *Agitators) has a valid ongoing collaboration and technology transfer agreement for design, engineering, manufacturing of such equipment(s) in India with a qualified equipment manufacturer who meets the requirements stipulated at clause 4.01.01 of sub-section-I, Part-A, Section VI of bidding documents (or the technology provider of the qualified equipment manufacturer). Further, in such a case, such qualified equipment manufacturers is having, directly or indirectly through its holding company/subsidiary company, at least 26% equity participation in the Indian Joint Venture Company/subsidiary company, which shall be maintained for a lock-in period of seven (7) years from the date of incorporation of such Joint Venture / Subsidiary or up to the end of defect liability period of the contract, whichever is later. Before taking up the manufacturing of such equipment(s) (*Booster Fans, *Slurry Recirculation Pumps, *Oxidation Blowers, *Wet Limestone Grinding Mills, *Slurry Pumps,*Agitators), we/ our sub vendor(s) *will create /*have created manufacturing facilities at his works as per collaborator's/licenser's design, manufacturing and quality control system.

We further confirm that details in respect of collaboration / valid licencing agreement for the aforesaid equipment(s) (*Booster Fans, *Slurry Recirculation Pumps, *Oxidation Blowers, *Wet Limestone Grinding Mills, *Slurry Pumps, *Agitators) who meets the requirement stipulated at clause **4.01.01**, sub-section-I, Part-A, Section-VI for are enclosed at **Annexure-.....** to this Attachment.

***4.00.00** **Applicable for Bidder/his sub vendors seeking provenness criteria as per clause no. 4.01.04, Sub section-I, Part-A of Section-VI.**

4.01.00 We, hereby confirm that *we/*our sub-vendors is a manufacturer of Blowers/compressors for minimum 50 NM³/min capacity. (Details of references enclosed at Annexure)

(Data to be furnished in line with format given at 1.00.00 of this Attachment))

4.02.00 We further confirm that details in respect of collaboration / valid licencing agreement for the Oxidation Blower between *us/*our sub-vendors, as per 4.01.00 above, and with qualified Oxidation Blower manufacturer, who meets the requirement stipulated at clause **4.01.01**, sub-section-I, Part-A, Section-VI are enclosed as per **Annexure-I** to this Attachment. The data in respect of proveneness criteria for the qualified Oxidation Blower manufacturer, which are in successful operation in at least one (1) plant for a period not less than one reckoned as on the date of consideration for approval but not later than six months to award date of contract to the Main bidder are furnished below. We further confirm that we/ our sub vendor(s) have created manufacturing and testing facilities at our/ their works as per collaborator's/ Licensor's design, manufacturing & quality control system for the Oxidation Blowers.

We further confirm that before taking up the manufacturing of such Oxidation Blower *we/ *our sub vendor(s) *will create /*have created manufacturing facilities at his works as per collaborator's/licenser's design, manufacturing and quality control system.

We further confirm that details in respect of collaboration / valid licencing agreement for the Oxidation Blowers who meets the requirement stipulated at clause **4.01.01**, sub-section-I, Part-A, Section-VI for are enclosed at **Annexure-.....** to this Attachment.

(Data to be furnished in line with format given at 1.00.00 of this Attachment)

***5.00.00** **Applicable for Bidder/his sub vendors seeking provenness criteria as per clause no. 4.01.05 (i), Sub section-I, Part-A of Section-VI.**

5.01.00 We, hereby confirm that *we/*our sub-vendors is a manufacturer of Dry Grinding Mills for minimum 20 T/h capacity. (Details of references enclosed at Annexure)

(Data to be furnished in line with format given at 1.00.00 of this Attachment))

5.02.00 We further confirm that details in respect of collaboration / valid licencing agreement for the Wet Grinding Mills between *us/*our sub-vendors, as per 5.01.00 above, and with qualified Wet Grinding Mill manufacturer, who meets the requirement stipulated at clause **4.01.01**, sub-section-I, Part-A, Section-VI are enclosed at **Annexure-.....** to this Attachment. The data in respect of proveneness criteria for the qualified Wet Grinding Mill manufacturer, which is in successful operation in at least one (1) plant for a period not less than one reckoned as on the date of consideration for approval but not later than six months to award date of contract to the Main bidder are furnished below.

(Data to be furnished in line with format given at 1.00.00 of this Attachment)

We further confirm that before taking up the manufacturing of such Wet Grinding Mill *we/ *our sub vendor(s) *will create /*have created manufacturing facilities at his works as per collaborator's/licenser's design, manufacturing and quality control system.

In addition, the Bidder along with our sub-vendors, as per 5.01.00 above (if applicable) and the qualified Wet Grinding Mill manufacturer and its holding/ subsidiary Company, as applicable, shall furnish DJU in which executant of the DJU shall be jointly and severally liable for the successful performance of the equipment as per the format enclosed at **Annexure-III of Attachment-3K**.

(Data to be furnished in line with format given at 1.00.00 of this Attachment)

***6.00.00 Applicable for Bidder/his sub vendors seeking provenness criteria as per clause no. 4.01.05 (ii), Sub section-I, Part-A of Section-VI.**

6.01.00 We, hereby confirm that *we/*our sub-vendors have designed, manufactured & supplied dry Grinding Ball Tube mills for at least 500 MW pulverized coal fired power plant. (Details of references enclosed at Annexure)

(Data to be furnished in line with format given at 1.00.00 of this Attachment))

6.02.00 We further confirm that details in respect of valid licencing agreement for the Wet Grinding Mills between *us/*our sub-vendors, as per 6.01.00 above, and with qualified Wet Grinding Mill manufacturer, who meets the requirement stipulated at clause **4.01.01**,

sub-section-I, Part-A, Section-VI are enclosed at **Annexure-.....** to this Attachment. The data in respect of proveneness criteria for the qualified Wet Grinding Mill manufacturer, which is in successful operation in at least one (1) plant for a period not less than one reckoned as on the date of consideration for approval but not later than six months to award date of contract to the Main bidder are furnished below.

(Data to be furnished in line with format given at 1.00.00 of this Attachment)

We further confirm that *we/*our sub-vendors shall provide an extended warranty of three (3) years for the Wet Limestone Grinding Mills provide an additional on demand bank guarantee for INR 10 Million (Indian Rupees Ten Million only) for each project.

(Data to be furnished in line with format given at 1.00.00 of this Attachment)

***7.00.00 Applicable for Bidder/his sub vendors seeking proveneness criteria as per clause no. 4.01.06, Sub section-I, Part-A of Section-VI.**

7.01.00 We, hereby confirm that *we/*our sub-vendors is a manufacturer of a manufacturer of Agitators for similar process/duty application in petrochemical or metals and mining industry. (Details of references enclosed at Annexure)

(Data to be furnished in line with format given at 1.00.00 of this Attachment))

7.02.00 We further confirm that details in respect of collaboration / valid licencing agreement for the Agitator between *us/*our sub-vendors, as per 6.01.00 above, and with qualified Agitator manufacturer, who meets the requirement stipulated at clause **4.01.01**, sub-section-I, Part-A, Section-VI are enclosed at **Annexure-.....** to this Attachment. The data in respect of proveneness criteria for the qualified Agitator manufacturer, which is in successful operation in at least one (1) plant for a period not less than one reckoned as on the date of consideration for approval but not later than six months to award date of contract to the Main bidder are furnished below.

We further confirm that before taking up the manufacturing of such Agitator, *we/ *our sub vendor(s) *will create /*have created manufacturing facilities at his works as per collaborator's/licenser's design, manufacturing and quality control system.

(Data to be furnished in line with format given at 1.00.00 of this Attachment)

***8.00.00** **Applicable for Bidder/his sub vendors seeking provenness criteria as per clause no. 4.01.07, Sub section-I, Part-A of Section-VI.**

8.01.00 We, hereby confirm that *we/*our sub-vendors is a manufacturer of a manufacturer of Slurry Pumps who meets the requirements stipulated at clause 4.01.01 (e), sub-section-I, Part-A, Section-VI.
(Details of references enclosed at Annexure)

(Data to be furnished in line with format given at 1.00.00 of this Attachment)

8.02.00 We further confirm that details in respect of collaboration / valid licencing agreement for the Slurry Recirculation Pumps, between *us/*our sub-vendors, as per 7.01.00 above, and with qualified Slurry Recirculation Pump manufacturer, who meets the requirement stipulated at clause **4.01.01**, sub-section-I, Part-A, Section-VI are enclosed at **Annexure-.....** to this Attachment. The data in respect of provenness criteria for the qualified Slurry Recirculation Pump manufacturer, which is in successful operation in at least one (1) plant for a period not less than one reckoned as on the date of consideration for approval but not later than six months to award date of contract to the Main bidder are furnished below.

We further confirm that before taking up the manufacturing of such Slurry Recirculation Pumps, *we/ *our sub vendor(s) *will create /*have created manufacturing facilities at his works as per collaborator's/licenser's design, manufacturing and quality control system.

(Data to be furnished in line with format given at 1.00.00 of this Attachment)

VOLUME IIB

**TECHNICAL SPECIFICATION
FOR
SEAWORTHY PACKING FOR EXPORT JOBS**

SPECIFICATION NO. PE-TS-888-100-A001



**BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NEW DELHI, INDIA**



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 1	OF 52

1.0 Purpose

The purpose of this specification is to describe minimum packing requirements for the different items/equipment for all export Project and also to define marking and shipping requirements during transportation by ship, road and air for all export jobs.

2.0 SCOPE

For export jobs, sea worthy packing capable of performing all necessary functions like prevention of damage to the contents, sufficient to support frequent handling and lengthy period of outdoor storage in adverse weather conditions are required. Workmanship and materials used shall be of high standard meeting the technical requirements and in accordance with best commercial export packing practices. Vendor shall be responsible for sea worthy export packing, however it shall meet the minimum requirements specified herein. Equivalent or better packing methods may be deployed subject to approval of the BHEL/Purchaser. Vendor shall submit the packing procedure for its equivalent for purchaser's approval during detailed engineering.

The scope this specification is to define VENDOR's responsibilities in terms of:

- Preservation of the GOODS/items/equipments before packing.
- Packing of the GOODS for road, rail, sea and/or air transportation to desired destination i.e. project site
- Making cases/crates
- Chemical Treatment/Fumigation before packing to prevent fungus, damage due to termite, borer, rats, etc.
- Marking of cases/crates.
- Other Services required.

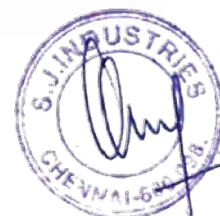
3.0 Application

This specification is applicable to all the goods to be transported to project site and requires to be in transit for longer duration. *However, for "Misc cable erection items", "Fire sealing system" & "Exothermic welding material", the packing requirements shall be as per the procurement specification.*

4.0 Definitions

- "BHEL" : Main EPC vendor
- "OWNER" : Customer for a particular export project.
- "VENDOR" : Company(ies)/VENDOR(s) to whom the BHEL has placed Purchase Order for GOODS/ items/system/package.
- "GOODS": means all or part of the articles, material, equipment supplies including technical documentation, as described in the Purchase Order, to be supplied by VENDOR.
- "PACKER": Packaging Company to whom VENDOR intends to sub-contract the packing in case they do not have own packing capability/facilities .
- "FREIGHT FORWARDER" : Means the Company responsible for performing freight forwarding activities.

5. General Information



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 2	OF 52

The following requirements are intended as minimum requirements, and compliance to these requirements in no way absolves or relieves VENDOR of any responsibility or obligation outlined in the Purchase Order. In all circumstances, the packing will be designed and constructed in order to support GOODS during transportation as well as to prevent the Goods from damage due to impact, extreme climatic conditions, sun and rain. It must be ensured that the delivery of the GOODS to the jobsite by sea, road or air, in good condition.

GOODS shall be export packed in compliance with the best-established practices for international projects, in accordance with the following instructions. In the event of any conflict between these specified requirement and the established practices, specification requirement shall govern.

Due to climatic conditions and the complex transport operation(s), it is essential that protection and packing is of the highest standard. Packing means to efficiently protect the GOODS during the total transport operation; from the moment they leave the factory until they are delivered to the jobsite, including handling operations (loading/unloading) and storage.

When VENDOR do not have packing capabilities/facilities of their own and therefore intends to sub-contract, VENDOR have to inform BHEL/Purchaser of the name and address of proposed PACKER(s) for approval.

6.0 Criteria for Selection of Packaging

Packages are to be made according to categories, described in articles 8.1 to 8.5, depending on the type of materials, their fragility and size.

These categories have been established for the protection of equipment and material during multi-mode transports, i.e.: combination of overland and sea transport; containerization, air transportation.

In a general manner, the GOODS have to be packed in such a way that crates, bundles, pallets can be stored into General Purpose containers, wherever possible.

If VENDOR has any doubt about the correct method of protection or packing, he should contact BHEL/Purchaser in order to mutually agree on the adequate type of packing to be used.

Materials can be classified in following categories

- Hazardous Material
- Non-Hazardous Material
-

Further to above categorisation, non-hazardous materials can be sub- categorised for selection of packing.

6.1 Hazardous Materials

Though handling of hazardous material may is not applicable in the scope of this specification. All hazardous material must be packed in adherence to the detailed requirement relating to packing, marking and labelling set out in the most recent report of the Board's Standard Advisory Committee on the Carriage of Dangerous Goods in Ships for sea freight, and the Restricted Articles Regulations, laid down by the International Air Transport Association for airfreight.

6.2 Non-Hazardous GOODS

The scope of this specification is to provide necessary guidelines for packing for power plant equipment, components, Pipings & Valves, Fittings, other structural items, electrical items, spare parts and erection materials. The procedure is defined in subsequent paragraphs in details in clause no. 8.0.



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 3	OF 52

7.0 Marking Instructions & Despatch details, Storage Code

7.1 Marking Instructions & despatch details

Packages and crates will be marked with indelible black paint, resistant to seawater. Marking must be perfectly legible.

The shipping marks, which will be as per fig-13, shall be stencilled on two sides and one end in clear characters at least 5 centimetres high (where crate size permits, otherwise use optimum size for each package dimension).

When the GOODS are to be shipped in containers then marking may be stencilled on one end only. However, packages must be stowed in a manner that shows these marks.

Crates containing fragile articles must be packed with special precaution against risk of breakage and must be stencilled on all sides "FRAGILE - HANDLE WITH CARE". Where crates are not to be overturned, VENDOR must show on the crates, clear and readily visible identification as per fig-12, to ensure they are kept in the correct position.

Packages/equipment of 2,000 kg or more must be marked with slinging points on all sides, in addition to the centre of gravity marks.

Number packages consecutively i.e. 1 of 10, 2 of 10, etc. Do not duplicate package numbers. VENDOR is responsible for any loss or damage caused by incorrect marking.

All cases/crates shall also be marked with the appropriate international standard graphic symbols for handling as shown in Fig 12.

As a minimum, all cases/crates are to be marked clearly on all four sides with:

- "HANDLE WITH CARE"
- "RIGHT SIDE UP"
- "KEEP DRY"

In the case of packages with a single gross weight totalling 2,000 kg and/or a height of more than 1m, the centre of gravity shall be clearly marked with the symbol on two adjoining sides. For all items of equipment with an eccentric centre of gravity this symbol shall be marked at the bottom, side and top of the package.

The slinging and lashing points shall be marked with a chain symbol.

When packing in cases/crates, these packages shall also have metal corners at the slinging points. (Fig-11)

External front and rear sides of the boxes to be planed for writing instructions.

Dispatch details such as consigner/consignee address, contract and case details, country of origin, port of delivery, stacking instructions shall be written on one side of the boxes. An anodized aluminum plate as per details and specifications given in fig-13 shall be provided on one side of the boxes.

One copy of packing slip wrapped in polyethylene bag covered with aluminum packing slip holder to be nailed on the external surface of the box. One more copy of the packing slip wrapped in polyethylene bag is to be kept inside the box at the pertinent place.



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 4	OF 52

7.2 Storage Code

The type of storage required is required to be specified, it will be shown on each packaging in **RED colour**.

- X Crates or packages to be stored outdoor without covers
- XX Crates or packages to be stored under tarpaulin
- XXX Crates or packages to be stored in covered or enclosed premises
- XXXX Crates or packages which must be stored in air-conditioned premises

8.0 GUIDELINES FOR PACKING GOODS

8.1 In the subsequent paragraphs details of different types of packings for different types of GOODS are defined. Vendor shall make packing details/procedure based on the guidelines and submit for approval.

8.1.1 Packing for Pipe, Fittings, Flanges and Valves, Structural Steel

Particular attention should be brought to pipe, fittings, flanges, valves and structural steel. Packing categories for piping and fittings will differ according to the diameter and wall thickness of these products. VENDOR shall comply with the following established practice.

IMPORTANT NOTE:

Depending on the project schedule and availability of ocean vessels, the piping and structural steel may be shipped in containers. In this event, VENDOR has to arrange the packages in such a way it allows the stuffing into Open Top in gauge containers.

8.1.2 Pipe

Where practicable, pipe lengths shall be limited to 11.8 meters.

All pipes 2" included and below shall be packed in crates. All pipes to be capped and ends sealed with waterproof tape.

Pipes over 2" up to 6", shall be bundled and banded in bundles of uniform length. Bundling is carried out with U-IRON or traversal planks, joined with threaded connecting rods with locknuts. Quantities and strapping positions depend on the lengths, with a 120 cm spacing to prevent distortion. Bundle weight shall not exceed 2,000 kg. All pipes are to be capped and ends sealed with waterproof tape (tape is not necessary if end caps are of the pre-shrunk or self-sealing type).

Pipes larger than 6" shall be shipped as single lengths with the ends capped. End caps are to be of the recessed type to enable the use of soft faced hooks, but still completely sealing the end and also protecting the weld.

All stainless steel piping must be packed separately in wooden crates. Any banding of bundles is to be with the same material.

8.1.3 Pipe Fittings, Flanges and Valves

All pipe fittings, flanges and valves up to 6", are to be packed in cases/crates. For items over 6", these may be fixed securely to a pallet base and enclosed in a crate, for protection. Where valves have actuators attached, rigidity must be ensured for the valve and actuator. The vulnerable parts of the actuator are to be completely protected within a wooden crate.

All stainless steel fittings, flanges and valves of all sizes, must be packed separately in wooden crates. Any strapping is to be with the same material.

8.1.4 Structural Steel



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 5	OF 52

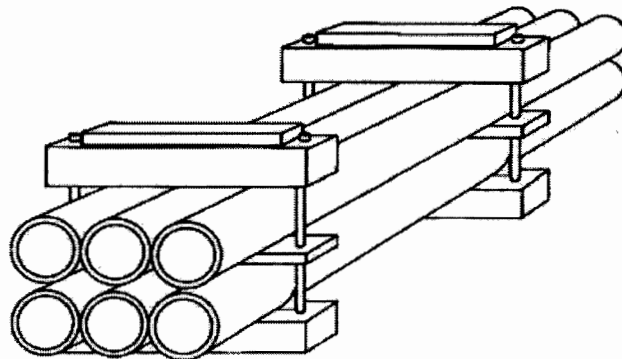
Structural Steel, reinforcing rods, bars, etc., should be packed in bundles of uniform length. Refer to articles 8.1.2, for strapping requirements. Bundle weight not normally to exceed 2,000 kg. Fabricated structures and structural steelwork, etc, should be bundled and packed using wooden beams and long bolting to secure the load.

8.2 Bundling – Packing Category I

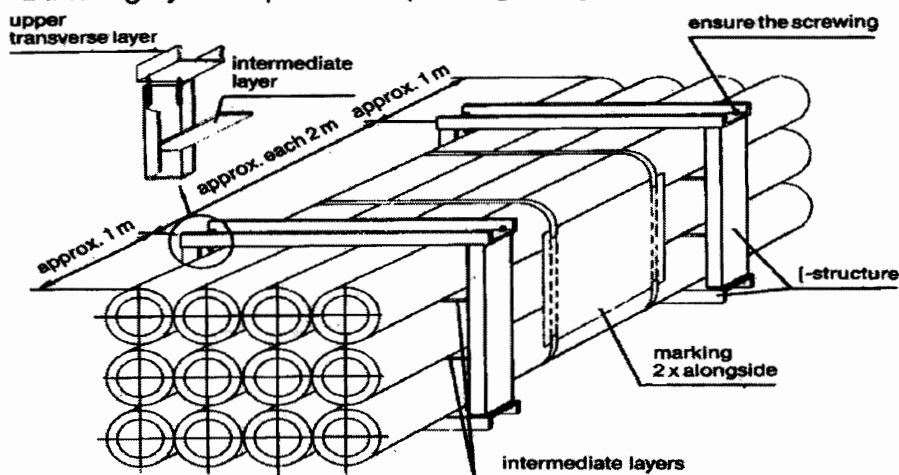
8.2.1 Type of Equipment

Equipment which is not subject to damage by corrosion or mechanical effect, i.e. pipes, piping, structural steel.

Packing category I



Bundling by U-shaped iron – packing category I A



8.2.2 Type of Construction



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 6	OF 52

- Bundling has to be effected
- By squared timber and threaded rods.
- With an intermediate layer (threaded on tightening bolts) according to the weight of the package.
- Wedge-shaped timbers must be added at the outer points of lower layer.
- Between the bolts a spacer must be nailed.
- The bolts must be secured (e.g. by locking nut).
- If single parts could protrude, an appropriate protection must be installed (flat iron or plates).
- Bundling with steel straps or PVC straps is not accepted.

8.3 Skids, Square Timber Constructions, Casings – Packing (Category II)

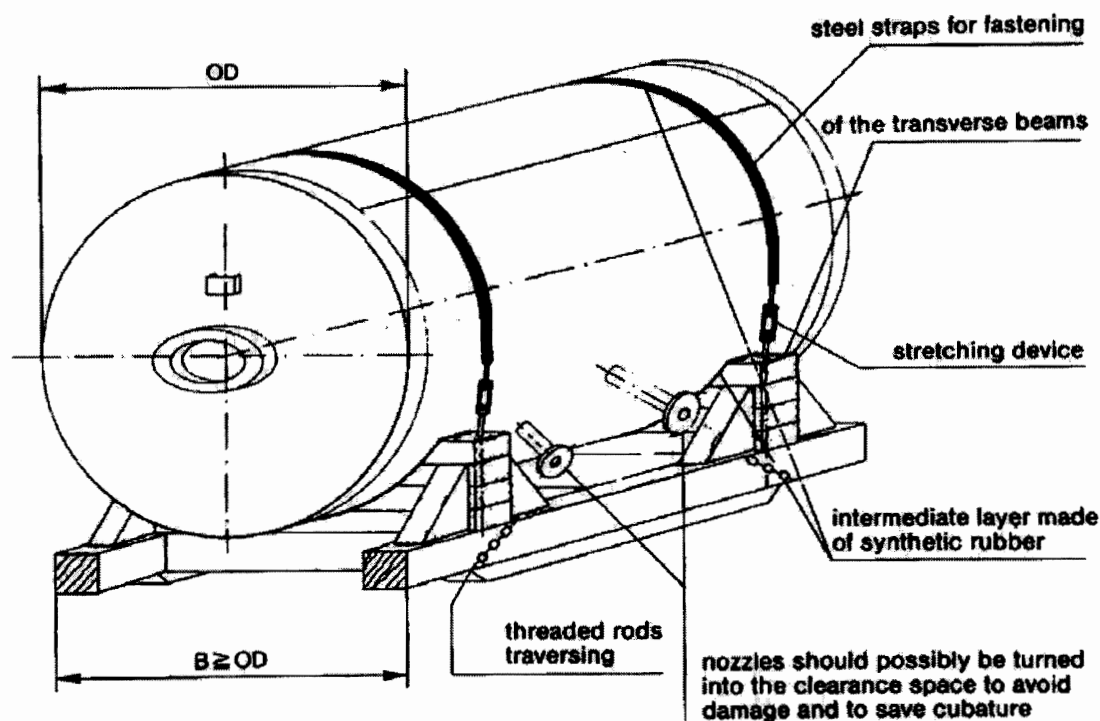
8.3.1 Type of Equipment

Voluminous apparatus, tanks and/or heavy pieces those are not vulnerable to mechanical or corrosive effects.

8.3.2 Type of Construction

- The construction skid can be made of wood or of metal.
- The fastening of the packages on the skid will be made by steel straps (flat iron) which have to be elastically lined, non-slip and securely bolted onto the skids.
- Flange openings have to be closed with gaskets and blind flanges or, if necessary, provided with cover.
- Skid constructions may not be less than the dimensions of the package in length or in width.
- Tanks and apparatus with their own support cradles must be supplied with an anti-slip lining.

PACKING CATEGORY-II



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 7	OF 52

8.4 Packing of GOODS in Wooden Crates/Cases/Boxes

The construction of wooden crate/cases/boxes shall be as per the details indicated in clause 9.0 & Fig 1 to 11. Details indicated in the sketches for different categories Packing crates/boxes are only for a typical equipment considered for illustration.

8.4.1 Packing Category III

8.4.1.1 Type of Equipment

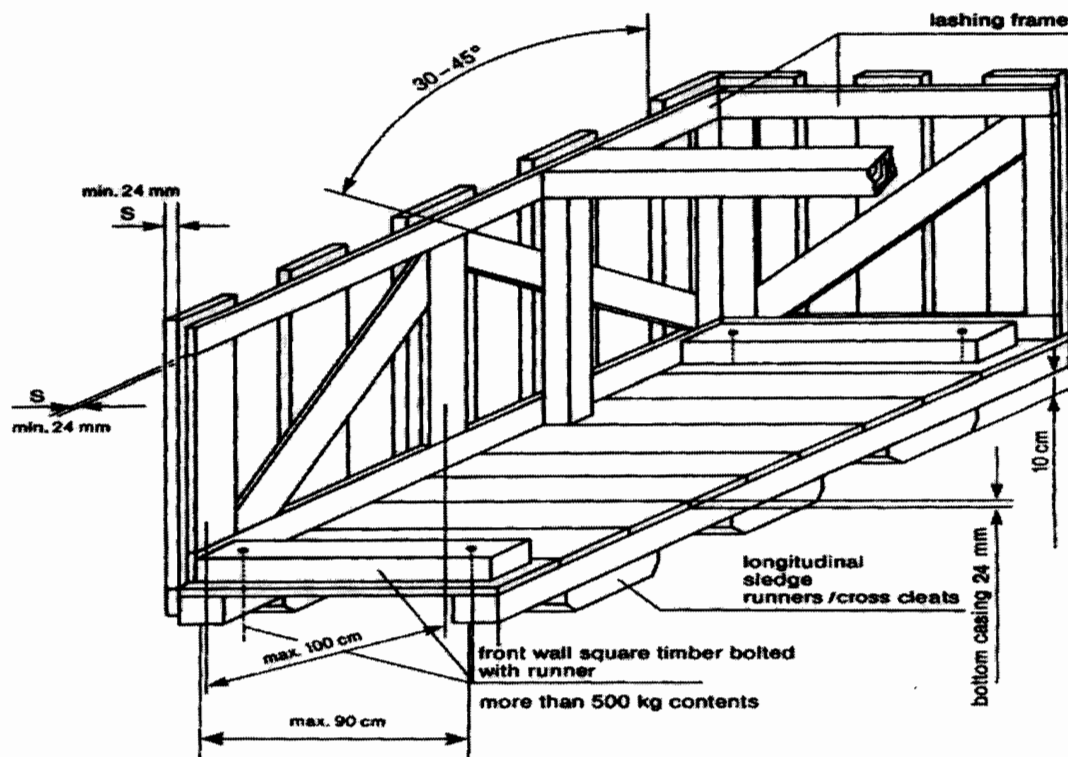
Fabricated equipment, which cannot be transported on cradles; frame-works, prefabricated piping and fittings, mechanical and electrical assemblies. *This type of packing is recommended where many parts of the equipment/component/assembly are not protruding out.*

8.4.1.2 Type of Construction

The equipment must be safely fastened to the bottom with bolts, possibly by the runners or to be spread in such a manner that no protruding parts are possible. For parts, sensitive to rainwater and/or debris, a protection has to be made by a foil cap.

If it is possible that single part could protrude through the front/back side wall, they shall be closed completely. The marking of the package shall be done on plywood plates at the prescribed sides.

Packing Category III



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 8	OF 52

8.4.2 Cases with Lining – Packing Category IV

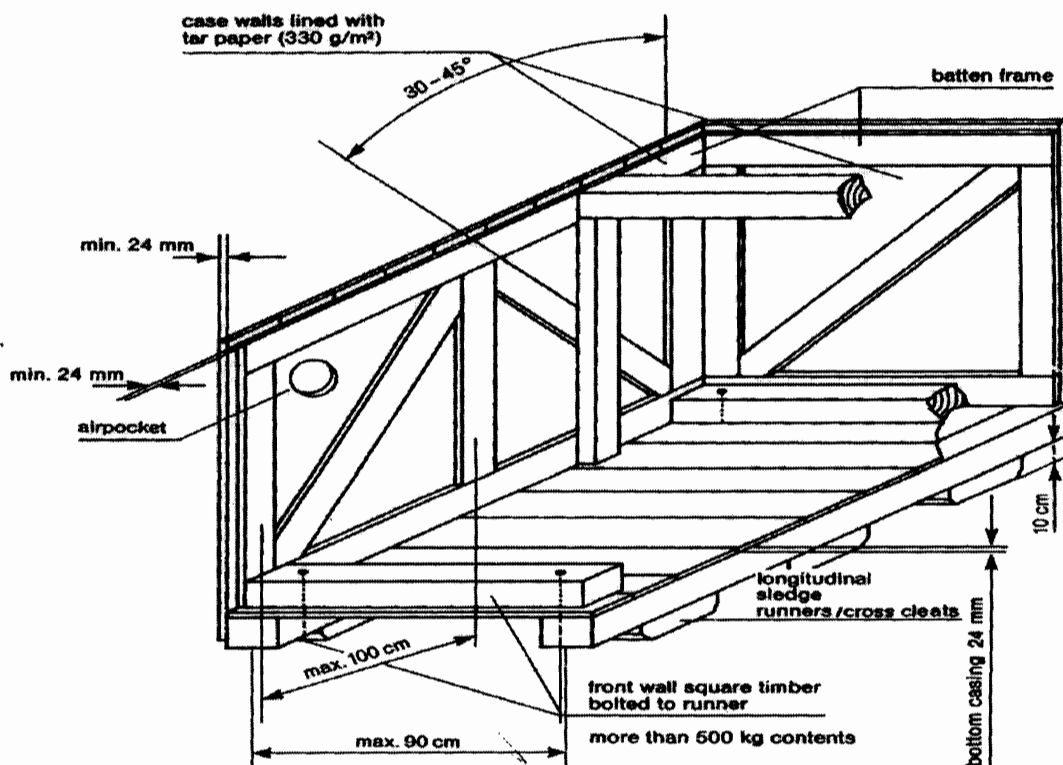
8.4.2.1 Type of Equipment

Recommended for equipment and mechanical parts Equipment sensitive to mechanical damage or parts and components that are particularly at risk of theft or loss; pumps, elbows, flanges, fittings, tools, erection materials, etc.

8.4.2.2 Type of Construction

The same type of construction as article 8.4.1.2, but with all sides completely boarded without space between the boards. Sides to be provided with waterproof lining; fabric-reinforced waterproof tar paper or polyethylene-foils resistant to ultraviolet rays can be used. Polyethylene-foil shall be fixed under the lid cover to avoid penetration of water. At weights of more than 500 kg the longitudinal runner must be bolted to the front all square timber. For ventilation inside the case, an opening in the waterproof lining must be placed between the diagonal battens and diagonal joists.

Packing Category IV

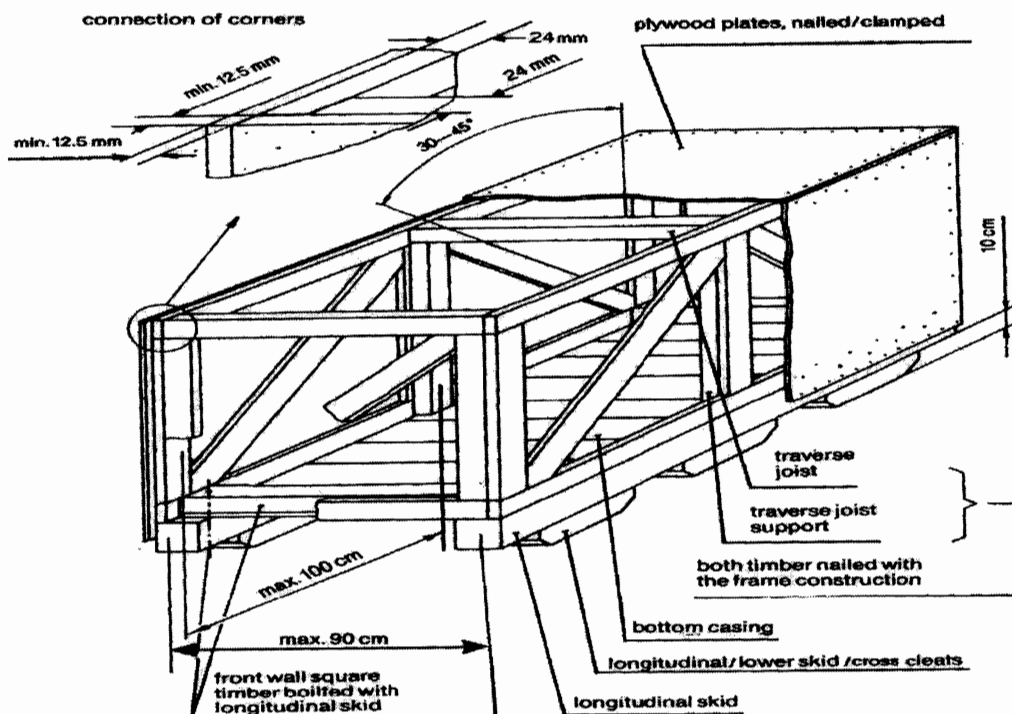


8.4.3 Cases with Alternative Surface Materials

8.4.3.1 Plywood Box – Packing Category IV A



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 9	OF 52



Case constructed of 5 layers of watertight, glued plywood with a total thickness of 12.5 mm. The frame must be constructed from minimum 24 mm timber or as per guide lines given above against clause 8.0, Fig 1 to 11 and must be suitable for the weight and nature of the parts to be packed. Planed square timber must be bolted with longitudinal skid and covered with diagonal joists. If applicable, construction of the cover and sides is to include diagonal bracing. Covers consisting of several layers of plywood are to be sealed with durable elastic putty or additional water-resistant sheets to be fixed.

8.4.4 Case with Barrier Material – Polyethylene Foil – Packing Category V

8.4.4.1 Type of Equipment

Sensitive equipment, simple electrical equipment, insulation materials, fire-resistant materials, with non-corrosion- guarantee for a period up to twelve (12) months.

8.4.4.2 Type of Construction

Preservation by welding in polyethylene-foil with addition of desiccants and if necessary, application of non-corrosive contact agents, otherwise, type of construction as indicated in article 8.4.2.2.

Additional marking:

- Case with desiccants.

8.4.5 Case with Barrier Material – Aluminium Compound Foil – Packing Category VI

8.4.5.1 Type of Equipment



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 10	OF 52

Electrical equipment such as, switchboards, electric motors, sensitive equipment, with non-corrosion guarantee, for a period up to twelve (12) months.

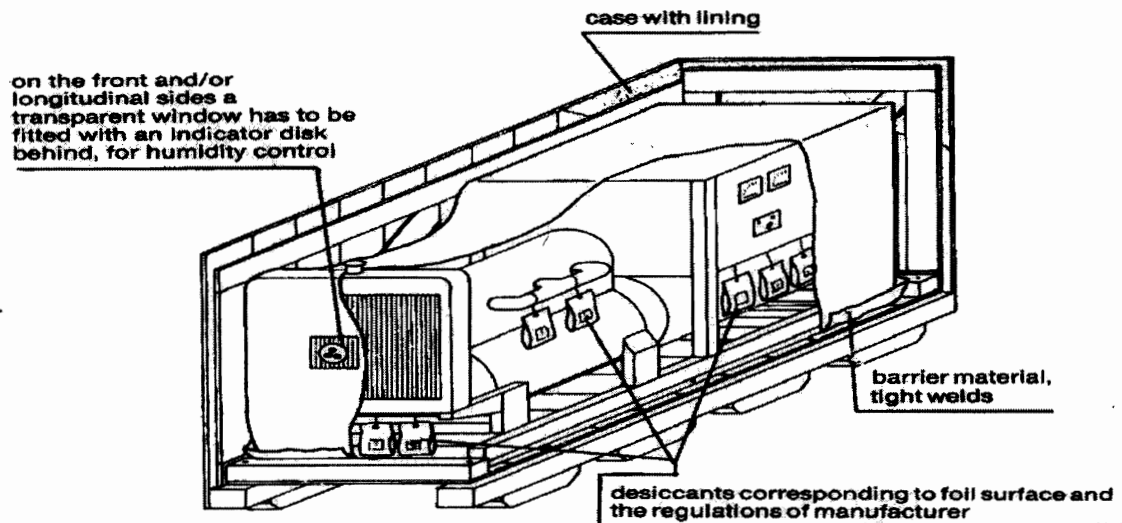
8.4.5.2 Type of Construction

Type of construction as indicated in article 8.4.2.2. Preservation by sealing an aluminium compound foil, with the addition of desiccants. Humidity indicators, if required and installed in the barrier wrapping, shall allow easy control from the outside.

Additional marking:

- Case with desiccants.

Packing Category V/VI



8.4.6 Double Case – Packing Category VII

8.4.6.1 Type of Equipment

GOODS which are of high sensitivity to shock, impact and vibration, for instance, special electrical equipment like computers, switchboards, laboratory instruments

8.4.6.2 Type of Construction

Case construction as indicated in article 8.4.2.2, with additional floating inner packing (case-in-case principle), padding corresponding to weight and sensitiveness. Preservation by sealing in aluminium compound foil with the addition of desiccants. The inner case has to be made of plywood or equivalent material with a thickness of 8-12 mm, depending on the weight of the GOODS to be packed. The inner buckles and/or frame borders have to be dimensioned so that the full stability of the inside case will be reached and no twisting is possible. The inner sides of the inside case will be lined with bituminous kraft paper on all sides (except bottom).



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 11	OF 52

8.4.7 Cable Drum – Packing Category VIII

8.4.7.1 Type of Equipment

All type of cables, wires, ropes, hoses.

8.4.7.2 Type of Construction

For all type of cables refer clause no. 11.1. For other items (wires, ropes, hoses) new or practically new drums are to be used. Planking of the e drums by use of boards, thickness minimum 20 mm, with additional double steel strapping, nailed, and carefully preserved/protected cable ends prior to packing.

8.4.8 Hazardous Materials – Packing Category IX

8.4.8.1 Type of Equipment

Hazardous materials according to the law are explosives, compressed gases, liquefied gases dissolved under pressure or deeply refrigerated, flammable liquids, flammable solids: substances liable to spontaneous combustion; substances which, on contact with water, emit flammable gases, oxidizing substances, organic peroxides, poisonous (toxic) and infectious substances; radioactive materials, corrosives, miscellaneous dangerous goods.

8.4.8.2 Type of Construction

Hazardous materials shall always be packed and documented separately from any other material. Selection of packaging materials, execution of packing and marking as well as documentation shall always be in compliance with the applicable laws and regulations. Any certificates required for transportation or for authorities to be supplied before shipment of the GOODS.

8.4.9 Wooden Floor as a Transport Support – Packing Category X

8.4.9.1 Type of Equipment

Any materials to be stuffed in containers or on flat racks and that are not stowed on standard pallets or otherwise suitably packed

8.4.9.2 Type of Construction

- Longitudinal internal square timbers bolted to the front wall runners, longitudinal skid.
- Maximum distance between longitudinal runners 90 cm (middle to middle of the runner).
- Full boarding of the floor.
- Attaching of lifting lugs and/or iron ropes for lifting/pulling the units off the transport equipment.
- If applicable, preservation of the equipment by sealing in polyethylene-foil or aluminium compound foil and the addition of desiccants.

8.5 Air Transport Packing

8.5.1 General

Certain types of material may have to be shipped by air from their country of origin. This means of transport will be exceptional, and will be used only:

- For GOODS, which are highly sensitive to shock or vibrations, such as computers, electronic instruments, or those of small dimensions and weight.
- For GOODS urgently required at the module yard(s) and/or jobsite.



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001		
		VOLUME II B		
		SECTION D		
		REV. NO. 0	DATE 10/08/2010	
		SHEET 12	OF	52

8.5.2 Type of Packing

Depending on the goods to be packed, VENDOR may use one of the following types:

- A triple-corrugated cardboard container made with waterproofed glue and a barrier layer of polyethylene on the outsides to keep out humidity.
- Wooden/cardboard packing cases: the wood being used for the framework and base of the cases, waterproofed triple-corrugated cardboard being used for the sides and top. These cases are of the "Bell" type, and used for material of small or medium dimensions.
- For larger dimensions, plywood cases are acceptable. The timber characteristics, cross-sections and thickness will be systematically determined by the nature of the loads to be packed.

8.5.3 Dimensions

In order to optimize the existing transport facilities (passenger or cargo aircraft), the dimensions of:

- Triple-corrugated containers.
 - Wooden/cardboard packing cases.
 - Plywood cases.
- Are to be adapted to pallets used for air transportation.

9.0 Detailed specification for Wooden Crates/Boxes/Cases and other packing materials

9.1 Technical specification for wood

The wood shall be Fir, Chir, Silver Oak (Gravillea Robusta), chemically treated mango and Pinewood with moisture content not exceeding 50%. The wood shall have flexural and compressive strength, stiffness, shock absorption and nail retention properties. The wood shall be free from common defects such as warp, bone, twist, knot, cracks, splits, end splits, bend, visible sign of infection and any kind of decay caused by insects or fungus, etc. Surface cracks with maximum depth of 3mm are permissible. A continuous crack of any depth all along the length is not allowed.

9.2 Chemical Treatment of Wood:

The wood shall be chemically treated to provide protection against deterioration due to fungi and attack by termites, borers, marine organism and any other kind of infection. It shall be treated only after final processing like cutting, planning, joint grooving, etc.

9.3 TYPE, DESIGN & DIMENSION OF WOODEN PACKING CASES:

9.3.1 PACKING OF EQUIPMENTS

Various mechanical, electrical and C&I equipment e.g. Pumps, motors, equipment skids, heat exchangers, control panels, switch gears, transformers, etc. shall be wrapped in weather proof packing and then secured in wooden packing cases. The construction of wooden packing cases/crates shall be as per details given below and also given in figure 1 to 11.

9.3.1.1 Bottom Frame



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 13	OF 52

The construction of bottom frame shall be as per Fig-2. The No. of slides/runners for bottom frames shall be selected depending upon the weight and overall dimensions of the load to be carried. The equipment shall be secured by fixing their base frame/plate with the help of bolt and nuts etc. to bottom frame of the wooden packing cases/crates. The equipment not provided with base frame/plate like cylindrical vessels, etc to be secured to the bottom frame of the wooden cases with "C" clamps fabricated from steel channels/ angle iron.

9.3.1.2 TOP FRAME

The construction of top frame shall be as per fig-3.

9.3.1.3 END PANELS

The dimension of the end and lateral panels shall be calculated according to overall dimensions of the items to be packed. Diagonal braces shall be used for packing cases having height exceeding 500mm. Details of bracings shall be as per fig 5 to 9.

9.3.1.4 Sling Plate

To facilitate lifting of cases, longitudinal under slide boards shall be fixed. To avoid damage to the box while lifting sling plates shall be provided. Refer fig-11.

9.3.1.5 Angle Iron Cleats

Angle iron cleats shall be used for strengthening the joints as indicated in fig-10

9.3.1.6 Other Requirements

- The thickness of planks for top, bottom, side and end panels shall be at least 25mm. Planks used for this purpose shall be joined with each other by tongue and groove joint. The groove dimension shall be such that tongue fits tightly into groove to make the joint.
- Runners/slides, traverse bars, etc shall be of single length i.e. without any joint. Planks for sheathing, diagonal bracing etc shall also be of single length up to 2400mm, proper jointing is permitted for planks for sheathing and diagonal bracings.
- Each equipment to be individually covered with double polyethylene petticoat. Sheet thickness of polythene sheet shall not be less than 0.175 mm (175 microns). The sealing shall be such so as not to allow moisture inside.
- The inner surface of 4 sides of shooks shall be nailed with bituminized water proof craft paper. Wherever 2 pieces of kraft paper are used, joint shall have an overlap of minimum 20 mm.
- All the inner sides of the box shall be nailed with bitumen coated HESSIAN POLYTHYLENE KRAFT PAPER. For top frame it shall project on all sides by 100mm and shall be nailed on sides. Wherever 2 pieces of kraft paper are used, joint shall have an overlap of minimum 20 mm.
- For delicate equipment like control panels and switchgears, lighting panels and lighting transformers, suitable cushioning material like rubberised coir (min. 50 mm thick and 100 mm wide) shall be provided on their bottom support and the gap between the panel and casing



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 14	OF 52

shall be filled with rubberized coir with distance between consecutive supports less than 500 mm (ref fig15). For other equipment suitable support from sides of the casing shall be provided.

- Switchgear cubicles, control panels and control desks shall be packed and shipped in separate convenient sections. The components e.g. circuit breakers relays and instruments etc. which are removed from panels for shipping purpose and shall be separately packed and shipped as per packing instructions in clause 10.4.
- Packing case for control panels and switchgear panels shall be finally covered with GI sheet of minimum thickness of 0.4mm.
- Packing cases shall be bound at edges by nailing MS clamps/brackets at sufficient intervals. Further heavier boxes shall be strapped with C clamps (ref fig-4) fabricated from steel channels/angles and lighter boxes shall be strapped with hoop iron strips.
- Silica gel is used for this purpose to protect contents over sufficiently long time from corrosion. Silica gel shall be indicating type confirming to IS-304 (1979) packed in cotton bags placed at different positions inside the packing for absorbing moisture and shall not come into directly contact with equipment/material inside the package. The quantity of silica gel shall be adequate for storage period of one year, however it shall not be less than 4 gm. per ltr. Volume of case subject to minimum 400 gm. Per case.





TITLE

TECHNICAL SPECIFICATION
FOR SEAWORTHY PACKING
FOR EXPORT JOBS

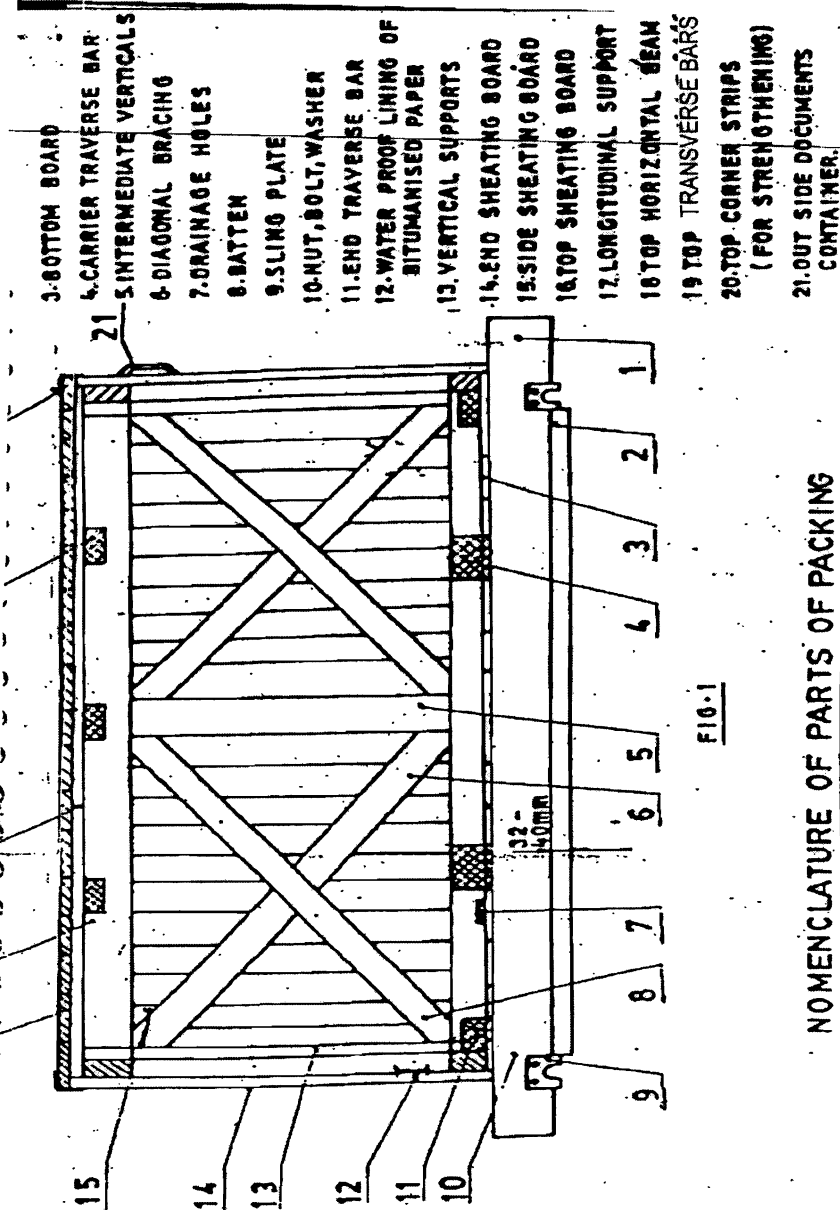
SPECIFICATION NO. PE-TS-888-100-A001

VOLUME II B

SECTION D

REV. NO. 0 DATE 10/08/2010

SHEET 15 OF 52



EC-009





TITLE

TECHNICAL SPECIFICATION
FOR SEAWORTHY PACKING
FOR EXPORT JOBS

SPECIFICATION NO. PE-TS-888-100-A001

VOLUME II B

SECTION D

REV. NO. 0 DATE 10/08/2010

SHEET 16 OF 52

BOTTOM FRAME ARRANGEMENTS

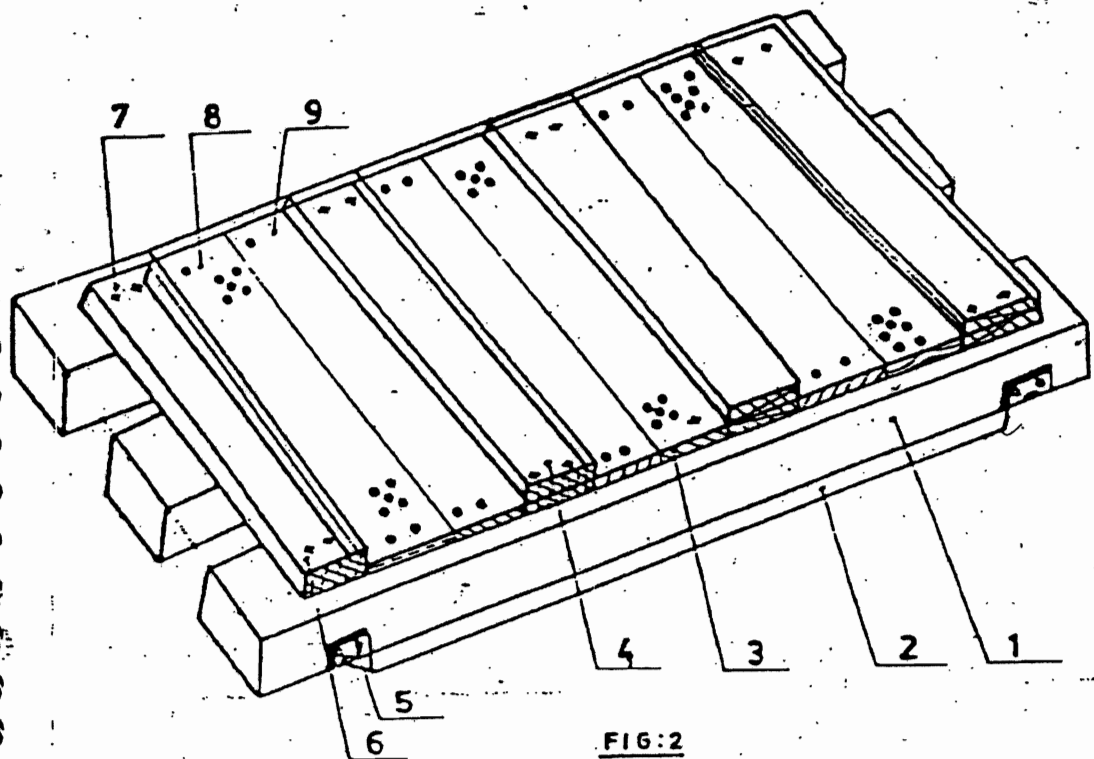


FIG:2

Nos. of slides: Minimum 2 Nos.
For length more than 1800 mm or
load more than 1000kg, Nos. of
slides shall be minimum 3 Nos.
For dimensions of slides, refer Table 1
Cross section of end transverse bar; 100x100 mm.
(minimum)

1. SLIDE
2. UNDER SLIDE BOARD
3. BOTTOM BOARD
4. CARRIER TRAVERSE BAR
5. SLING PLATE
6. TRAVERSE BAR
7. BOLT, NUT & WASHER
8. DRAINAGE HOLES
9. NAILS



TITLE

TECHNICAL SPECIFICATION
FOR SEAWORTHY PACKING
FOR EXPORT JOBS

SPECIFICATION NO. PE-TS-888-100-A001

VOLUME II B

SECTION D

REV. NO. 0 DATE 10/08/2010

SHEET 17 OF 52

TOP FRAME ARRANGEMENT

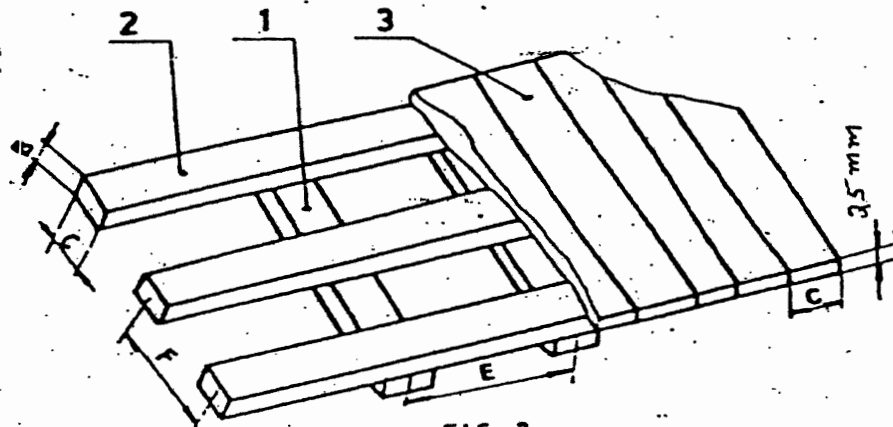
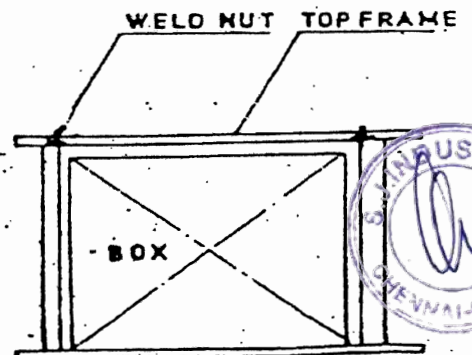
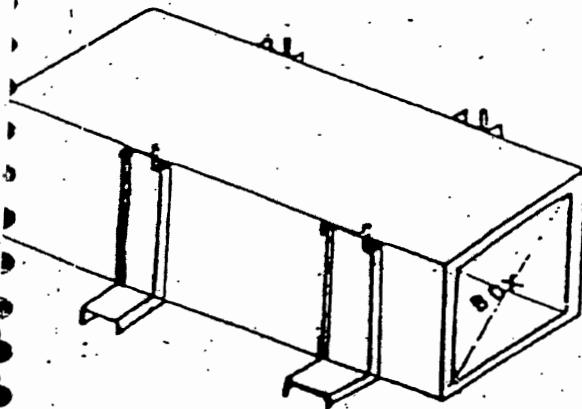


FIG-3

F : 700 to 1000 mm
E : 500 to 900 mm
30 x 100 mm.

- 1 - Traverse Bars
- 2 - Horizontal Soans
- 3 - Top Board

ARRANGEMENT OF C-CLAMPS AROUND CASES



**TITLE****TECHNICAL SPECIFICATION
FOR SEAWORTHY PACKING
FOR EXPORT JOBS**

SPECIFICATION NO. PE-TS-888-100-A001

VOLUME II B

SECTION D

REV. NO. 0 DATE 10/08/2010

SHEET 18 OF 52

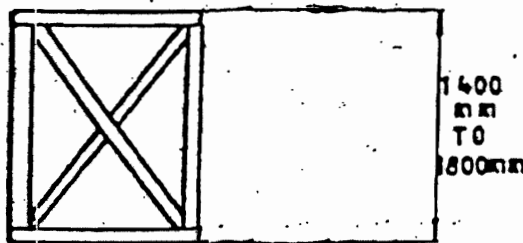
**ARRANGEMENT OF DIAGONAL BRACING AND
HORIZONTAL SUPPORT**

FIG: 6

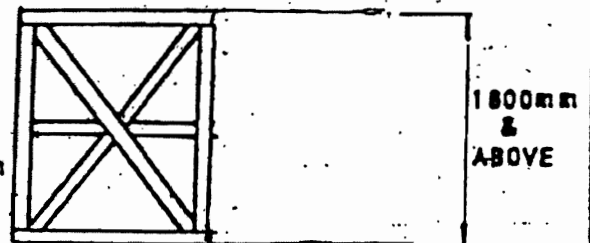


FIG: 8

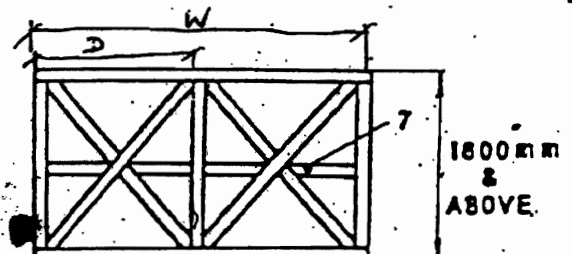


FIG: 7

7- Middle Horizontal Support

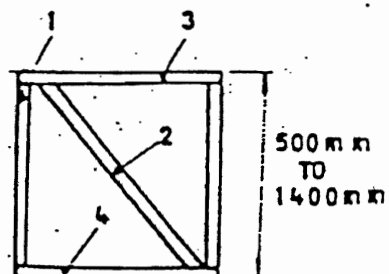


FIG: 5

1- Vertical Support

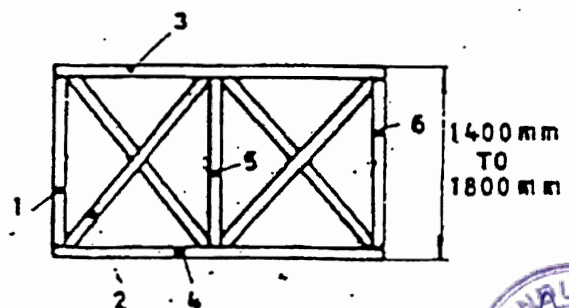


FIG: 7

1, 5, 6 - Vertical Support



**TITLE**

**TECHNICAL SPECIFICATION
FOR SEAWORTHY PACKING
FOR EXPORT JOBS**

SPECIFICATION NO. PE-TS-888-100-A001

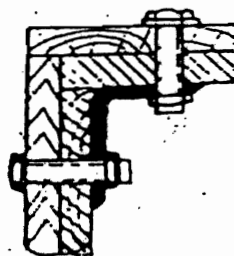
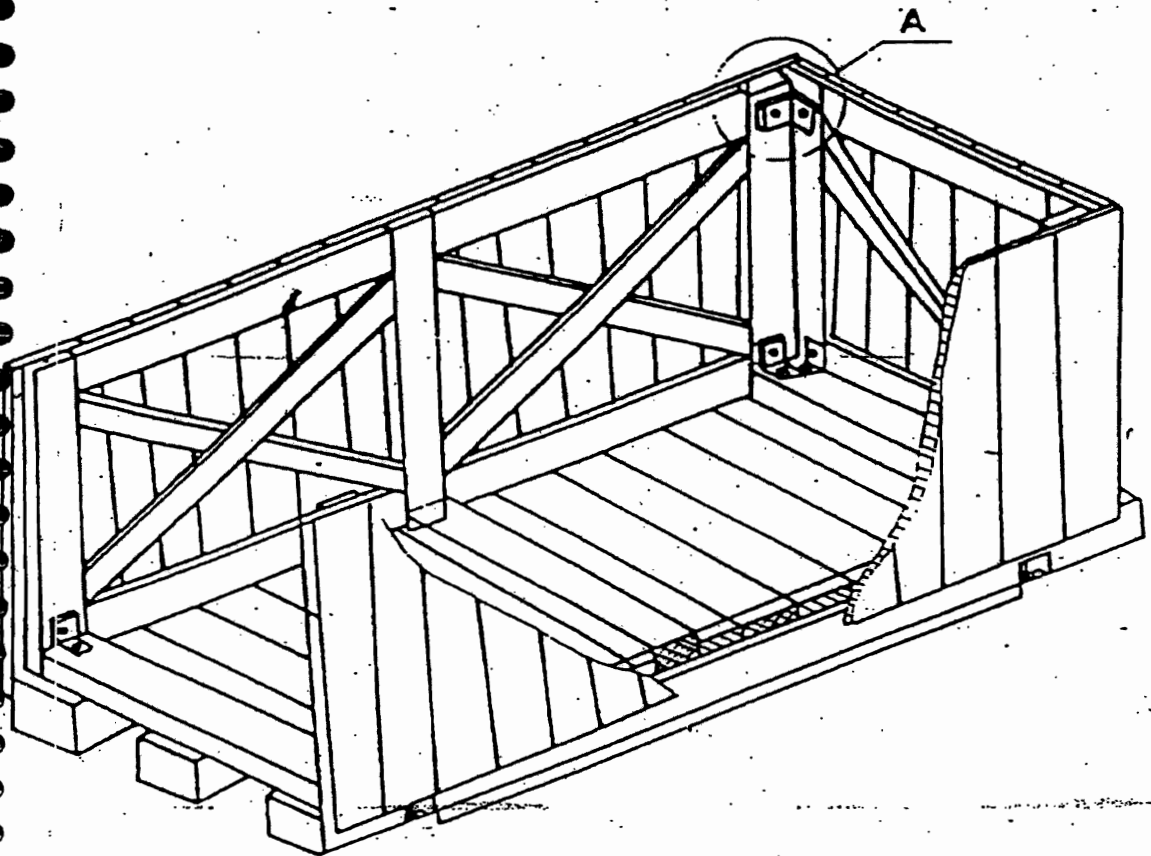
VOLUME II B

SECTION D

REV. NO. 0 DATE 10/08/2010

SHEET 19 OF 52

ARRANGEMENT OF PACKING CASE



DETAIL-A

**HOLE DIAMETER
MUST CONFORM
TO BOLT DIA**

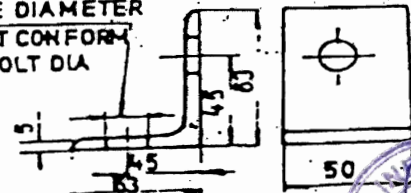


FIG:10



**TITLE****TECHNICAL SPECIFICATION
FOR SEAWORTHY PACKING
FOR EXPORT JOBS**

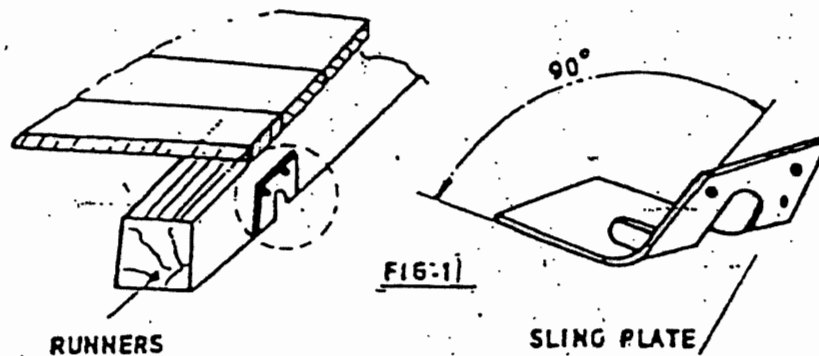
SPECIFICATION NO. PE-TS-888-100-A001

VOLUME II B

SECTION D

REV. NO. 0 DATE 10/08/2010

SHEET 20 OF 52

**ARRANGEMENT OF SLING & PLATE ON
CASES**

031

	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 21	OF 52

TABLE-1

LOADS	LENGTHS OF SLIDES						
	600	800	1000	1200	1300	1500	2000
	Cross section b x c				c b		
500	50 X 100	50 X 100	50 X 100	50 X 100	75 X 100	75 X 100	100 X 100
800	50 X 100	50 X 100	75 X 100	75 X 100	75 X 100	75 X 100	100 X 100
1000	75 X 100	75 X 100	75 X 100	100 X 100	100 X 100	100 X 110	100 X 150
1500	75 X 100	75 X 100	100 X 100	100 X 100	100 X 100	100 X 150	100 X 150
2000	75 X 100	100 X 100	100 X 100	100 X 150	100 X 150	100 X 150	150 X 150
2500	75 X 100	100 X 100	100 X 150	100 X 150	100 X 150	150 X 150	150 X 150
3000	100 X 100	100 X 150	150 X 150	150 X 150	150 X 150	150 X 150	150 X 150



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 22	OF 52

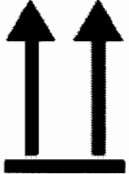
Table-2

End and side panels	Width of the panel "W"	Distance between longitudinal support (Dimension "D")						
		600	800	1000	1200	1400	1600	1800
		Cross section b x c				Item 1 to 7		
Fig- 5 to Fig-9	600 to 1200	30	30	30	30	30	30	30
		X	X	X	X	X	X	X
	1201 to 1600	100	100	100	130	130	130	130
		30	30	30	30	30	30	30
	1601 to 2000	X	X	X	X	X	X	X
		130	130	130	130	130	130	130
	2001 to 3000	30	30	30	30	30	30	40
		X	X	X	X	X	X	X
	3001 to 4000	130	130	130	130	130	130	150
		40	40	40	40	40	40	40
		X	X	X	X	X	X	X
		150	150	150	150	150	150	150



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 23	OF 52

INDICATION MARKS ON CASES/BOXES/CRATES

Designation	Symbol	Explanation
Fragile, Handle with care		The symbol should be applied to easily broken cargoes. Cargoes marked with this symbol should be handled carefully and should never be tipped over or slung.
Use no hooks		Any other kind of point load should also be avoided with cargoes marked with this symbol. The symbol does not automatically prohibit the use of the plate hooks used for handling bagged cargo.
Top		The package must always be transported, handled and stored in such a way that the arrows always point upwards. Rolling, swinging, severe tipping or tumbling or other such handling must be avoided.
Keep away from heat (solar radiation)		Compliance with the symbol is best achieved if the cargo is kept under the coolest possible conditions. In any event, it must be kept away from additional sources of heat. It may be appropriate to enquire whether prevailing or anticipated temperatures may be harmful.
Protect from heat and radioactive sources		Stowage as for the preceding symbol. The cargo must additionally be protected from radioactivity.
Sling here		The symbol indicates merely where the cargo should be slung, but not the method of lifting. If the symbols are applied equidistant from the middle or center of gravity, the package will hang level if the slings are of identical length. If this is not the case, the slinging equipment must be shortened on one side.
Keep dry		Cargo bearing this symbol must be protected from excessive humidity and must accordingly be stored under cover. If particularly large or bulky packages cannot be stored in warehouses or sheds, they must be carefully covered with tarpaulins.



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 24	OF 52

Center of gravity		This symbol is intended to provide a clear indication of the position of the center of gravity. To be meaningful, this symbol should only be used where the center of gravity is not central. The meaning is unambiguous if the symbol is applied onto two upright surfaces at right angles to each other.
No hand truck here		The absence of this symbol on packages amounts to permission to use a hand truck on them.
Stacking limitation		The maximum stacking load must be stated as "... kg max.". Since such marking is sensible only on packages with little loading capacity, cargo bearing this symbol should be stowed in the uppermost layer.
Clamp here		Stating that the package may be clamped at the indicated point is logically equivalent to a prohibition of clamping anywhere else.
Temperature limitations		According to regulations, the symbol should either be provided with the suffix "...°C" for a specific temperature or, in the case of a temperature range, with an upper ("...°C max.") and lower ("...°C min.") temperature limit. The corresponding temperatures or temperature limits should also be noted on the consignment note.
Do not use forklift truck here		This symbol should only be applied to the sides where the forklift truck cannot be used. Absence of the symbol on other sides of the package amounts to permission to use forklift trucks on these sides.
Electrostatic sensitive device		Contact with packages bearing this symbol should be avoided at low levels of relative humidity, especially if insulating footwear is being worn or the ground/floor is nonconductive. Low levels of relative humidity must in particular be expected on hot, dry summer days and very cold winter days.



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 25	OF 52

Do not destroy barrier		A barrier layer which is (virtually) impermeable to water vapor and contains desiccants for corrosion protection is located beneath the outer packaging. This protection will be ineffective if the barrier layer is damaged. Since the symbol has not yet been approved by the ISO, puncturing of the outer shell must in particular be avoided for any packages bearing the words "Packed with desiccants".
Tear off here		This symbol is intended only for the receiver.

FIG-12



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS		SPECIFICATION NO. PE-TS-888-100-A001	
			VOLUME II B	
			SECTION D	
			REV. NO. 0	DATE 10/08/2010
			SHEET 26	OF 52

BHEL-PEM-DEWHI-INDIA	
CONSIGNEE	
MATERIAL	
CUSTOMER REF.	MO. NO.
DESPATCH ADVICE NOTE NO.	CASE NO.
DIMENSIONS(MM) LXBXH	NET WT -KGS GROSS WT -KGS
SPECIAL INSTRUCTIONS	HANDLE WITH CARE -- KEEP DRY DO NOT DROP -- DO NOT TILT

FIG-13: MARKING PLATE





TITLE

TECHNICAL SPECIFICATION
FOR SEAWORTHY PACKING
FOR EXPORT JOBS

SPECIFICATION NO. PE-TS-888-100-A001

VOLUME II B

SECTION D

REV. NO. 0 DATE 10/08/2010

SHEET 27 OF 52

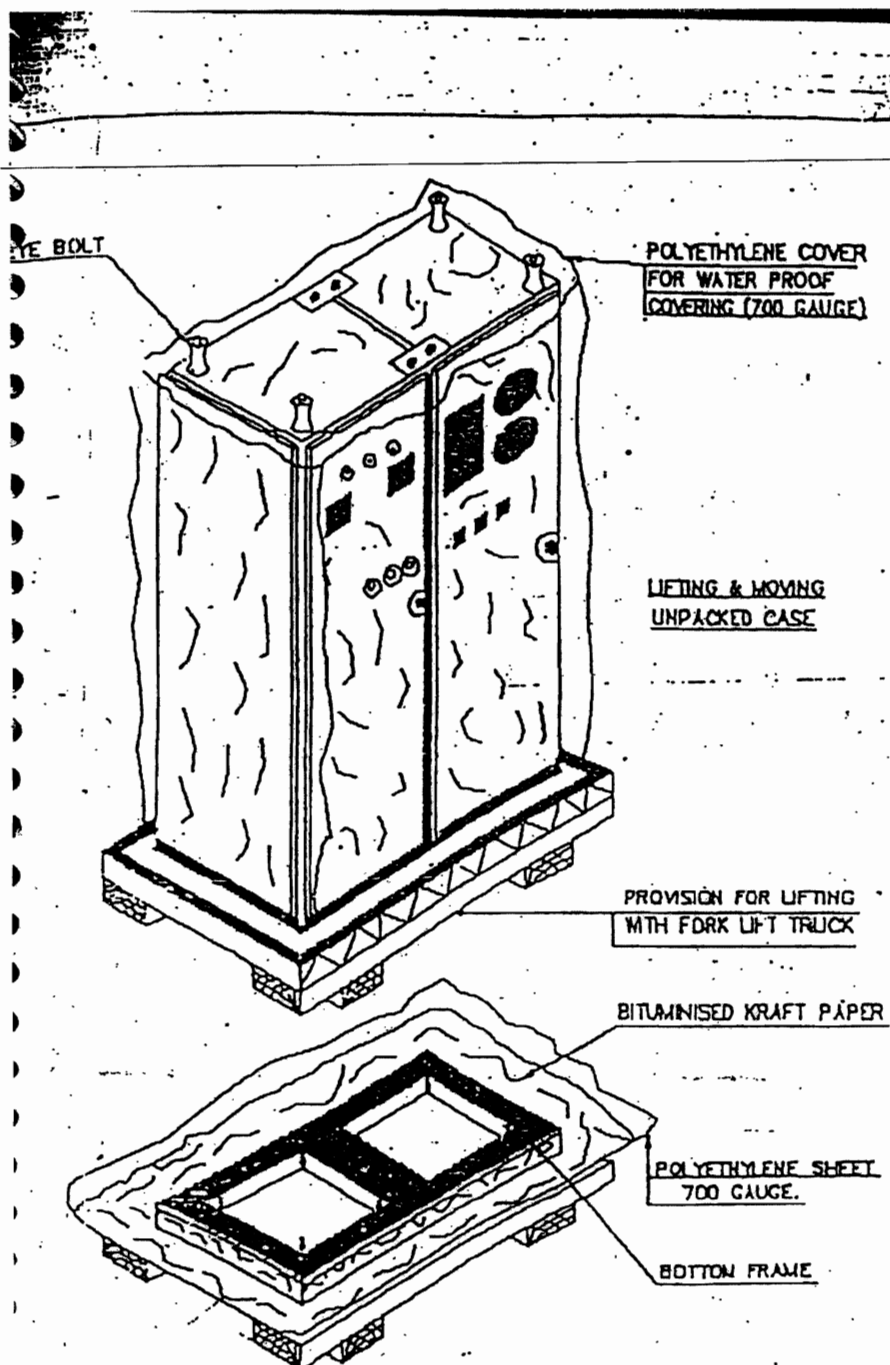


FIGURE-14



**TITLE****TECHNICAL SPECIFICATION
FOR SEAWORTHY PACKING
FOR EXPORT JOBS**

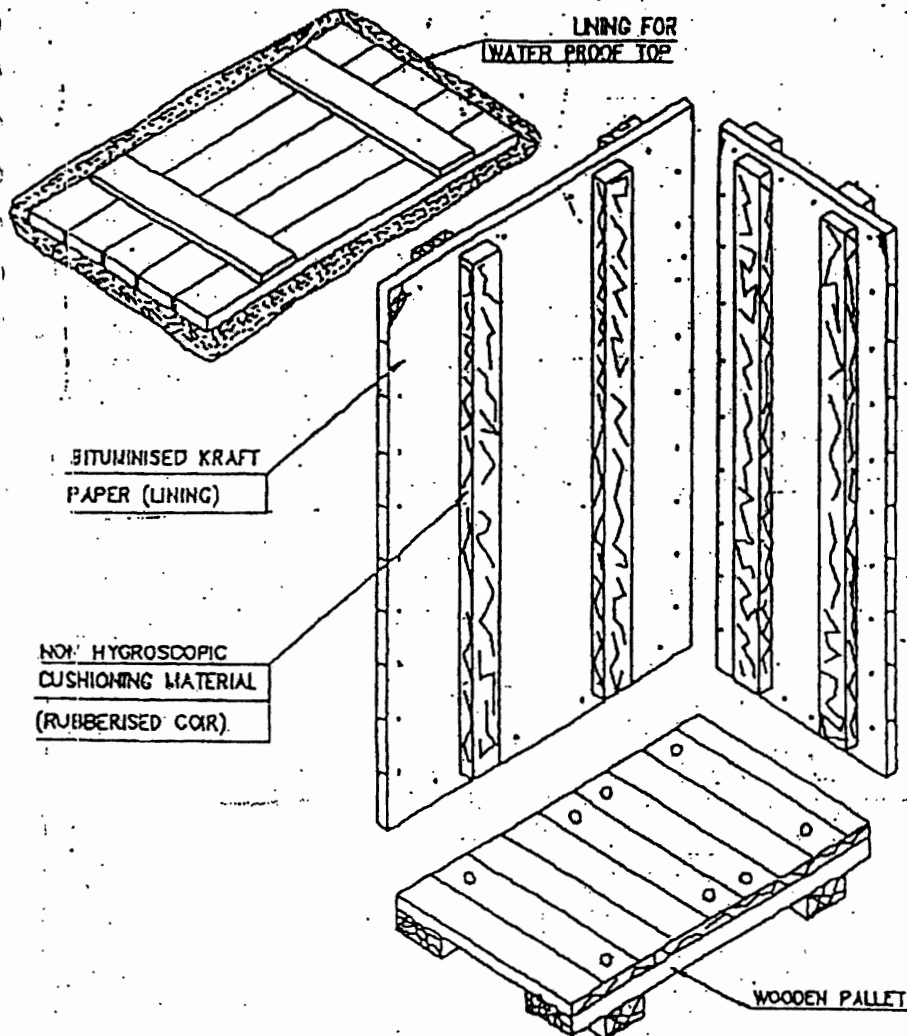
SPECIFICATION NO. PE-TS-888-100-A001

VOLUME II B

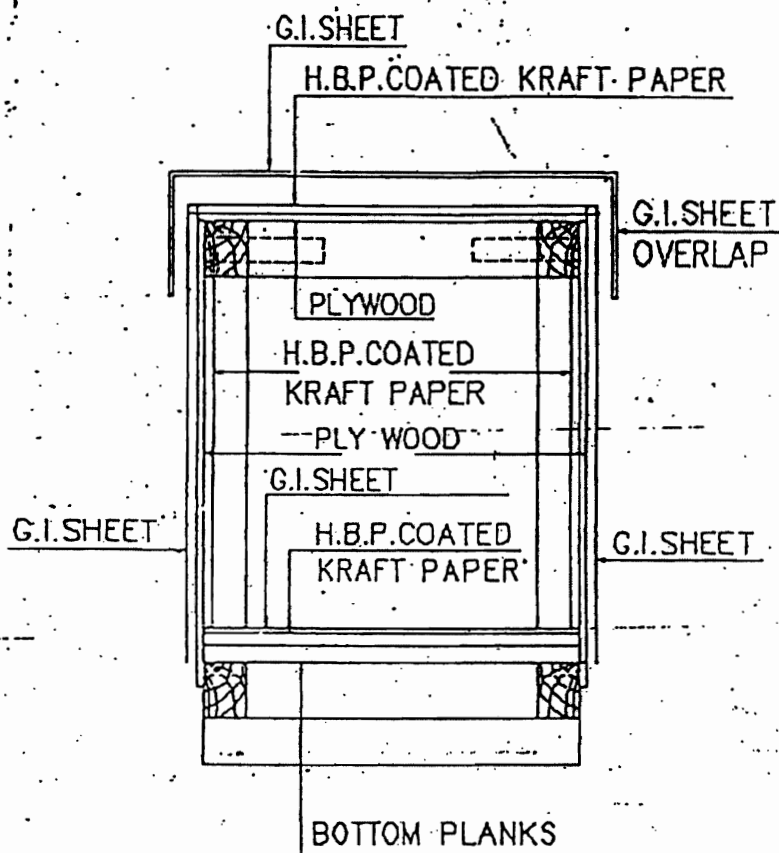
SECTION D

REV. NO. 0 DATE 10/08/2010

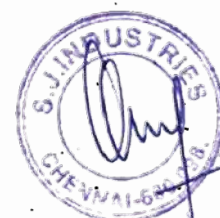
SHEET 28 OF 52

**FIGURE-15**

	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 29	OF 52



**FIG-16 : CLOSED PACKING CASE WITH G.I.SHEET
SHOWING LAYERS OF PACKING MATERIALS.**



038

	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 30	OF 52

10.0 TYPICAL PACKING DETAILS/PROCEDURE FOR MECHANICAL ITEMS

10.1 INSULATION MATERIAL (MINERAL WOOL MATTRESSES)

This specification covers the requirements of seaworthy packing and marking for bonded mineral (rock) wool mattresses having metallic hexagonal wire netting as facing on one or both sides.

10.1.1 TYPE OF CONSTRUCTION

Mattress shall be packed in Polythene (of 0.2 mm thickness) all around and sealed to prevent moisture absorption during transit and storage. Further it shall be wrapped with Bitumen coated Polythene bonded/lined Hessian and stitched and then packed in 5 ply DFC carton box.

Silica gel is used for this purpose to protect contents over sufficiently long time from corrosion. Silica gel shall be of indicating type conforming to IS:304-1979 packed in cotton bags placed at different positions inside the packing for absorbing moisture and shall not come into direct contact with the material inside the package. The quantity of silica gel shall be enough for storage period of one year. However, it shall not be less than 4 gms per litre volume of case subject to minimum of 400 gms per case.

Each mattress as well as the packages shall be serial numbered. Also, printed sheets indicating the nominal thickness, density and wire netting details (i.e. material and size) shall be placed below the wire netting.

Following details shall be legibly written on the packages. The details shall also be typed on a sheet of paper & kept in a sealed Polythene cover, inside the packages

- Project Name
- Purchase Order No.
- Sl. No. of package
- Size of mattress (Thickness x Length x Width)
- Density
- Wire netting material and size
- Weight of the package

10.2 INSULATION MATERIAL (ALUMINIUM COIL)

Heavy Gauge Aluminium Coil Packaging are done by Eye-to-Sky packaging or by Eye to eye packaging as per the proven practice being followed by manufacturer of Aluminium sheets.

10.2.1 Type of construction for Eye to Sky packaging

- Strapping of coil with polyester strap around circumference at one place.
- Putting paper I. D. Edge protector.
- Wrapping the coil with VCI stretch film after putting silica gel bags (4 nos.) Inside the coil.
- Wrapping the coil with HDPE film.
- Covering the coil including its build up & bore with masonite / particle board.
- Putting metallic I. D on coil.
- Putting O.D edge protector (paper) on coil.



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 31	OF 52

- h. Putting circumferential polyester strap (3 nos.) & eye polyester strap (4 nos.).
- i. After placing the coil on coil tilter ply wood (10mm thick) of suitable size along with wooden pallet is to be put at the bottom side of the coil.
- j. Coil is to be tilted to eye-to-sky position.
- k. Final strapping with metallic strap to unit coil and skid at 2 places with top cover of plywood.
- l. Fixing the coil with wooden blocks at 4 corners.
- m. Labeling 2 nos.(one metallic & one adhesivetype) For specification, net wt. & gross wt.

10.2.2 Type of construction for Eye to Eye packaging

- a. Strapping of coil with polyester strap around circumference at one place.
 - b. Putting paper I. D. Edge protector.
 - c. Wrapping the coil with VCI stretch film after putting silica gel bags (4 nos.) Inside the coil.
 - d. Wrapping the coil with HDPE film.
 - e. Covering the coil including its build up & bore with masonite / particle board.
 - f. Putting metallic I. D on coil.
 - g. Putting O.D edge protector (paper) on coil.
 - h. Putting circumferential polyester strap (3 nos.) & eye polyester strap (4 nos.).
 - i. Placing of coil on wooden skid Coil is to be tilted to eye-to-sky position.
 - j. Final strapping of coil and skid at 2 places with steel strap. Fixing the coil with wooden blocks at 4 corners.
- Labeling 2 nos.(one metallic & one adhesive type) For specification net wt. & gross wt.

10.3 Packing Procedure for Online Tube Cleaning System and accessories

This procedure is applicable for the shipment of Onload Tube Cleaning System and accessories by sea.

10.3.1 Packing details:

- The Packing case shall be made of treated rubber wood. The design of the case shall be as per Annexure IIIA & IIIB.
- The Equipments shall be placed on the wooden base of the Packing case and fastened if required to arrest the movement of the same.
- Equipment shall be covered by Polythene sheet and inside wall surfaces of the wooden cases also shall be covered by polythene sheet.
- All Nozzles shall be closed with plywood dummies.
- All electrical components assembled or loose shall be covered with polythene sheets along with silica gel pack.
- Silica gel desiccants shall be kept inside each case in sufficient quantities in order to absorb the moisture.



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 32	OF 52

- Thermocol packing shall be made for glass items like Ball vessel sight glass, Vpiece
- sight glass & pressure gauge.
- Silica gel desiccants shall be kept inside of each case to absorb the moisture.
- A Packing list covered in a polythene envelope shall be fixed inside and outside of each packing case.
- Shipping marks and consignee address shall be painted on the outer surface of the case.
- All handling instruction required for the case like top, sling, rain, handle with care etc, shall be marked on the case as per the symbol attached.
- Machined surface will be applied with Anti rust oil and covered by polyurethane sheet to protect from external oxidation.
- All valves will be closed with dummies to protect the internals and placed in the wooden case which will covered by polyurethane sheet.





TITLE

TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS

SPECIFICATION NO. PE-TS-888-100-A001

VOLUME II B

SECTION D

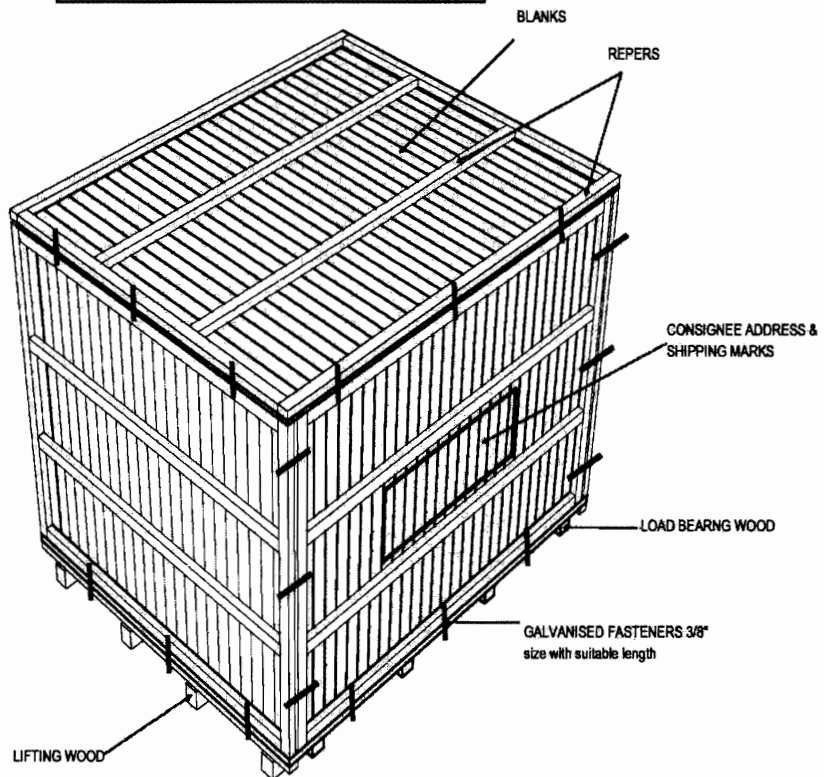
REV. NO. 0 DATE 10/08/2010

SHEET 33 OF 52

MODEL: FASTNERS TYPE (BASE, SIDE & TOP
ATTACHED WITH BOLT, NUT & WASHER)

This Type of case to be used for
following items:

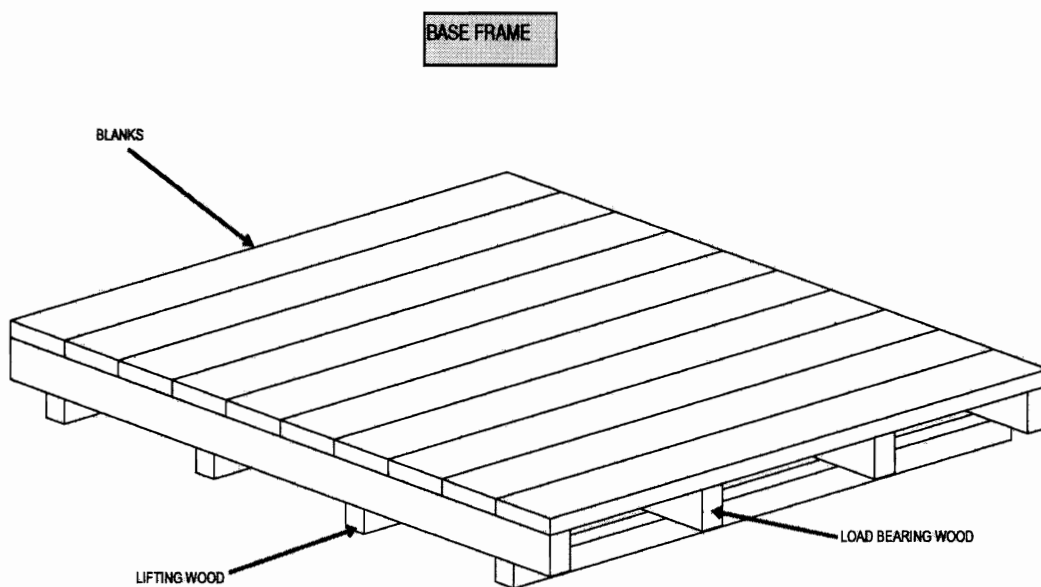
1. BALL SEPERATOR
2. BALL COLECTOR SKID



SHEET 05 of 10



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 34	OF 52



SHEET 06 of 10



**TITLE****TECHNICAL SPECIFICATION
FOR SEAWORTHY PACKING
FOR EXPORT JOBS**

SPECIFICATION NO. PE-TS-888-100-A001

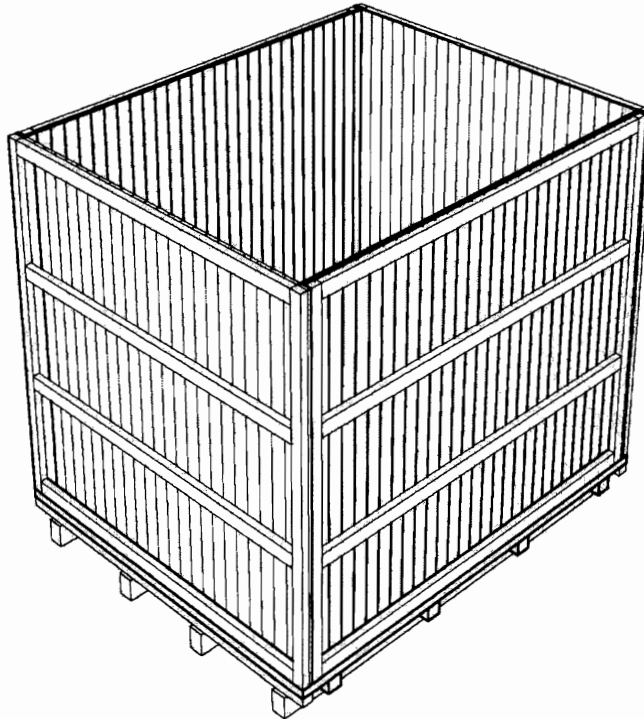
VOLUME II B

SECTION D

REV. NO. 0 DATE 10/08/2010

SHEET 35 OF 52

MODEL: FASTNERS TYPE - WITHOUT TOP



SHEET 07 of 10





TITLE

TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS

SPECIFICATION NO. PE-TS-888-100-A001

VOLUME II B

SECTION D

REV. NO. 0 DATE 10/08/2010

SHEET 36 OF 52

MODEL: NAILING TYPE
(FRAME & INSIDE REEPER NAILED)

THIS TYPE OF CASE TO BE USED FOR THE
FOLLOWING ITEMS:

1. PUMP SKID
2. CONTROL PANEL
3. LOOSE ITEMS, TOOLS & TACKLES
4. DPMS, BRM
5. SPARES
6. CLEANING BALLS
7. CABLES & ACCESSORIES

Shipping marks & Consignee
Address

BLANKS

LIFTING WOOD

BLANKS

REEPERS

BLANKS

REEPERS

LOAD BEARING WOOD

SHEET 08 of 10



**TITLE****TECHNICAL SPECIFICATION
FOR SEAWORTHY PACKING
FOR EXPORT JOBS**

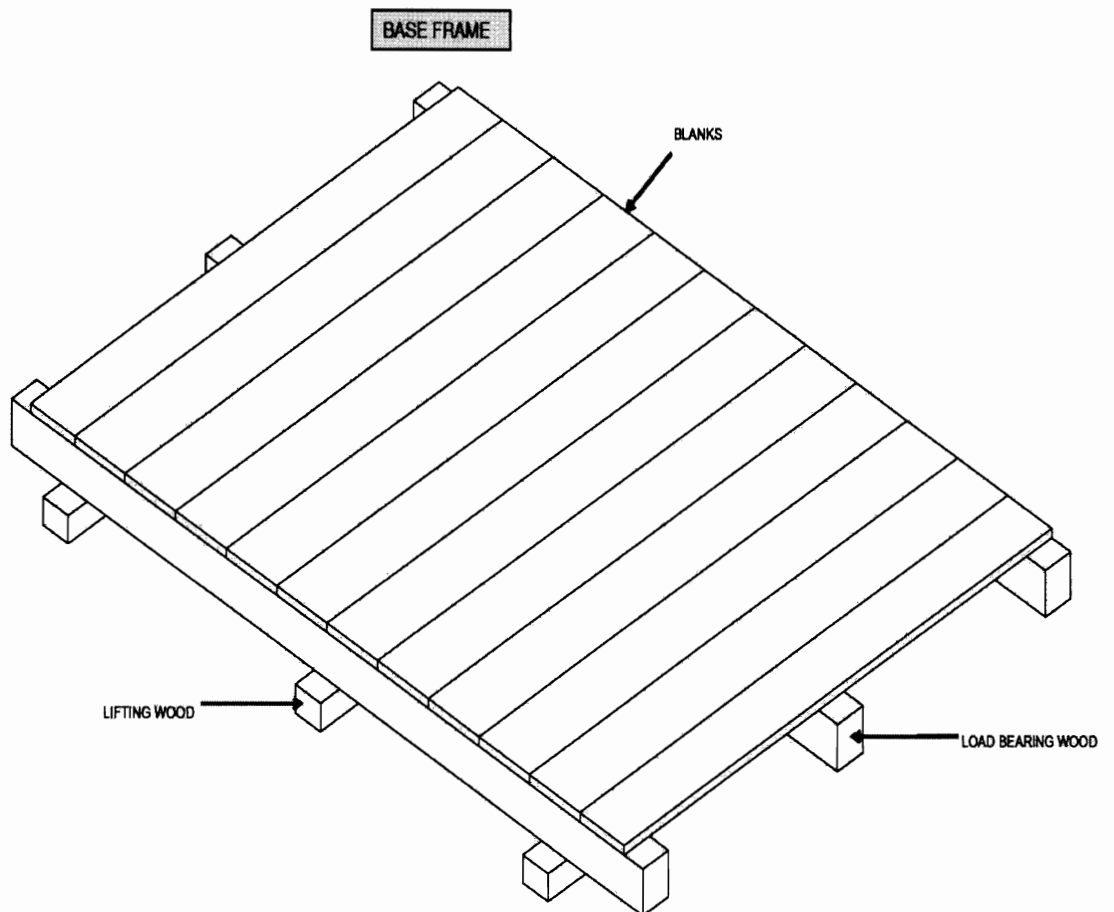
SPECIFICATION NO. PE-TS-888-100-A001

VOLUME II B

SECTION D

REV. NO. 0 DATE 10/08/2010

SHEET 37 OF 52



SHEET 09 of 10



**TITLE****TECHNICAL SPECIFICATION
FOR SEAWORTHY PACKING
FOR EXPORT JOBS**

SPECIFICATION NO. PE-TS-888-100-A001

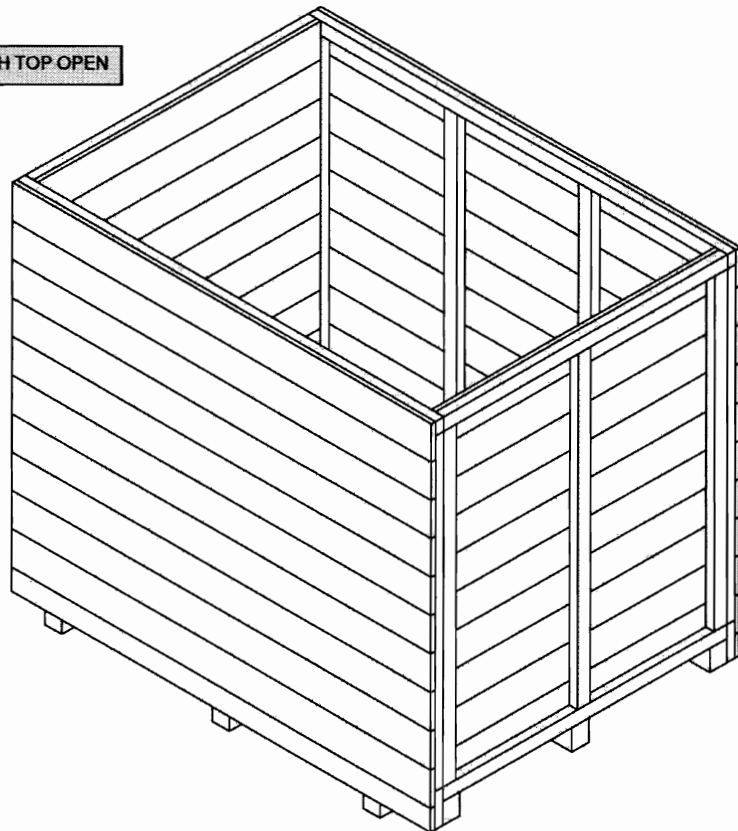
VOLUME II B

SECTION D

REV. NO. 0 DATE 10/08/2010

SHEET 38 OF 52

NAILING TYPE MODEL WITH TOP OPEN



SHEET 10 of 10



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 39	OF 52

10.4 PACKING OF LOOSE ITEMS

Loose mechanical, electrical and C&I items e.g. valves, fittings, pressure/temperature gauges/switches, circuit breakers, relays etc shall be individually wrapped using polyethylene sheets/U foam/ thermocol sheets/air bubble sheets depending upon the items and then packed in wooden boxes. The left out spaces and top of the boxes shall be filled with rubberized coir to get proper cushioning effect, Special attention shall be paid to relays, instruments etc for arresting the movements of their operating mechanism during transportation.

The construction of wooden packing cases shall be as per clause 9.3.1 retaining its all features concerning strength of the box. The construction of wooden packing case for electrical and C&I items shall be as per fig-16.

Inner surface of 6 sides of the box shall be lined with bitumen coated hessian polyethylene kraft paper. Rubberized coir of min. 25mm thickness and 100 mm width shall be nailed to inner surfaces of bottom and 4 sides of the boxes.

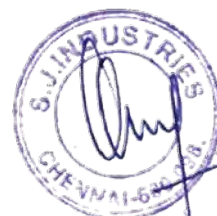
11.0 PACKING OF ELECTRICAL ITEMS

11.1 CABLES

11.1.1 Type of Equipment
All type of cables..

11.1.2 Type of Construction

New or practically new cable drums made of steel and painted with epoxy resin paint are to be used. Cable ends are carefully protected before packing. Over the cables polyethylene sheet shall be wrapped and then sealed properly. Cable drum can be put in wooden crates for ease in transportation and handling. (Wooden cable drum is also acceptable, however vendor to furnish constructional details for approval).





TITLE

TECHNICAL SPECIFICATION
FOR SEAWORTHY PACKING
FOR EXPORT JOBS

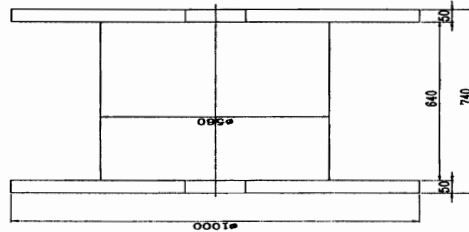
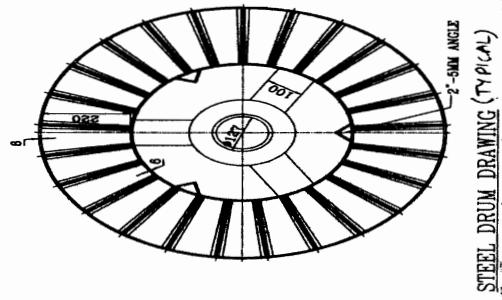
SPECIFICATION NO. PE-TS-888-100-A001

VOLUME II B

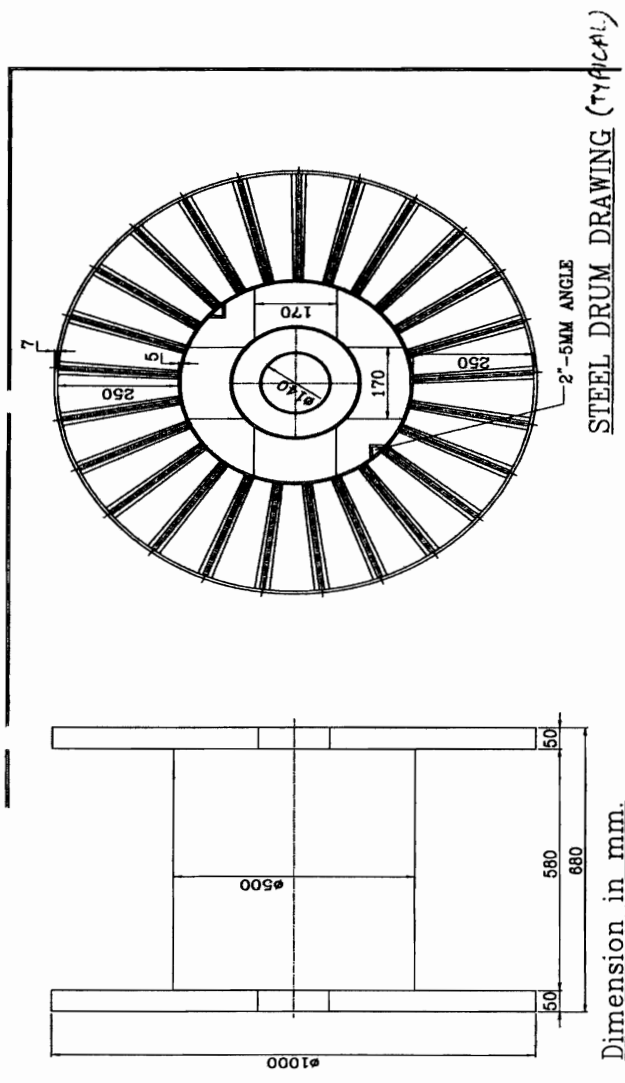
SECTION D

REV. NO. 0 DATE 10/08/2010

SHEET 40 OF 52



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 41	OF 52



11.2 PACKING OF CABLE TRAYS & ACCESSORIES AND CABLE TRAY SUPPORT MATERIAL

11.2.1 Cable trays can be packed in wooden boxes as per fig 1 to 11 or in steel boxes. Details of steel box construction is as indicated below.

- 1) All Dimensions are in "mm" unless otherwise stated.
- 2) Packing Box shall be fabricated using 50x50x6mm MS Angle, 50x3mm Flat, 2.5 mm thick C Channel, 1mm & 1.6mm Thick sheet.
- 3) Finish of Packing Box Shall be Galvanized.
- 4) Angle & Channel Section forming part of the Main frame shall be welded thoroughly with each other to give a rigid structure.
- 5) Sheet Section and Flat section shall be bolted/ Riveted/ Welded suitably to the Main frame stated in '4' above.



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 42	OF 52

- 6) Welding Portion on galvanized surfaces shall be painted with Zinc Rich Paint.
- 7) Dispatch details such as consignor/consignee address, contract and case details, 'country of origin, port of delivery, stacking instructions shall be written on one of the side of boxes. An anodized aluminium plate as per details and specifications given in page 3 of 5 shall be provided on the boxes
- 8) One copy of packing slip wrapped in polythylene bag covered with suitable aluminium .packing slip holder to be nailed on the external surface of the box. One more copy 9f the packing Slip wrapped in polythylene bag to be kept inside the box at the prominent place.
- 9) **INDICATION MARKS ON THE BOXES:** Markings shall be provided on the boxes indicating position of Boxes for handling, storage and nature of consignment. For guidelines referred page 4 of 5. The ink issued for this purpose as well as for marking dispatch instruction shall be indelible/non-washable marking ink.
- 10) Each item as mentioned in BOQ shall be packed & supplied as a set comprising of required numbers of associated fasteners & hardware etc



**TITLE****TECHNICAL SPECIFICATION
FOR SEAWORTHY PACKING
FOR EXPORT JOBS**

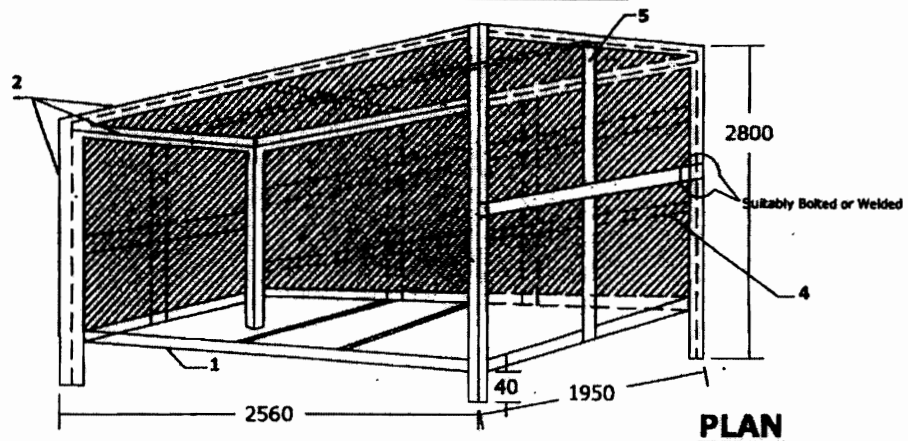
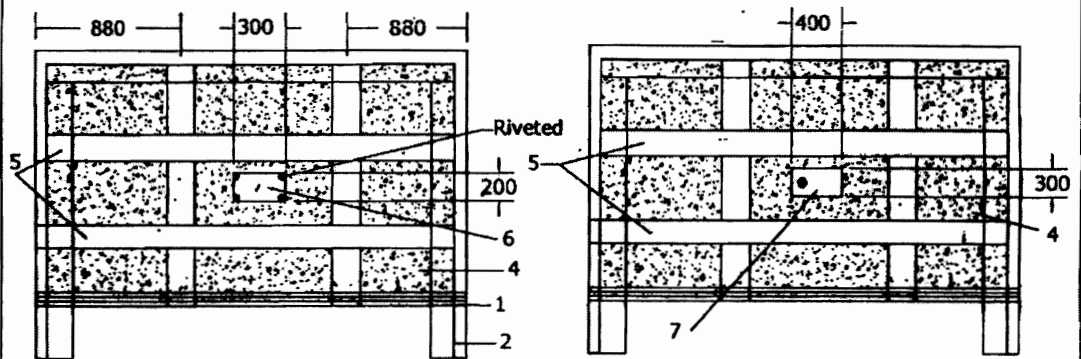
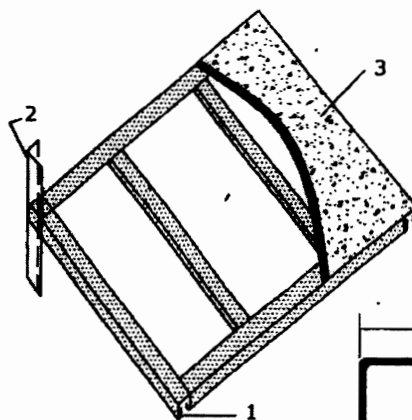
SPECIFICATION NO. PE-TS-888-100-A001

VOLUME II B

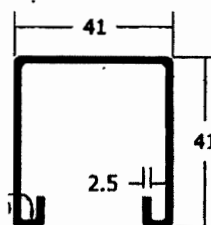
SECTION D

REV. NO. 0 DATE 10/08/2010

SHEET 43 OF 52

STEEL PACKING (TYPICAL DETAILS)**PLAN****FRONT SIDE OF BOX****BACK SIDE OF BOX****BOTTOM FRAME ARRANGEMENT****Note:**

1. "C" Channel to be used on Bottom Frame.
2. 50x50x6 Angle to be used Vertically on four sides of the Box and Horizontally on four sides on the top Frame.
3. 1.6mm thick sheet (plain) on Bottom Plate.
4. 1.0mm thick sheet to cover top & four sides of BOX.
5. 50x3 Flat as additional cross members to be used Horizontally & Vertically on top & Four Sides of Box.
6. Anodised Aluminium Plate for Marking.
7. Hinged Inspection Window.

**DETAILS OF "C" CHANNEL**

	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 44	OF 52

11.3 PACKING FOR STATION LIGHTING SYSTEM

Aspects of packing specific to equipments / items of station lighting system are given here. All other instructions / aspects as per the main specification of export packing which are not covered here shall also be applicable.

11.3.1 For LIGHTING TRANSFORMER, DISTRIBUTION BOARDS, LIGHTING PANELS,

- Construction of packing case for LIGHTING DISTRIBUTION BOARDS, LIGHTING PANELS, TRANSFORMER . shall be EITHER as per FIGURE 1,2,3,5,6,7,8,9,10,11 OR FIGURE 14,15,16.
- Each Panel/Transformer shall be individually covered with double polythene sheet of thickness 175 microns minimum.
- All the 6 inner surfaces of packing shall be nailed with bitumen coated hessian polythene craft paper. Wherever 2 pieces of craft paper are used, the joint shall have minimum overlap of 20mm.

For the top frame it shall be project on all sides by 100mm and shall be nailed on sides .

- The gap between the panels and packing case shall be filled with rubberized coir of thickness 50mm minimum and width 100mm. The distance between two consecutive supports of rubberized coir shall be less than 500mm.
- Silica get packed in cotton bags shall be placed at different positions inside the packing.
- Packing case shall be finally covered with GI sheet of thickness 0.4mm minimum.

11.3.2 For LUMINARIES, RECEPTACLES. EMERGENCY LIGHT, 240/24V TRANSFORMER, CEILING FAN, SWITCH BOARDS, FLEXIBLE CONDUIT, WIRES, EARTH WIRE. JUNCTION BOXES, ERECTION COMMISSIONING SPARES, RECOMMENDED SPARES , ERECTION MATERIAL AND CONSUMABLES

- Construction of packing case for THE ABOVE MATERIAL shall be as per FIGURE 1to11.
- Items placed inside the case shall be covered with double polythene sheet of thickness 175 microns minimum.
- All the 6 inner surfaces of packing shall be nailed with bitumen coated hessian craft paper. wherever 2 pieces of craft paper are used, the joint shall have minimum overlap of 20mm. For the top frame it shall be project on all sides by 100mm and shall be nailed on sides.
- Silica get packed in cotton bags shall be placed at different positions inside the packing.

11.3.3 For CONDUIT PIPE

As per international practice pipes are shipped in open bundles with metal strapping. Packing as per attached figure A shall be provided which is described as following:

- Each bundle shall be wrapped with 2 layers of 175 microns thick polythene sheet.
- Then bundle will be wrapped with bitumen coated hessian craft paper.
- Bundle shall be strapped with steel straps.
- An anodized aluminium packing description plate as per Figure No. 13 shall be provided.

11.3.4 For POLES

Poles will be wrapped with 2 layers of minimum 175 microns thick polythene sheet and then with bitumen coated hessian craft paper, packed as per Figure – C i.e. bundling.

11.3.5 For STRUCTURAL STEEL



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 45	OF 52

Structural steel will be different sizes and shapes. Hence it will be packed as per Figure No. B and described as following :

- a) Each bundle shall be wrapped with 2 layers of 175 microns thick polythene sheet.
- b) Then bundle will be wrapped with bitumen coated hessian craft paper.
- c) Bundle shall be strapped with steel straps.
- d) An anodized aluminium packing description plate as per Figure No. 13 shall be provided.



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 46	OF 52

PACKING PROCEDURE FOR CONDUIT PIPE

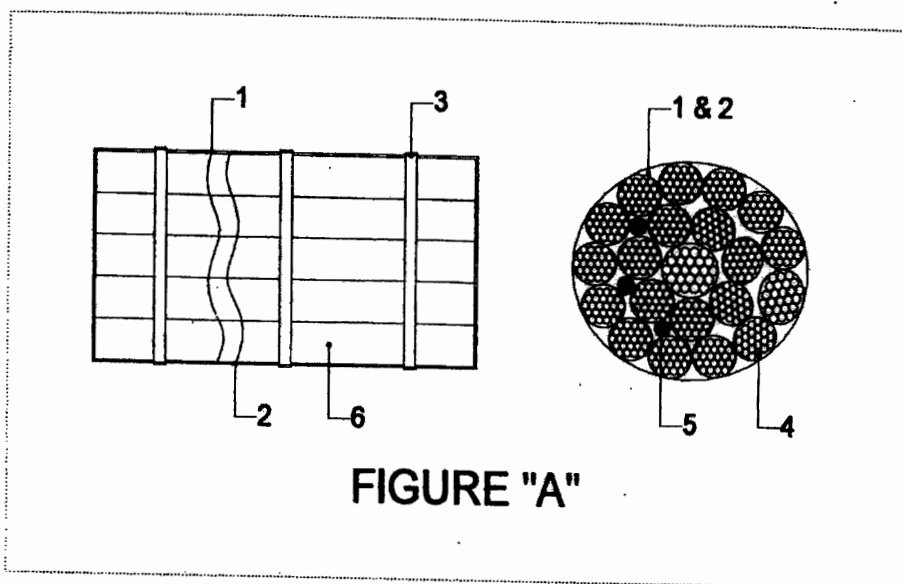


FIGURE "A"

- 1) LAYER OF BITUMEN COATED HESSIAN KRAFT PAPER.
- 2) LAYER OF POLYTHENE SHEET.
- 3) METAL STRAPPING.
- 4) CONDUIT PIPES.
- 5) SILICA GEL POUCHES.
- 6) BUNDLES OF CONDUIT PIPES.

**TITLE****TECHNICAL SPECIFICATION
FOR SEAWORTHY PACKING
FOR EXPORT JOBS**

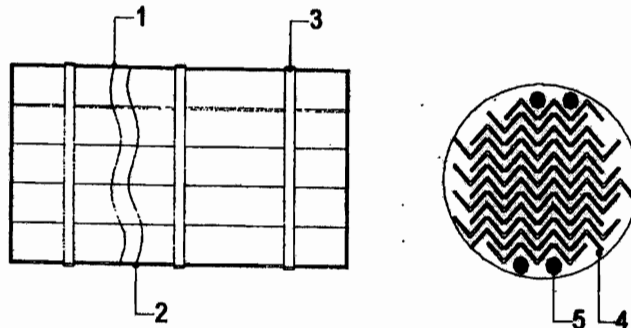
SPECIFICATION NO. PE-TS-888-100-A001

VOLUME II B

SECTION D

REV. NO. 0 DATE 10/08/2010

SHEET 47 OF 52

PACKING PROCEDURE FOR STRUCTURAL STEEL**FIGURE "B"**

- 1) LAYER OF BITUMEN COATED HESSIAN KRAFT PAPER.
- 2) LAYER OF POLYTHENE SHEET.
- 3) METAL STRAPPING.
- 4) STRUCTURAL STEEL.
- 5) SILICA GEL POUCHES.





TITLE

TECHNICAL SPECIFICATION
FOR SEAWORTHY PACKING
FOR EXPORT JOBS

SPECIFICATION NO. PE-TS-888-100-A001

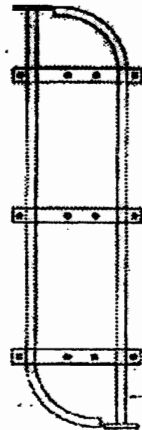
VOLUME II B

SECTION D

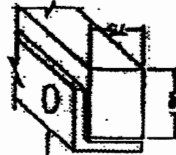
REV. NO. 0 DATE 10/08/2010

SHEET 48 OF 52

packing procedure for poles



POLES WRAPPED WITH POLYTHENE SHEET &
EXTRUDING COATED HESSIAN CLOTH



TOP WOODEN BATTEN TO BE
FIXED WITH L50x80x6 MM ON TOP
OF IT FOR TIEING THE ROD
25 MM DIA



BOTTOM WOODEN BATTEN TO BE
FIXED ON L50x80x6 MM ANGLE

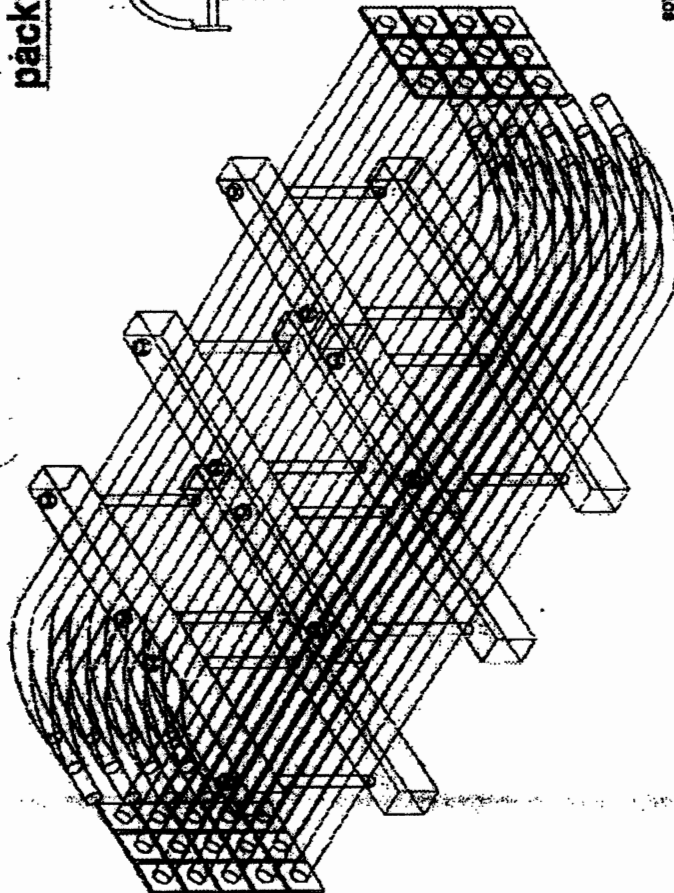


FIGURE "C"



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 49	OF 52

11.4 PACKING FOR DC BATTERY

The packing procedure for seaworthy packing of DC Battery is defined below, which is capable of withstanding impacts, compression, vibration, toppling, sea water spray, prevention against rust, temperature and extreme atmospheric conditions. Aspects of packing specific to equipments / items of DC Battery are given here. All other instructions / aspects as per the main specification of export packing which are not covered here shall also be applicable.

The packing procedure consists of various stages namely primary packing, cushioning, securing, desiccant, outside packing box, Runners/ sliders/ transverse bars of plywood, etc., provided for each movement.

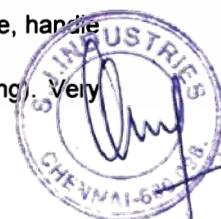
- a) The packing boxes shall be made up of plywood boxes (thickness 9mm min.) with blocks at the bottom of the box for provision for handling the boxes using the forklift. The packing boxes sizes are generally standardized to half-euro size (capable of handling equipment's weight).
- b) Rubberized coir of 25mm thickness shall be provided as cushioning material at the bottom and thermocole of 20mm shall be provided inside on all four sides. Other than this polyethylene film wrap or cover also will be provided. Left out spaces to be filled with rubberized coir/ thermocol to get cushioning effect.
- c) Silica gel in dust free air permeable cotton/paper bag shall be placed in the packing boxes for storage period of 1 year as per IS 304 (1979)
- d) While packing the cells, transit caps (polypropylene) of red and blue shall be used for big size cells for ensuring that cells does not get damaged during the transport due to vibrations etc.
- e) The battery accessories shall be packed with suitable precautions as follows:
 - i) Copper connectors shall be packed after making bunches with lead wire seals to avoid misplacement.
 - ii) Hardware items shall be packed in polyethylene bags (Thickness $\geq 0.175\text{mm}$) with item slip
 - iii) Battery rack shall be packed in dismantled condition, wrapped with polyethylene sheet
 - iv) For Ni-Cd type battery, electrolyte in solid form for dry cells shall be packed in cans with KOH, LiOH being packed separately.
 - f) Galvanized Steel straps are provided for binding the packing box sides.
 - g) The handling instructions shall be marked in indelible/ non-washable ink, indicating the upright position.

11.5 PACKING OF SERVICE TRANSFORMERS(OIL FILLED) & ACCESSORIES

This instruction is applicable for packing of transformers (oil filled), its accessories and components so as to ensure safe delivery to end user. Aspects of packing specific to equipments / items of transformers(oil filled) are given here. All other instructions / aspects as per the main specification of export packing which are not covered here shall also be applicable.

11.5.01 PACKING DETAILS :

- a) Items shall be packed in case / crates as per the shipping list.
- b) All fragile items and small items shall be packed in cases and to be marked as "Fragile, handle with care Fragile items".
- c) Fragile accessories are to be first packed in their original boxes (VENDOR's packing). Very



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 50	OF 52

- d small / delicate items such as glass thermometer, door keys shall be packed in separate box.
- d In case original box is found damaged, suitable alternate box or packing method using felt or foam sheet and polythene wrap to be used.
- e These boxes are then placed in identified wooden boxes. Inside of such boxes are lined with a layer of polythene sheet, packing wool / grass and another layer of polythene sheet before placing the boxes. All boxes are then wrapped with this polythene sheet before closing the box. Fragile items shall not be placed loose, one above the other inside the case.
- f All wiring cables, connection flats of non-ferrous materials, CTs, valves bellows shall also be packed.
- g Items like CTs, Oil communicating bushings, insulators, wired equipments and housings such as RTCC Panel, M. Box, Drive Mechanism, thermometers, gauges shall be wrapped in polythene from all around.
- h Buchholz relay and OSR relay openings will be blanked using covers, before putting them in the box
- i Items shall be carefully lowered and arranged inside the crate / case and each item shall be locked from all sides in such a way to avoid its movement in any way. Wooden stoppers and separators shall be provided for this and nailed to the crate / case wood.
- j Wooden planks and batons in contact with fragile items shall be provided with kit foam at the locations of contact.
- k Oil communication bushings shall be packed in separate case on V or U shape wooden felted supports, as in case of condenser bushings.
- l While placing and arranging the items inside the crates / cases, these shall be verified for correctness and then the packing note shall be signed. The cover top of the crate / case shall then be closed.
- m The main equipment like transformer tank shall be packed suitably to prevent any damage during transit / storage. Support structures like frame, header supports etc. shall be crated. Conservator headers shall also be crated. Radiators pipe work and other instruments & components shall be packed in cases. All the cases shall be lined with polythene from inside.

11.6 ALTERNATIVE PACKING CASES FOR CONTROL PANELS AND SWITCH GEARS

For Control and switch gear panels, construction of wooden packing cases may be provided as per fig 14 & 15 and as detailed below.

Thickness of planks for all sides, binding and jointing battens shall be at least 25 mm. Width of the plank shall be at least 125mm and that of binding and jointing planks shall be at least 100mm.

Top frame shall be suitable so that it does not collapse due to sandwiching between slings while lifting. Longitudinal and traverse bars for the bottom wooden pallet to be suitably selected.

Diagonal bracings shall be as per cl 9.3.1.3 and all other requirements shall be as per clauses 9.3.1.4 to 9.3.1.6.

12.0 Containerization

As required by BHEL, the VENDOR shall stuff the GOODS into 20 or 40 foot containers (dry open top, flat racks, etc.).

The maximum inside dimensions of containers are to be considered:



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001			
		VOLUME II B			
		SECTION D			
		REV. NO. 0	DATE 10/08/2010		
		SHEET	51	OF	52

- 40 foot containers: 11.80 m x 2.20 m x 2.05 m
- 20 foot containers: 5.80 m x 2.20 m x 2.05m
-

The present definition of containerization is valid for sea containers only. Vendor to check the size of containers before start of packing of equipment.

12.1 Protection of Cases/Crates

Since shipping containers are in general not water tight, packing in contact with the floor of the container shall be raised in order to prevent it from being damaged by the accumulation of water.

12.2 Mechanical Constraints

The mechanical constraints for "general use" closed containers are of a different nature (height of "stacking" being limited inside the containers), the packing for the GOODS may be of a lighter structure. However, it is necessary that the packing be appropriate so as to protect the GOODS on site during the storage period, as required after discharging of the GOOD'S from the containers.

Note:

It is the responsibility of the VENDOR to ensure that the cases/crates are stowed, secured and fastened inside the container. The VENDOR will take all necessary precautions to conform to the maximum weight allowed and the centre of gravity of the container. The securing and fastening of the cases/ crates can be carried out by nailing timbers on the bottom or on the vertical sides of the container.

13.0 Other Services to be provided by Vendor

In addition to the packing and shipping documents, VENDOR must also carry out the following services, which shall be included in his quotation:

Carriage of VENDOR's sub-contracted equipment and material, which must be re-grouped in VENDOR's or PACKER's workshops, whilst waiting for packaging.

BHEL reserves the right to postpone the shipping of the GOODS. In this event, any storage and insurance costs during the first ninety (90) days shall be borne by the VENDOR.

Loading, including lifting, securing, lashing, and stowing, of all cases, crates, or packages onto means of transportation such as, but not limited to, trailers, containers, etc.

14.0 Responsibilities and Guarantees

VENDOR is responsible for the choice of category for packing according to the transport facilities used, and on the basis of the present document. In case of doubt or disagreement regarding the choice, VENDOR must inform BHEL prior to packing and await BHEL's approval. All phases of packaging, marking, loading, etc. will be subject to BHEL inspection.

BHEL reserves the right to reject the packing when the packing does not conform to these instructions and/or when the packing does not ensure perfect protection of the GOODS. VENDOR is responsible for the weights and dimensions declared, and the marking of the packages.

The documents must be in strict conformity with the packing contents.

The packing specified in these "Packing, Marking and Shipping Instructions" is guaranteed for a twelve (12) months storage period after delivery on site.

VENDOR is responsible for providing storage recommendation adapted to the GOODS. According to this guarantee, VENDOR is held responsible in the event of goods becoming



	TITLE TECHNICAL SPECIFICATION FOR SEAWORTHY PACKING FOR EXPORT JOBS	SPECIFICATION NO. PE-TS-888-100-A001	
		VOLUME II B	
		SECTION D	
		REV. NO. 0	DATE 10/08/2010
		SHEET 52	OF 52

useless, damaged or broken, as a result of poor packing and/or stowing, or due to corrosion, subsequent to insufficient or inadequate protection. All direct or indirect costs resulting thereof, will be back-charged to VENDOR.



Annexure-VIII-Agitator inspection requirement. We wish to submit that attached QP is indicative only. Stage inspection and Quantum of checkmay vary during final approval by customer (NTPC).

MANUFACTURER'S NAME AND ADDRESS		STANDARD QUALITY PLAN										
ITEM: AGITATOR		QIP NO		FGS: 720								
SYSTEM: FGD		REV. NO:		00								
		DATE:		12.02.2019								
		PAGE NO:		Page 2 of 2								
SL. NO	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY		REMARKS
					M	B				M	C	N
1.	2.	3.	4.	5.	6.		7.	8.	9.	10.		11.
4.2	Free Air Run Test of complete assembly	Measurement Current, RPM, Noise & Vibration	MA	Measurement	100%	10%	Vendor Standard / Approved Drawing / Data Sheet		IR		P	W
4.3	Review of QA Documents	Verification of QA Documents	MA	Verification	100%	100%	As per Appd. MQP		IR		P	V
5.0 Painting & Preservation												
5.1		Painting Material	MI	Review of MTC	100%		Appd. "Painting Procedure"/Approved Painting Schedule		IR		P	V
5.2		Surface treatment and inspection	MI	Visual	100%	-	-do-		IR		P	-
5.3		DFT Check	MI	Measurement	10%		-do-		IR		P	V
5.4		Painting Surface Quality	MI	Visual	100%		-do-		IR		P	V
6.0 Inspection before Delivery												
6.1	Packing	Size, appearance & firmness	MI	Measurement & Visual	100%		As per "Packing Procedure"		IR		P	V
6.2	Deliver Documents	Markings, Packing List & Details packing List, etc., Check	MI	Verification	100%		As per "Packing Procedure"		IR		P	V

NOTES:

1. For Agitator Motor rating is 45KW and motor make NTPC/BHEL Approved source.
2. Routine test report duly witnessed by main contractor as per applicable standard shall be reviewed during inspection (more than 30 KW Rating).

LEGEND: * RECORD, IDENTIFIED WITH "TICK" (✓) UNDER COLUMN 'D' SHALL BE SUBMITTED TO CUSTOMER AS A QA DOCUMENTATION PACKAGE.		PREPARED BY	REVIEWED & APPROVED BY
M: MANUFACTURER / SUB SUPPLIER, C: MAIN CONTRACTOR.			
N: CUSTOMER/CONSULTANT P: PERFORM W: WITNESS V: REVIEW OF RECORDS			
MA: MAJOR AND MI: MINOR		Rakesh Kumar Madhu, (SER/QA)	K C Gandhi Parimalam, (DGM/QA)



MANUFACTURER'S NAME AND ADDRESS
M/S BHEL: BAP: RANIPET
632 406
TAMIL NADU

ITEM: AGITATOR
SYSTEM: FGD

STANDARD QUALITY PLAN

QP NO FGS: 720

REV. NO: 00

DATE: 12.02.2019

PAGE NO: Page 1 of 2

SL. NO	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
					M	B				M	C	N	
1.	2.	3.	4.	5.	6.		7.	8.	9.	D	*	** 10.	11.

1.0 Raw Material Inspection

1.1	All materials including casting & forgings	Chem. & Mech. Dimensions Surface Defects	MA MA MA	Review of MTC Measurement Visual	1/Heat 100% 100% 100%	1/Heat -	As per spec. & Appd. Dwg		TC IR IR	✓ P P	V - -	V - -	
-----	--	--	----------------	----------------------------------	-----------------------------	----------	--------------------------	--	----------------	-------------	-------------	-------------	--

2.0 Motor : Review Of Manufacture Test Certificate

3.0 In Process Inspection

3.1	Welding Qualifications	WPS & PQR	MA	WPS, PQR & WPQ	100%		ASME Sec IX		IR	✓	P	V	V	Recent qualified WPS, PQR and WPQ shall be submitted for review during inspection
3.2	Marking, Cutting, Edge Preparation Tacking	Dimensions	MA	Measurement	100%	-	Appd. Dwg.		IR		P	-	-	
3.3	Welds	Dimensions & Surface Quality	MA	Measurement	100%		Appd. Dwg. & ASME Sec VIII		IR	✓	P	W	V	
3.4	Machining of Components	Dimensions Surface Defects	MA	Measurement Visual	100%	-	Appd. Dwg.		IR		P	-	-	
3.5	Impeller	Static balance test	MA	Measurement	100%		As per Specs.		TR	✓	P	V	V	
3.6	Rubber Lining	Hardness test & Spark test	MA	Measurement	100%		As per Specs.	Appd. Drg	TR	✓	P	W	V	
3.7	Assembly	Dimensions Completeness	MA	Measurement Visual	100%	100%	Appd. Drg.		IR	✓	P	V	V	
4.0	Final Inspection													
4.1	Final Assembly	Overall Dimensions & Completeness	MA MA	Measurement Visual	100%	10%	Appd. Dwg		IR	✓	P	W	V	*10% pf each type (Vertical /

LEGEND: * RECORD, IDENTIFIED WITH "TICK" (✓) UNDER COLUMN 'D' SHALL BE SUBMITTED TO CUSTOMER AS A QA DOCUMENTATION PACKAGE.
M: MANUFACTURER / SUB SUPPLIER, C: MAIN CONTRACTOR.
N: CUSTOMER/CONSULTANT P: PERFORM W: WITNESS V: REVIEW OF RECORDS
MA: MAJOR AND MI: MINOR

PREPARED BY

[Signature]

REVIEWED & APPROVED BY

[Signature]

Rakesh Kumar madhu,(SER/QA)

K C Gandhi Parimalam,(DGM/QA)

QUALITY REQUIREMENT

- (a) Since this items comes under Sub-QR Category, hence inspection at vendor works is applicable by BHEL/BHEL TPI and NTPC as per NTPC Approved Quality plan.
- (b) Supplier shall submit the MQP in NTPC Format (Sample QP attached herewith) for approval of NTPC. We wish to submit that attached QP is indicative only. Stage inspection and Quantum of check may vary during final approval by customer (NTPC).
- (c) With respect to Sub QR Engg may kindly comment and take care of Proveness Criteria from NTPC Engg. NTPC inform that if the item is covered under Sub-QR List, the proposed vendors for the same shall be accepted by NTPC QA subject to clearance by NTPC Engg.
- (d) Painting : Painting details in the specification is tentative. Painting shall be as per approved schedule which will be given during contract
- (e) In case of order placed on foreign vendors, vendor has to finalize Inspection agency from the List enclosed in Annexure 'A' at their own cost and carry out inspection as per the approved Quality plan. Vendor has to furnish BHEL the inspection reports and other documents required as per approved Quality plan duly signed by the Inspection Agency after their witness for our review and acceptance.

Annexure-A

List of Third Party Inspection Agencies

Sl no	Name of Third Party Inspection Agency
01	M/s Bureau Veritas
02	M/s TUV- Nord
03	M/s TUV- SUD
04	M/s TUV Rheinland
05	M/s Lloyds Register
06	M/s SGS
07	M/s Germanischer Lloyds
08	M/s Quest
09	M/s Certification Engineers International
10	M/s Intertek
11	M/s IR class Systems and Solutions
12	Ms/ DNV
13	M/s Fichtner
14	M/s ABS Inspection services

ANNEXURE-X (SUB-VENDOR QUESTIONNAIRE)

LT MOTOR APPROVED VENDORS ARE GIVEN BELOW. PUMP MANUFACTURER HAS TO SUBMIT THE SUB VENDOR QUESTIONNAIRE IF THE MOTOR MANUFACTURER IS NOT AS PER THE LIST GIVEN BELOW

04	LT MOTORS	a) KEC c) CGL b) SIEMENS c)ABB a) BBL b) NGEF c) Marathon d) Jyoti e) LHP (For other PMD vendors except above NTPC approved vendors, pl refer Slno. 4 under important notes in page no:11)	Bangalore/Hubli (Up to 90KW) Ahmednagar Mumbai Faridabad up to 55KW/ Bangalore above 55KW Mumbai Hubli (up to 15KW) Kolkata Vadodara Solapur	Please refer remark column for Categorization Please refer remark column for Categorization	BAP/QR/ G501 & G502 /LTM:012 Rev NO: 00 dt 17 05 2018 ** Acceptance of Motor rating between 30KW to 50 KW is based on NTPC Review of Routine Test Inspection report as per IS 325 Witnessed by BHEL/BHEL AIA ie Main contractor along with COC of the manufacturer and the contractor confirming as follows: "It is hereby confirmed that the above mentioned motor was /motors were manufactured taking care of NTPC specific requirements regarding ambient temperature, voltage and frequency variation, hot starts , pull out torque, starting KVA/KW, temperature rise, distance between centre of stud and gland plate, space heater and in accordance with approved drawing /data sheets" ##Acceptance of Motor less than 30KW is based on COC of the manufacturer and the contractor conforming as follows: "It is here by confirmed that the above mentioned motor/motor was / were manufactured taking care of NTPC specific requirements regarding ambient temperature, voltage and frequency variation, hot starts , pull out torque, starting KVA/KW, temperature rise ,distance between centre of stud and gland plate and tested in accordance with approved drawing /data sheet".	Cat I Above 50 KW and up to 200KW NTPC insp as per appd RQP/MQP Cat-II **From 30KW to 50KW BHEL Inspection # Cat-III Up to 30KW
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Prepared by: 
(Ch. Anil Singh)
Dy. Engineer/QA (Electrics)

Reviewed by: 
(S. Sheela)
Dy. Manager/QA (Electrics) & System

Approved by: 
(K. Gandhi Parimalam)
DGM / QA (Electrics)

	CORPORATE QUALITY ASSURANCE SUB-VENDOR QUESTIONNAIRE	

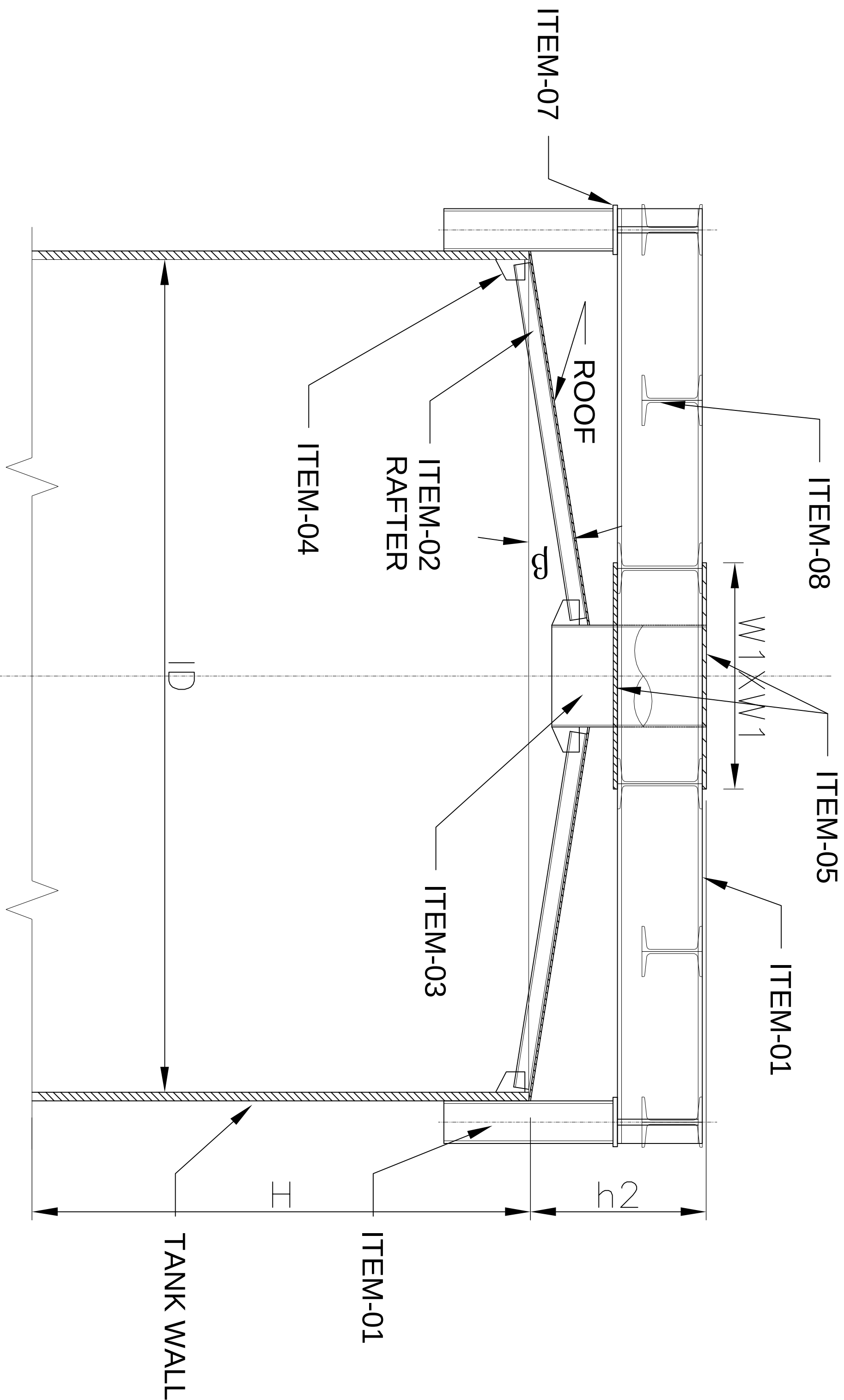
i.	Item/Scope of Sub-contracting			
ii.	Address of the registered office	Details of Contact Person (Name, Designation, Mobile, Email)		
iii.	Name and Address of the proposed Sub-vendor's works where item is being manufactured	Details of Contact Person: (Name, Designation, Mobile, Email)		
iv.	Annual Production Capacity for proposed item/scope of sub-contracting			
v.	Annual production for last 3 years for proposed item/scope of sub-contracting			
vi.	Details of proposed works			
1.	Year of establishment of present works			
2.	Year of commencement of manufacturing at above works			
3.	Details of change in Works address in past (if any)			
4.	Total Area			
	Covered Area			
5.	Factory Registration Certificate	Details attached at Annexure – F2.1		
6.	Design/ Research & development set-up (No. of manpower, their qualification, machines & tools employed etc.)	Applicable / Not applicable if manufacturing is as per Main Contractor/purchaser design Details attached at Annexure – F2.2 (if applicable)		
7.	Overall organization Chart with Manpower Details (Design/Manufacturing/Quality etc)	Details attached at Annexure – F2.3		
8.	After sales service set up in India, in case of foreign sub-vendor (Location, Contact Person, Contact details etc.)	Applicable / Not applicable Details attached at Annexure – F2.4		
9.	Manufacturing process execution plan with flow chart indicating various stages of manufacturing from raw material to finished product including outsourced process, if any	Details attached at Annexure – F2.5		

	CORPORATE QUALITY ASSURANCE SUB-VENDOR QUESTIONNAIRE
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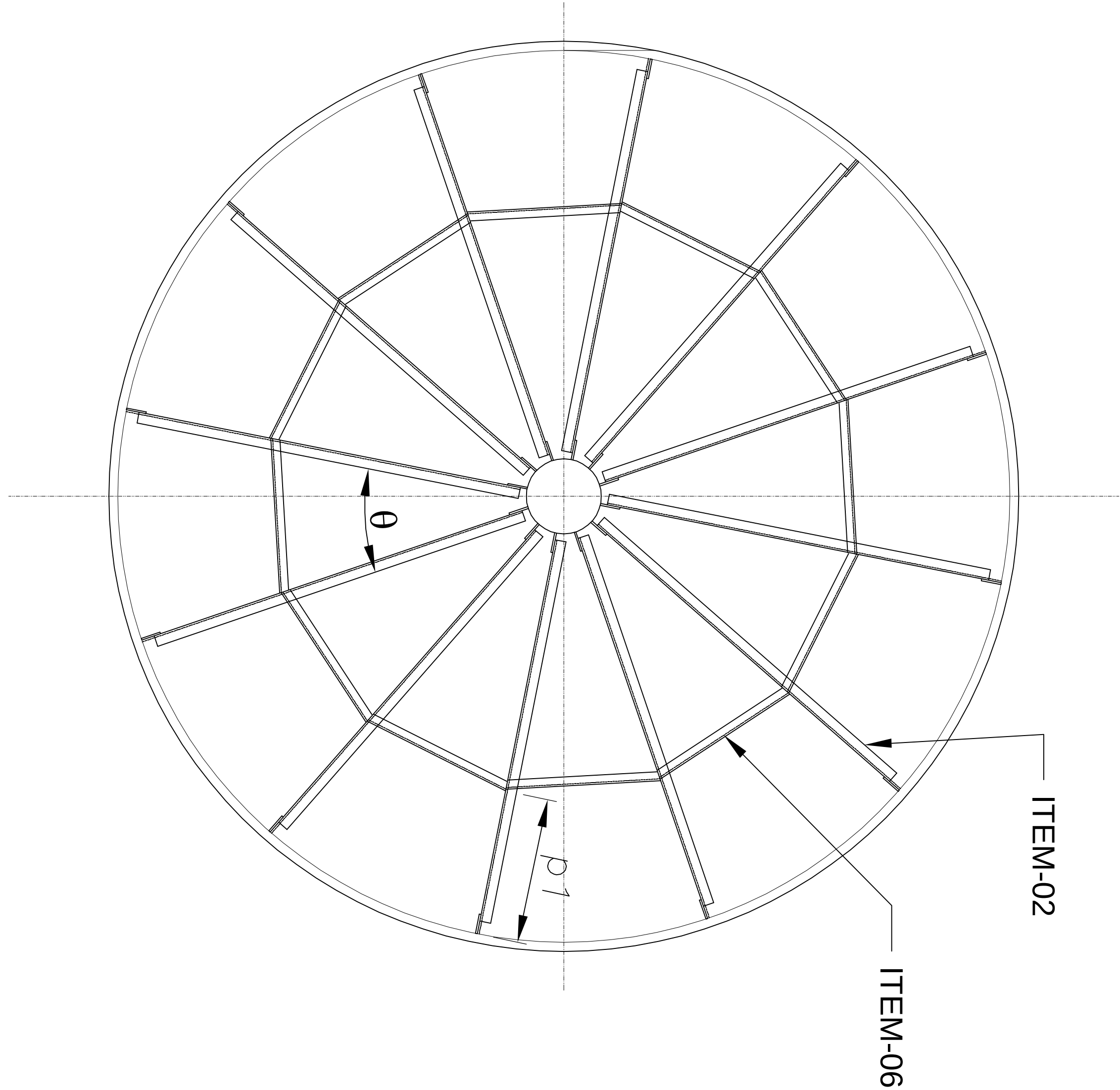
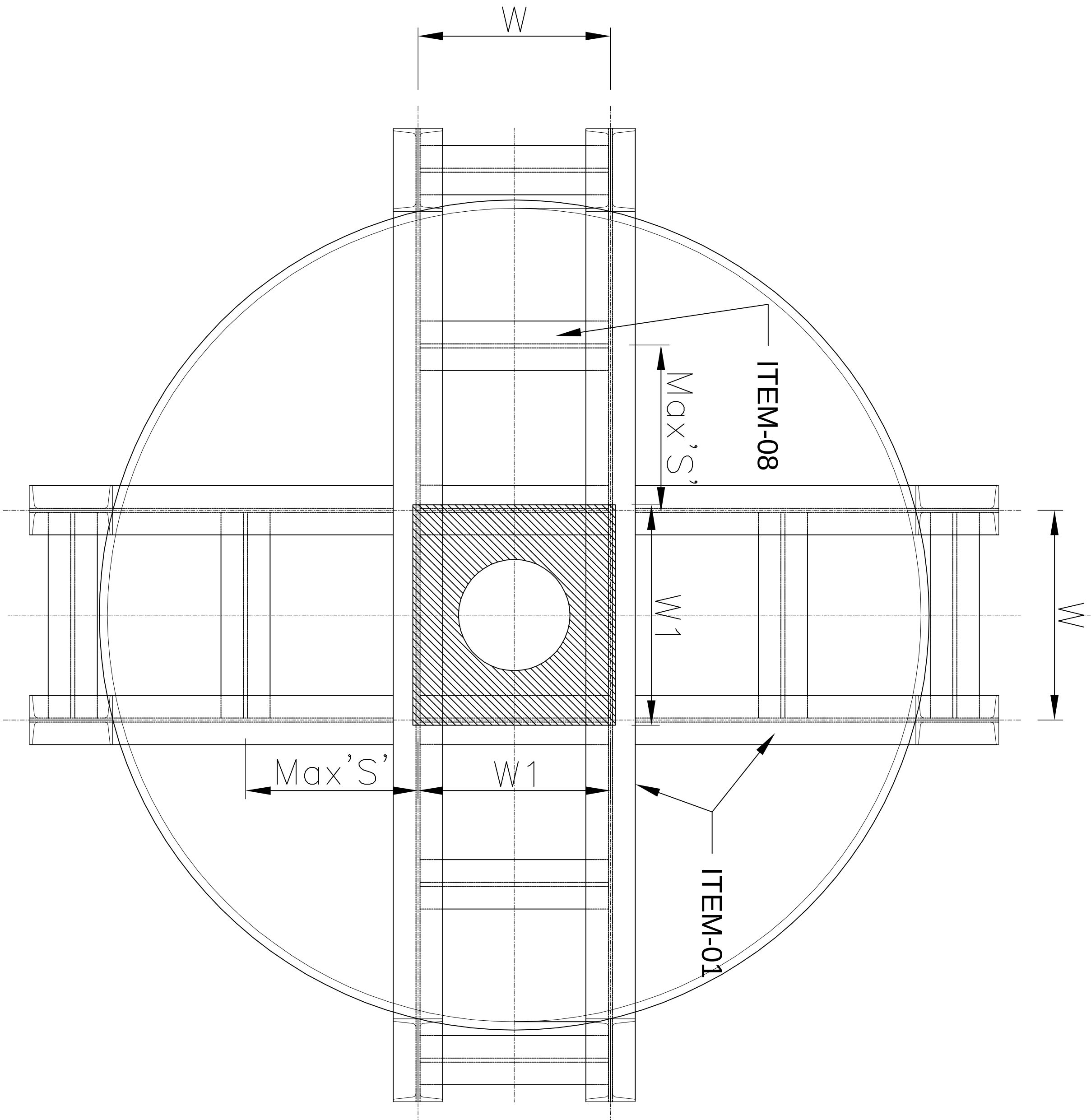
10.	Quality Control exercised during receipt of raw material/BOI, in-process , Final Testing, packing	Details attached at Annexure – F2.6												
11.	Manufacturing facilities (List of machines, special process facilities, material handling etc.)	Details attached at Annexure – F2.7												
12.	Testing facilities (List of testing equipment)	Details attached at Annexure – F2.8												
13.	If manufacturing process involves fabrication then-	Applicable / Not applicable												
	List of qualified Welders	Details attached at Annexure – F2.9												
	List of qualified NDT personnel with area of specialization	(if applicable)												
14.	List of out-sourced manufacturing processes with Sub-Vendors' names & addresses	Applicable / Not applicable Details attached at Annexure. –F2.10 (if applicable)												
15.	Supply reference list including recent supplies	Details attached at Annexure – F2.11 (as per format given below)												
	<table border="1" style="width: 100%;"> <tr> <th style="width: 10%;">Project/ package</th> <th style="width: 10%;">Customer Name</th> <th style="width: 30%;">Supplied Item (Type/Rating/Model /Capacity/Size etc)</th> <th style="width: 15%;">PO ref no/date</th> <th style="width: 15%;">Supplied Quantity</th> <th style="width: 20%;">Date of Supply</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	Project/ package	Customer Name	Supplied Item (Type/Rating/Model /Capacity/Size etc)	PO ref no/date	Supplied Quantity	Date of Supply							
Project/ package	Customer Name	Supplied Item (Type/Rating/Model /Capacity/Size etc)	PO ref no/date	Supplied Quantity	Date of Supply									
16.	Product satisfactory performance feedback letter/certificates/End User Feedback	Attached at annexure - F2.12												
17.	Summary of Type Test Report (Type Test Details, Report No, Agency, Date of testing) for the proposed product (similar or higher rating) Note:- Reports need not to be submitted	Applicable / Not applicable Details attached at Annexure – F2.13 (if applicable)												
18.	Statutory / mandatory certification for the proposed product	Applicable / Not applicable Details attached at Annexure – F2.14 (if applicable)												
19.	Copy of ISO 9001 certificate (if available)	Attached at Annexure – F2.15												
20.	Product technical catalogues for proposed item (if available)	Details attached at Annexure – F2.16												
<table border="1" style="width: 100%;"> <tr> <td style="width: 15%;">Name:</td> <td style="width: 30%;"> </td> <td style="width: 10%;">Desig:</td> <td style="width: 20%;"> </td> <td style="width: 10%;">Sign:</td> <td style="width: 15%;"> </td> <td style="width: 10%;">Date:</td> <td style="width: 10%;"> </td> </tr> </table>			Name:		Desig:		Sign:		Date:					
Name:		Desig:		Sign:		Date:								

Company's Seal/Stamp:-

SLURRY TANK DETAILS



NTPC–MOUDA: 2X500MW FGD



AGITATOR SUPPORT DETAILS

SL	TANK	Qty	lD(mm)	H(mm)	h2(mm)
01	Limestone Slurry Tank	2	12400	12400	1500
02	Aux Absorbent Tank	1	11500	12700	1500
03	Filtrate Water Tank	1	4500	5100	1200
04	Sec Hydro Cyclone Tank	1	5000	5000	1200
05	Waste Water Tank	1	6500	6700	1200
06	Primary Hydro Cyclone Tank	1	5500	6600	1200

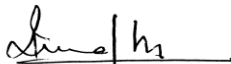
ROOF STIFFENER DETAILS

 Ranipet		MANUFACTURER'S NAME AND ADDRESS M/S BHEL: BAP: RANIPET 632 406 TAMIL NADU		STANDARD QUALITY PLAN										
				ITEM: AGITATOR SYSTEM: FGD						QP NO:		FGS: 720		
										REV. NO:		00		
										DATE:		12.02.2019		
								PAGE NO:		Page 1 of 2				
SL. NO	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD		AGENCY			REMARKS
					M	C/N				D *	M	C	N	
1.	2.	3.	4.	5.	6.		7.	8.	9.	D *	** 10.			11.
1.0 RAW MATERIAL INSPECTION														
1.1	All materials including casting & forgings	Chem. & Mech. Dimensions Surface Defects	MA MA MA	Review of MTC Measurement Visual	1/Heat 100% 100%	1/Heat - -	As per spec. & Appd. Dwg	TC IR IR	√ 	P P P	V - -	V - -		
2.0 MOTOR : REVIEW OF MANUFACTURE TEST CERTIFICATE														
3.0 IN PROCESS INSPECTION														
3.1	Welding Qualifications	WPS & PQR	MA	WPS, PQR & WPQ	100%		ASME Sec IX	IR	√	P	V	V	Recent qualified WPS, PQR and WPQ shall be submitted for review during inspection	
3.2	Marking, Cutting, Edge Preparation Tacking	Dimensions	MA	Measurement	100%	-	Appd.Dwg.	IR		P	-	-		
3.3	Welds	Dimensions & Surface Quality	MA	Measurement	100%		Appd.Dwg.& ASME Sec VIII	IR	√	P	W	V		
3.4	Machining of Components	Dimensions Surface Defects	MA	Measurement Visual	100% 100%	- -	Appd. Dwg.	IR		P P	- -	- -		
3.5	Impeller	Static balance test	MA	Measurement	100%		As per Specs.	TR	√	P	V	V		
3.6	Rubber Lining	Hardness test & Spark test	MA	Measurement	100%		As per Specs.	TR	√	P	W	V		
3.7	Assembly	Dimensions Completeness	MA	Measurement Visual	100% 100%		Appd.Drg.	IR	√	P P	V V	V V		
4.0 FINAL INSPECTION														
4.1	Final Assembly	Overall Dimensions & Completeness	MA MA	Measurement Visual	100%	10%	Appd. Dwg	IR	√	P	W	V	*10% pf each type (Vertical / Horizontal)	
LEGEND: * RECORD, IDENTIFIED WITH "TICK" (√) UNDER COLUMN 'D' SHALL BE SUBMITTED TO CUSTOMER AS A QA DOCUMENTATION PACKAGE. M: MANUFACTURER / SUB SUPPLIER, C: MAIN CONTRACTOR. N: CUSTOMER/CONSULTANT P: PERFORM W: WITNESS V: REVIEW OF RECORDS MA: MAJOR AND MI: MINOR							PREPARED BY  Rakesh Kumar Madhu,(Ser/QA)			REVIEWD & APPROVED BY  K C Gandhi Parimalam,(DGM/QA)				

 Ranipet		MANUFACTURER'S NAME AND ADDRESS M/S BHEL: BAP: RANIPET 632 406 TAMIL NADU		STANDARD QUALITY PLAN										
				ITEM: AGITATOR SYSTEM: FGD						QP NO:		FGS: 720		
										REV. NO:		00		
										DATE:		12.02.2019		
								PAGE NO:		Page 2 of 2				
SL. NO	COMPONENT & OPERATIONS	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.
4.2	Free Air Run Test of complete assembly	Measurement Current, RPM, Noise & Vibration	MA	Measurement	100%	10%	Vendor Standard / Approved Drawing / Data Sheet	IR	✓	P	W	W		
4.3	Review of QA Documents	Verification of QA Documents	MA	Verification	100%	100%	As per Appd. MQP	IR		P	V	V		
5.0	PAINTING & PRESERVATION													
5.1		Painting Material	MI	Review of MTC	100%		Appd. "Painting Procedure"/Approved Painting Schedule	IR	✓	P	V	-		
5.2		Surface treatment and inspection	MI	Visual	100%	-	-do-	IR	✓	P	-	-		
5.3		DFT Check	MI	Measurement	10%		-do-	IR	✓	P	V	-		
5.4		Painting Surface Quality	MI	Visual	100%		-do-	IR	✓	P	V	-		
6.0	INSPECTION BEFORE DELIVERY													
6.1	Packing	Size, appearance & firmness	MI	Measurement & Visual	100%		As per "Packing Procedure"	IR	✓	P	V	-		
6.2	Deliver Documents	Markings, Packing List & Details Packing List, etc., Check	MI	Verification	100%		As per "Packing Procedure"	IR	✓	P	V	-		

NOTES:

1. For Agitator Motor rating is 45KW and motor make NTPC/BHEL Approved source.
2. Routine test report duly witnessed by main contractor as per applicable standard shall be reviewed during inspection (more than 30 KW Rating).

LEGEND: * RECORD, IDENTIFIED WITH "TICK" (✓) UNDER COLUMN 'D' SHALL BE SUBMITTED TO CUSTOMER AS A QA DOCUMENTATION PACKAGE. M: MANUFACTURER / SUB SUPPLIER, C: MAIN CONTRACTOR. N: CUSTOMER/CONSULTANT P: PERFORM W: WITNESS V: REVIEW OF RECORDS MA: MAJOR AND MI: MINOR	PREPARED BY  Rakesh Kumar Madhu,(Ser/QA)	REVIEWD & APPROVED BY  K C Gandhi Parimalam,(DGM/QA)
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Sl.No	3890097E : Annexure-I : Provenness Criteria and/or Qualification Requirement	Bidder response
1	AGITATORS (VERTICAL & HORIZONTAL) for Wet Limestone based Flue Gas Desulphurization (FGD) application in coal fired power plant offered by the bidder shall be only from such manufacturer(s) who has previously designed (either by itself or under colloboration/Licensing agreement) manufactured/got manufactured the respective equipmet(s) of the type application and minimum equipment rating as stipulated below such that the respective equipment(s) should have been in successful operation in at least one (1) plant for a period not less than one (1) year reckoned as on 18th March 2019.	
2	Name of Equipment : AGITATORS	
3	Type of Equipment : VERTICAL & HORIZONTAL	
4	Application: Wet Limestone based FGD application in Coal fired power plant	
5	Equipment rating : Agitator rating not less than that supplied for 500 MW or higher size unit for similar application.	
6	Bidder shall offer and supply only the type of above equipment (s) for which he/hinself is qualified.	
7	Performance certificate from End User has to be provided for meeting the qualification requirement.	
8	Specific conformation to clause 4.00.00 of Annexure-I Qualification Crieteria for recirculation pump.	
9	Specific conformation to clause 4.01.00 of Annexure-I Qualification Crieteria for recirculation pump.	
10	Specific conformation to clause 4.01.01 of Annexure-I Qualification Crieteria for recirculation pump.	
11	Specific conformation to clause 4.01.03 of Annexure-I Qualification Crieteria for recirculation pump.	
12	Specific conformation to clause 4.01.06 of Annexure-I Qualification Crieteria for recirculation pump.	
13	Specific conformation to clause 4.01.08 of Annexure-I Qualification Crieteria for recirculation pump.	
14	Specific conformation to clause 4.01.09 of Annexure-I Qualification Crieteria for recirculation pump.	
15	Specific conformation to clause 4.01.10 of Annexure-I Qualification Crieteria for recirculation pump.	

16	Confirmed to all the points of 3K documents, Filled in, Signed, Official Seal Affixed in all pages and shall be submitted the document ATTACHMENT 3K . This is mandatory to evaluate your offer for further processing.	
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ANNEXURE –B
GENERAL TERMS & CONDITIONS
(FOR GUIDANCE TO THE SUPPLIERS)

A] Submission of Offer

a) Invitation for bid

Tenders are invited through electronic mode from eligible suppliers in case of open tenders and from suppliers to whom the enquiry is addressed in case of Limited / Single Tender.

The offers shall be posted into the system before the date and time specified in the tender.

The offer shall be sent on single part / two part / three part basis as specified in the main tender document.

Bids shall be submitted through e-Procurement portal, <https://bhel.abcprocure.com> of M/s e-Procurement Technologies, Ahmedabad who is our solution provider.

b) Hardware and Software requirements for participating in e-tender

Requirement for participating in e-Procurement is as under:

- i) A Computer with internet connectivity (Internet Explorer 9.0 (32-bit Browser only) & above)
- ii) Digital Signature Certificate (Class 3- SHA2-2048 BIT- with both Signing and Encryption component separately).
- iii) JAVA (Version 1.8 Update 45).
- iv) Steps for Hardware and software configuration is detailed at <https://bhel.abcprocure.com/EPROC/> under title “Minimum system requirements and Settings Document for BHEL User and Bidders”.

c) Instructions for Registered Suppliers

For all types of tenders (Single / Limited / Open) an automated email alert regarding issue of the Tender will be sent by the e-procurement portal to all Suppliers registered with BHEL, Ranipet for the item/s for which the tender is issued.

In case of open tenders, Registered suppliers with registered DSC will have to login with their user id/password & DSC and search for the Open Tender. To participate in event and to submit bid, a bidder needs to agree the terms and conditions.

Registered suppliers without DSC will have get their profiles approved by mapping DSC after login.

To know the procedure for obtaining Digital Signature Certificate (DSC), suppliers who are not having the DSC are advised to visit our website www.bhel.com → Tender Notifications → Sample Checklist.

d) Instructions for new suppliers wishing to bid against open tenders

New, unregistered suppliers wanting to bid against open tender/s will have to first register themselves in <https://bhel.abcprocure.com> as new supplier by clicking the “Register” button.

After entering the Income Tax Permanent Account Number (PAN) details and pressing “Enter”, they have to select the respective BHEL Unit for which they want to participate in the Open Tender and also fill up other relevant Company information as a one-time activity. On successful registration, your profile will be approved by the authorized officer and you can login to portal and can participate in the procurement event.

To participate in a tender, you need to login to the portal. You must be an approved registered user. If you are not a registered user, you can register yourself by clicking upon the “Register” link. You need to have a valid vendor code and password to login to the portal. Enter your Vendor code, password and click on Login button after Login, you need to select your digital signing and encryption certificates certificate. The DSC will be approved by M/s e-Procurement Technologies/ Authorised officer of BHEL.

As required by the tender, the necessary documents have to be filled-in online, in the provided template. Additional documents required are to be scanned and uploaded as .pdf file. Suppliers are advised to take note that the maximum space that is provided for uploading the documents that are to be attached is 300 MB. However the size of an individual document cannot exceed 10 MB. For any clarification on submission of offer on line, attention of the Supplier/s is invited to our document “Bidder Manual for BHEL Bidders” hosted in the home-page of the e-procurement portal. During normal business hours, helpline maintained by the service provider M/s e-Procurement Technologies is available for clarifying any doubts of supplier/s. The helpline numbers are +91-79-40270599/508/560/590/513 and email id is: Bhel.Support@abcProcure.com . Bidder can also refer to “Bidder Manual for BHEL Bidders” hosted in the home-page of the e-procurement portal <https://bhel.abcprocure.com>.

Typical documents that would be required as part of tender submission would be

- a) **Complete technical Offer** with details, catalogues, as applicable.
- b) **Un-priced bid** (i.e. Bid without the Price) as per given format, if any.
- c) **Filled-in BHEL’s Standard Terms & Conditions** as per Annexure enclosed with the Tender Document,
- d) **Deviation summary** submitted in two parts – giving the summary of technical deviations separately and the commercial deviations separately, if any and
- e) **Supporting documents** to substantiate equivalent material specifications / sections, where quoted for.
- f) Where asked for, **Client list** with their full address including detail of contact person with phone no., fax no. & e-mail ID (if any) to whom the same / similar items are supplied in the past two years. The date of supply may also be indicated, against each client.
- g) Suppliers can also upload their credentials by way of submission of Performance certificate/s issued by their customer/s detailing the quantity supplied and specification along with the un-priced PO copies and proof of supply along with the offer.

Technical acceptance of offer by BHEL shall be based on the evaluation of offer and the submitted documents.

- h) **Bidders who are not already registered with BHEL Ranipet** are requested to submit the Supplier Registration Form (SRF) online (<http://supplier.bhel.in/>) for evaluating and registering as an approved vendor. The Supplier Development Cell (SDC) of BHEL, Ranipet would process the SRF for evaluation / registering the Supplier. Don’t send hardcopies of SRF to BHEL-Ranipet, **only** online submission is accepted. This registration process is a separate / parallel activity and do not mix-up with submission offers.

Note

- (i) The materials offered, shall conform to the specification and scope attached in the tender.
- (ii) In case the offered materials are not conforming to the Enquiry material Specification, such offers would not be considered for evaluation and would be rejected.

Where equivalent specifications are offered, considering such offers will be at the sole discretion of BHEL. Wherever alternative standards / specifications are offered by Bidder, the Bidder shall provide sufficient documentary evidence to ensure equivalence to the designated standards / specifications, failing which the offer would be considered as not technically acceptable and hence shall stand rejected.

(iii) All taxes and duties payable as extra to the quoted price should be specifically stated in offers (as appearing in the online template).

Offer/s from within India shall be submitted along with the applicable HS Number and the applicable Goods & services Tax (GST) for each quoted item, failing which the purchaser will not be liable for payment of such taxes and duties. Our GST No: **33AAACB4146P2ZL**.

(iv) The un-priced bid shall be used to indicate relevant commercial terms such as scope of freight and insurance, applicability of duties and taxes etc. All Commercial terms are to be indicated clearly in the offer.

(vi) No changes shall be entertained once the bid is opened unless otherwise specifically agreed to in writing by BHEL.

(vii) Money values other than for those items appearing in the un-priced bid template shall not be indicated anywhere in the un-priced bid.

(viii) Time required for inspection (at Supplier's works), should be clearly given in terms of numbers of working days.

(x) **Offers sent by FAX / E-mail:** would not be entertained.

(xi) Bid should be free from correction, overwriting, using corrective fluid, etc. Any interlineation, cutting, erasure or overwriting shall be valid only if they are attested under full signature(s) of person(s) signing the bid else bid shall be liable for rejection.

(xii) Registration process for items required by BHEL is always open at <https://supplier.bhel.in>. Prospective suppliers (including MSEs & owned by SCs/STs) may visit this site and apply for registration in the respective Unit.

Price Bid in conformance with the specification and terms as given in the Un-Priced bid document.

Caution on submission of price bids thru EPS:

The suppliers are severely cautioned to note that the price bid document accepts the price in figures only. It does not allow the supplier to write the value by words. Therefore all care shall be exercised by the supplier while filling in the figures. Once the price bid is opened no option is available for the supplier to retract the offer under any grounds. If a supplier, for any reason whatsoever approaches BHEL with a request for change in the price, it would be treated as going back on the offer submitted. In such cases, action would be initiated by BHEL for suspending further business dealings with such suppliers as per policy of BHEL which prevails at that point of time.

Foreign / Overseas suppliers are hereby informed that offers with differential currencies are not permitted for a given tender document.

Note

(i) The price break-up should be in line with technical specification / scope of the tender. (Cost of material, packing charges, forwarding charges, freight and insurance charges shall be shown appropriately, as applicable).

- (ii) Unless otherwise specified as a part of the tender condition, No Price Variation Clause will be entertained and No advance payment will be made by BHEL.
- (iii) In case, there is a discrepancy in the term quoted in techno-commercial bid and price bid, the term as per the techno-commercial bid (Part I) shall hold good and the commercial term quoted in the Price Bid (Part II) shall not be considered.
- (iv) In their own interest, all Tenderers are advised to double check their prices, applicable duties and taxes.
- (v) The quotation should be valid at least for a period of 90 days from the tender opening date.
- (vi) Indian bidders should submit the prices in Indian Rupees only.
- (vii) Foreign bidders may submit their bid in foreign currency. The currency for quoting shall be selected from the drop-down menu provided.
- (x) Indian Suppliers shall quote on FOR Destination basis only. Destination is BHEL, Ranipet Stores or BHEL Project Site as specified in the tender requirement. Foreign Suppliers shall quote on CFR Chennai Seaport Delivery and Insurance will be in BHEL's scope. No other delivery terms shall be acceptable. Shipment shall be arranged by the Seller on *Liner in / Liner out basis*. As per Government of India guidelines, BHEL Ranipet being a Government of India Undertaking the Bill of Lading shall be made with the Shipper as "Government of India". This shall be specifically confirmed by the Bidder.
- (xi) Where the cargo is containerized, Container washing charges, stuffing charges and / or any other such charges would be to the account of the supplier, where the containers are to be stuffed at the works of the supplier.

B] Opening of Offers

a) Tenders can be submitted up to 1400 Hours on tender opening due date. Part I will be opened on the same day at 1430 Hours. Results of the tender opening will be available for viewing for upto 7 days from the date of opening.

b) Requests by Bidders for extension of due date will not be entertained by BHEL.

c) Price Bid opening will be done through e-mode / Reverse Auction method (English method) which will be decided after techno-commercial bid evaluation is completed. All tenderers would have to specifically give their acceptance for this in their bid/s.

Note

- (i) Bids including all enclosures and supporting documents like catalogues, pamphlets, etc., shall be provided in ENGLISH language only.
- (ii) In exceptional circumstances, at its option, BHEL may consider extending the due date/s for the tender openings for reasons such as (but not limited to) paucity of offers etc. However, sufficient notice would be given by BHEL for such extension.
- (iii) Deviations shall be summarized and provided in a "Deviation Statement", listing the points and the deviation against each point.
- (iv) BHEL reserves the right to increase or decrease the tendered quantity and to order on more than one vendor at the lowest acceptable price to BHEL. In ordering on more than one source, the ratio of quantity split will be as specified in the tender terms.

If not explicitly specified, BHEL reserves the right to split the quantity of the enquiry as follows: 70% quantity being ordered on the original lowest bidder (L1) and balance 30% on the next higher bidder/s excluding H1, who accepts the L1 price. However, the final decision to split the order rests with BHEL only.

In the event that the other than L1 suppliers do not accept the L1 price, then the balance will be reverted to the original L1 and the original L1 shall be bound to accept the balance of the enquiry quantity kept reserved for order splitting. This decision would be given by BHEL within 60 days of the price bid opening.

Notwithstanding the quantum of split that may be indicated in the main body of the enquiry, bidders are advised to note that the splitting of the orders will be decided by BHEL after the evaluation of the techno-commercial and price bids.

(v) Offers for part quantities on item level basis are not acceptable to BHEL. While tenderers can quote for some or all the tendered items, no supplier shall quote for partial quantity of any given enquiry item. Such partial offer would not be considered in the enquiry for that item. Suppliers are to note that the evaluation unless otherwise specified will be on item level and not for the tendered items as a whole.

C] Evaluation of Offers

a) The price bids including the impact price (if any) of the technically acceptable offers alone shall be opened.

b) Offers with pre-conditions (like conditional discounts) for price are liable to be not considered / rejected. For evaluation such conditions would be removed and only the base offer would be considered for evaluation and comparison.

d) In the event of any change in scope / quantity arising out of the discussions, offerers would be given a chance to submit their revised offer / Impact bids. The option for the revised offer / impact offer will be triggered by BHEL. The Supplier then will have the facility to feed-in the revised price / impact price as per the provision given by BHEL. The impact price can be positive or negative (or nil). The impact price option shall contain only the price addition / deletion for such change in the scope / quantities, over and above the original scope and price quoted. The original price quoted would remain unchanged. The total price would then be computed by the arithmetic addition of the original price and the impact price. Where BHEL gives the option of submitting the revised offer, the impact would be computed as the arithmetic difference of the revised price and the original price.

e) For evaluating the overseas offers, CFR Chennai Sea Port price quoted will be taken into account. The cost to BHEL will be arrived at by loading the applicable customs duty project wise, insurance charges, inland transportation charges to BHEL stores and LC charges etc.,

f) Deleted.

g) BHEL reserves the right to reject without assigning any reasons / load any offer with factors other than already specified for such offers having deviations to BHEL Specifications, Standard Terms & Conditions at its discretion. The decision of BHEL in this regard shall be final.

h) BHEL reserves the right to reject an offer due to unsatisfactory performance during tender finalisation / execution of a contract at any of BHEL projects / units in the past or if unsatisfactory performance report is received from the party/s referenced by the supplier at any time during tender finalisation.

i) BHEL reserves the right to operate Purchase / Price preference to Government of India Undertakings, which shall be given as per the guidelines of Government of India given from time to time and / or relax the Terms and Conditions of the tender.

j) For the purpose of comparing prices, tender prices shall be converted to Indian rupees and the conversion shall be made by using the TT Selling rate of State Bank of India (SBI) prevailing on the date of opening of Techno-Commercial / Unpriced bids. If the relevant day happens to be a bank holiday, then the forex rate as on the previous bank (SBI) working day shall be taken. This exchange rate will be followed till placement of order. Tenderers may please note that even if an impact price is taken as in (d) for purpose of price evaluation and arriving at the rank; the exchange rate will be taken as explained above.

k) Unless otherwise specified, evaluation will be on individual line item basis only and ordering will be on respective L1 vendors.

l) BHEL reserves the right to conduct negotiations on the “Price” and “Other Commercial Terms and Conditions” with the lowest ranked offerer at any time after the bid opening but before the release of the Purchase Order and If so required by BHEL, Supplier may have to share their costing sheet with BHEL.

m) Bidders are required to confirm in writing in their techno-commercial document that other than themselves (the bidder) none of its group companies, concerns or affiliates etc., are participating in the tender either directly or indirectly or through any other agency under the same proprietor / common partner(s)/ common Directors. If during the evaluation of the bids it is found that the bidder has submitted the offer in violation of this condition then all the offers received from the group companies would stand rejected. If such relationship is found at a later date where the Purchase Order has been issued, then BHEL would cancel the Purchase Order and initiate suitable action/s under the contract/s including but not limited to invoking the Risk Purchase clause of the order and other applicable legal provisions / guidelines of BHEL including guidelines on suspension of business dealings. (Please see clause L sub-clause c).

n) For this procurement, Public Procurement (Preference to Make in India), Order 2017 dated 15.06.2017 & 28.05.2018 and subsequent orders issued by the respective nodal ministry shall be applicable even if issued after issue of this NIT but before finalization of contract/PO/WO against this NIT.

In the event of any Nodal Ministry prescribing higher or lower percentage of purchase preference and/ or local content in respect of this procurement, same shall be applicable.

Preference to Make in India including counter offering will be as per the Public Procurement (Preference to Make in India), Order 2017 available in the following link

http://dipp.nic.in/sites/default/files/publicProcurement_MakeinIndia_15June2017.pdf

http://dipp.nic.in/sites/default/files/Revised-PPP-MII-Order-2017_28052018.pdf

D] Execution of the Order

a) BHEL will have the option to pre-inspect the materials at Supplier's works by BHEL's own inspector or by third party agency appointed by BHEL or BHEL's end customer/s. The mere act of the pre-dispatch inspection (PDI) does not absolve the Supplier from giving the specifications as agreed upon in the Purchase Order. In the case of inspection being carried out by a third party inspector (TPI) as per the extant practice, the TPI would forward the Inspection Report (IR) along with Test Certificates and other related documents to the Quality Assurance (QA) Department of BHEL. The QA department after scrutinising the report/s submitted by the TPI would issue the Material Dispatch Clearance Certificate (MDCC). Suppliers are hereby

informed that materials should be dispatched only after getting the MDCC, failing which the materials may be rejected on receipt at BHEL Stores.

b) In the case of overseas suppliers Inspection call for carrying out the inspection shall be given 30 days before the scheduled contract delivery date. The Inspection date/s given by the Supplier shall be on firm basis. For local Suppliers the Notice period of Inspection shall be 10 working days.

c) Deviations, if any pointed out by the visiting Inspection team of BHEL shall be corrected and the items as per specification shall be dispatched on or before the contract delivery date after getting the MDCC.

d) The final inspection for acceptance will, however be carried out at BHEL's works at Ranipet.

e) The contract delivery date is the date of receipt at BHEL Stores for suppliers in India, applicable in the case of FOR Destination Contracts.

For ex-works contracts or FOR dispatching station indigenous contracts, the date of the Lorry way bill issued by the authorised transport carriers of BHEL / Railway Receipt / Courier Way bill / Airway bill or any such dispatch documents of carriage approved by BHEL would be considered as the Contract Delivery Date. In the case of CFR contracts with overseas suppliers, the B/L date shall be taken as the Contract Delivery Date

f) Travel & other local stay cost for the Inspectors sent by BHEL will be to BHEL account, but other Inspection Charges, if any shall be to the account of the Seller only.

g) The supplier shall arrange for packing suitably in all respects for normal transport by sea / rail / road and Materials shall be suitably protected against effect of tropical salt laden atmosphere in the event of shipment being delayed at ports / store yards and as per BHEL TDC.

h) Foreign suppliers shall dispatch on CFR agreed Sea-Port basis, according to the contract conditions. Indian suppliers shall dispatch on free delivery (door-delivery) at BHEL stores basis only. Unloading the materials at BHEL Stores would be to the account of BHEL only.

i) In the event of any short supply, it shall be the responsibility of the supplier to deliver such short supplied/ missing items on Free-of-Cost basis at BHEL stores, including customs clearances at Indian Ports in the case of foreign suppliers.

k) Terms of payment:

k.1) For Indigenous Suppliers: Unless otherwise agreed to by BHEL, the standard payment terms of BHEL shall be: For non-MSE suppliers 100% payment made directly through EFT within 90 days from the date of receipt and acceptance of materials at BHEL Stores, Ranipet or 90 days from the date of acknowledgement of receipt of materials at destination specified. If any supplier asks for payment terms other than the above specified, then suitable loading on cost will be considered. **Loading of any deviation in the payment terms w.r.t tender terms will be "Base rate of State Bank of India (SBI) (as applicable on the date of bid opening: Techno-commercial bid opening in case of two part bids) + 6%, will be considered for loading for the periods of relaxation sought by bidders.**

k.2) For MSE vendors (under Micro & Small category alone) 100% payment will be made within 45 days from the date of receipt and acceptance of materials at BHEL Stores, Ranipet or 45 days from the date of acknowledgement of receipt of materials at destination specified.

l) NOTE:

Where the destination specified is other than BHEL Stores Ranipet, for claiming payment, Supplier has to submit proof of receipt of the materials at the destination by furnishing a copy of the acknowledged despatch document (LR/RR/Courier receipt etc.) .

If the Bidder is bidding for the first time and wants to be considered as an MSE then, the Bidder shall submit document evidencing that they are an MSE along with a certificate from a Chartered Accountant certifying the status of their Unit / Works clearly specifying the address of the works which is to be considered as MSE and send the same to BHEL, Ranipet either before the tender opening date or upload it as a part of the tender document in the e-procurement portal. Where the document is submitted electronically a hard copy shall invariably be sent within a reasonable period (not exceeding 30 days) from the bid opening date for the purpose of BHEL's records. If the hard copy is not received within this specified time, then the supplier would be treated as a non-MSE. BHEL will not be responsible for any postal / courier / delivery delays.

For approved vendors the status as on the date of the bid opening as available with BHEL Ranipet's records shall be used for reckoning the status of the Bidder as an MSE or otherwise.

Offer/s received without these documents will be treated as non-MSE and order finalization will be done based on this premise. Documents submitted after Bid-opening will not be considered in this tender. This provision for MSE will apply subject to the condition that the participating MSE meets the tender requirements.

For approved suppliers, in case of any change in the MSE status, it shall be the responsibility of the Bidder to notify the change as a part of the Bid document. If at a later date it comes to the knowledge of BHEL, Ranipet that the change in the status has not been intimated by the Bidder and the order is obtained under the premise of an MSE then BHEL would cancel the pending order against this tender and take necessary steps for suspension of the business dealing with the Bidder as per the procurement policy of BHEL. Similarly if a supplier claims MSE status after the Part I bid opening, then the same would not be considered in the tender.

In case after the bid opening it is seen that no MSE has become L1, then depending on the nature of the item, if it is not possible to split the tendered items / quantities on account of reasons like customer contract requirements of supplying one make for a given project or technical reasons like the tendered item being a system etc. then BHEL would not counter offer the L1 prices even though there may be MSE bidders within the +15% band of L1.

Other concessions for MSEs / Reserved sectors (Also for women owned MSEs and MSEs owned by SC/STs)

In addition to the concessions specified above, MSE suppliers will be eligible for such other concessions as per the MSME Act 2006 and any other benefits / concessions that may be announced by the Government of India from time to time.. However, such concessions as applicable at the time of tender opening alone will be applicable. Any concessions advised after tender opening will not be considered for the current tender.

Items that are reserved for MSE and for any other items for which reservations for Indian manufacturers are notified by the Govt. Of India, such concessions as prevailing on the date of tender opening shall apply as a part of this tender conditions.

ii) Foreign Suppliers "100% thru' irrevocable & unconfirmed LC at sight within 3 weeks from the PO date through any one of our Bankers listed elsewhere in the tender conditions for 100% value (less Agency Commission, if any) valid up to the PO delivery period and 15 days thereafter for negotiation. All bank charges in India to BHEL's account and all other charges outside India to Supplier's account. **BHEL would load the price of foreign suppliers in order to bring them on common platform as per Indigenous**

Suppliers on the account of differential payment terms to Indigenous Suppliers. Loading of payment terms will be “Base rate of State Bank of India (SBI) (as applicable on the date of bid opening: Techno-commercial bid opening in case of two part bids) + 6%, will be considered for loading for the periods of relaxation compared to indigenous suppliers i.e. 90 days.

m) Any incidence of tax like Income tax, Goods & Services Tax (GST) and Withholding any other similar tax / duties /levies imposed by the Government of India, or the State Government, where the BHEL Unit is located, deductible at Source, during the tenure of the Order shall be deducted by BHEL and necessary certification of the deduction (Tax deduction at Source) would be given. This is subject to the supplier fulfilling the necessary documentation as specified by the Government of India. (e.g. Tax Residency Certificate, PAN Number etc.)

n) The Guarantee period shall start from the “Date of receipt and acceptance of the materials at BHEL Stores.”

E] Liquidated Damages Clause:

BHEL will levy penalty as Liquidated Damages (LD), for delay in delivery. The damages shall be at the rate of ½% per week or part thereof subject to a maximum of 10% PLUS applicable Goods & Services Tax (GST). The contract delivery date for purpose of L.D is the date of receipt at BHEL Stores for suppliers in India for F.O.R. Destination Contract and the date of dispatch clearance given by BHEL for overseas suppliers. For ex-works or F.O.R dispatching station contracts, the date of the dispatch document will be reckoned as the date of delivery for computing the LD. Supplier shall deduct the applicable LD from the first payment when raising the claim for the same. The applicable LD if any would be communicated by BHEL along with the dispatch clearance. It is taken by BHEL that Foreign Suppliers have confirmed their acceptance to BHEL for opening the LC for value which is the value of the order reduced by the applicable LD. The LD would apply on the undelivered portion only. In case of reasons attributable to BHEL for the delay in delivery (for e.g. delay in arranging the pre-inspection) then the delivery time would be reset to the extent of the time delay attributable to BHEL, with waiver of the LD. Delivery being the essence of BHEL’s contract requirements, unless otherwise specified the LD would apply on the undelivered portion of the contracted items. **In the event that a Supplier does not accept the LD condition above, the offer would be loaded to the extent of the shortfall with respect to upper limit specified above.**

F) Miscellaneous

i) Role of Principals and Agents:

BHEL will deal directly with indigenous manufacturers only.

BHEL strongly discourages the engagement of Agents in India by foreign principals, to deal with BHEL, in BHEL’s tenders.

BHEL will not enter into any correspondence with an Indian Agent.

The Indian Agent will not be extended the privilege given to the principals, such as that of attending the tender openings, attending technical discussions, commercial discussions or price negotiations and such like.

In case, in spite of the above, a foreign principal insists on engaging an Indian Agent, It is made clear by BHEL that:

It is the sole responsibility of the foreign principal to ensure the Agent does not represent any other foreign principal in a given tender.

An undertaking to this effect shall be given by the foreign principal that his / her Agent does not represent any other foreign principal in the tender. This document shall form a part of the techno-commercial offer.

A Principal shall authorise only one Agent to quote against each BHEL's tender. In the event a Principal authorises more than one agent to quote against a BHEL's tender, then all such offers will be rejected by BHEL in that tender. Principals are also advised to include BHEL's tender Number / Reference in their authorisation issued to the Agent.

If at any stage of the tender, BHEL finds that an Indian Agent has represented more than one foreign principal, all such offers of and all the foreign principals would be disqualified summarily in the tender inquiry.

BHEL will only give an intimation of notice of the disqualification. No correspondence would be entertained by BHEL, on their decision. Such decision of BHEL shall be irrevocable, firm and final and shall be binding on the tenderer.

BHEL, due to business reasons would ban, would have banned Indian agents from dealing with BHEL.

Any foreign principal who engages such a banned agent, or an employee of the banned agency, or any other person connected with the banned agency, at any time during the tender proceedings, would be disqualified from the tender proceedings. The decision of BHEL in this regard shall be final and be binding on the OEM.

Hence in their own interests, prospective tenderers may check with BHEL, the status of their proposed agent vis-à-vis BHEL.

In view of the requirement of BHEL, it is strongly suggested that in their own interest, foreign principals may desist from engaging any Indian agent and deal with BHEL directly and it is stressed that any Main producer proposing to deal with BHEL by engaging and through an Indian Agent does so at their own risk.

BHEL shall in no way be responsible for any consequences that may arise to the foreign principal on account of the antecedents / actions of their Indian Agent.

In the event of the foreign principal engaging an Indian Agent:

a) The Supplier shall furnish an authenticated copy of the Agency Agreement with his agent detailing the precise relationship between them and their mutual interest in the business along with techno-commercial bid.

b) The Supplier shall furnish original authorization letter for the Indian Agent. The letter shall contain name, contact person, complete postal address including phone, fax and e-mail ID. It shall also spell out the type of services to be rendered by Indian Agent.

c) Indian Agent & Agency commission: An Indian Agent can represent only one Foreign Manufacturer against a particular Tender. The CFR price quoted by the foreign bidder shall include the agency commission. However, the agency commission component payable to their Indian Agents shall be shown separately in the Offer, either as a lump-sum or as a percentage of the quoted price. This will be paid by BHEL in Indian Rupees, on satisfactory receipt & acceptance of the materials. For calculation of Rupee equivalent of Agency Commission, exchange rate as prevailing on the date of Purchase Order will be taken and

d) For all discussions, technical clarification and negotiations etc. only the principal would be authorized for interaction with BHEL. The Agent shall not be a party to the discussions / negotiations and would not be normally allowed to participate.

ii) Terms & Conditions of Letter of Credit (L/C) for overseas suppliers (indicated for acceptance).

a) Unconfirmed irrevocable Letter of Credit at Sight only will be opened by BHEL. Confirmation of L/C is not preferred by BHEL. Also L.C will be opened in Lots in line with the staggered delivery.

b) All Bank charges out side India are to the Supplier's account and within India to BHEL's account.

c) In case of L/C extension caused by delays attributable to the Supplier, the L/C extension / commitment charges are to be borne by the Supplier.

iii) Other terms & conditions for letter of credit: - Documents for negotiation

a) Signed Commercial invoice in quadruplicate, for a value not exceeding the draft amount, quoting the import Licence No and certifying goods evidencing shipment of the merchandise are as per Applicant's Purchase Order. The amount of invoice after deducting Indian Agent's commission, if any, should not exceed the Credit amount. (The Indian agent's commission, if any, is payable in India in Indian rupees only.)

b) Certificate of Country of Origin, from the country of manufacture, issued by the Chamber of Commerce.

c) One set of Original and two sets of Non-negotiable copies of 'signed', 'unmarked', 'clean on board' Ocean Bill of Lading, showing Shipper as "Government of India" Account M/s. Bharat Heavy Electrical Ltd, Unit: BHEL, Ranipet as consignee (The opening bank should not be notified as consignee), marked freight payable / prepaid at destination.

d) Packing list in 4 copies in English, indicating Size wise Number of bundles / pieces shipped and weight.

e) Certified copy of the fax / e-mail sent by the beneficiary to the applicant giving the following particulars of shipment, as the insurance is to be arranged by the Applicant in India: (a) Purchase Order Number & date; (b) Bill of Lading Number & date (c) Name of vessel; (d) Port of Loading; (e) Number of bundles / pieces and weight; (f) Invoice Number, date and value (g) Purchase Order item number's despatched. The cable / fax is to be sent within 2 working days of shipment.

f) Beneficiary's certificate showing the relevant airmail / courier reference no. and date that the following clauses have been complied with:

- 1] Beneficiary to forward by Registered Airmail / Courier one complete set of original documents and one set of non-negotiable documents within 3 working days of obtaining shipping documents to Regional Manager (ROD), Bharat Heavy Electricals Ltd, 6th Floor, EVR Periyar Bldg. No 690 (Old 474), Anna Salai, Nandanam, Chennai-600035. India. (Phone: +91-24330931, 24330253; e-mail: pbpwar@bhel.in)
- 2] Beneficiary to courier at his cost 3 copies of complete set of non-negotiable documents to the Officer who released the Purchase Order.
- 3] Declaration by the Supplier certifying that the contents in each case are not less than those entered in the invoices / packing list and that the invoicing for the supplies effected is strictly in accordance with agreed rates as stipulated in the Purchase Order.
- 4] Declaration to the effect that all other documents as per purchase order has been couriered to the Purchase order releasing authority
- 5) The carrying steamer should be seaworthy, less than 25 years of age and approved by Lloyds / Classification Societies / General Insurance Corporation of India from time to time and

6) Copy of Dispatch Clearance / Instruction issued by BHEL.

iv) Documents to be sent directly to the Purchaser prior to shipment

- a) Manufacturer's Original Internal Inspection / Test certificate in triplicate.
- b) Manufacturer's Original Guarantee certificate as per Purchase Order. The material shall be guaranteed for a period of 12 months from the date of acceptance of the materials at BHEL stores or 18 months from the date of dispatch whichever is earlier. The acceptance would be evidenced by the Stores Receipt Voucher (SRV) which will be raised by BHEL.
- c) Inspection / Test Certificate issued by BHEL / Inspection agency specified in the Purchase Order. In the event that Inspection prior to dispatch is not carried out by the Engineers of BHEL, the Inspection certificate of the third party so authorized by BHEL and
- d) Any other documentation as specified in the Purchase Order.

v) Conditions for transportation:

- a) All shipping documents shall show the Purchase Order Number & Date, Import Licence Number & Date, and Letter of Credit Number & Date.
- b) Transshipment is to be avoided.
- c) Loading on deck is not permitted. The transport document must not contain a provision that goods may be carried on deck.
- d) A transport document which is produced or appearing to have been produced by reprographic, automated or computerized systems or as carbon copy will be accepted as an original document provided that it is marked as original and is ink-signed.
- e) The transport document must contain all the conditions of carriage on the original document.
- f) The transport document must not indicate the place of destination as being different from the port of discharge.
- g) The transport document must not contain the indication 'intended' or similar qualification in relation to the vessel or other means of transport or port of loading or port of discharge.
- h) The transport document must be issued by the carrier or his agent and not by any freight forwarder.
- i) Transport documents bearing reference by stamp or otherwise, to costs additional to the freight charges are not acceptable.
- j) The Bills of Exchange must be dated and presentation of documents for negotiation must not be later than 15 days after the date of shipment and in any case not later than the expiry date of the Credit.
- l) Indian suppliers shall dispatch the materials on freight prepaid and on door-delivery basis (FOR Destination – Destination: BHEL Stores) and
- m) In the event there is a delay by the Supplier in negotiating / submitting the document, any demurrage / wharfage arising out of the same shall be to the account of the Supplier and shall be deducted from the final payment. Also, in such cases, the Supplier shall authorize the Steamer / Shipping agent / transporter to freely release the consignment to BHEL by providing a “Surrender Bill of Lading”. Over-seas Suppliers have to give a No-Objection Certificate to BHEL, authorizing BHEL to get the Delivery Order from the Steamer

Agent without producing the Original Bill of Lading. This is required to ensure avoidance of incidence of demurrage at Chennai Sea-port that may arise in case of delayed presentation of documents by the Seller.

G) Reverse auction (RA) / on-line bidding on internet:

1. *"BHEL reserves the right to go for Reverse Auction (RA) (Guidelines as available on www.bhel.com) instead of opening the sealed envelope price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. Bidders shall give their acceptance with their offer for participation in RA. Non-acceptance to participate in RA may result in non-consideration of the bids, in case BHEL decides to go for RA."*

2. *Those bidders who have given their acceptance to participate in Reverse Auction will have to necessarily submit 'Process compliance form' (to the designated service provider) as well as 'Online sealed bid' in the Reverse Auction. Non-submission of 'Process compliance form' or 'Online sealed bid' by the agreed bidder(s) will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines for "Suspension of Business Dealings with Suppliers/ Contractors (as available on www.bhel.com)."*

3. The philosophy followed for reverse auction shall be English Reverse (No ties).

4. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.

5. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.

6. In case of reverse auction, BHEL will inform the bidders the details of Service Provider to enable them to contact & get trained.

7. Business rules like event date, time, bid decrement, extension etc. also will be communicated through service provider for compliance.

8. Bidders have to fax the Compliance form (annexure IV) before start of Reverse auction. Without this, the bidder will not be eligible to participate in the event.

9. Reverse auction will be conducted on scheduled date & time.

Note: Decision to go for RA or not will be on case to case basis.

10. At the end of Reverse Auction event, the lowest bidder value will be known on auction portal.

11. The lowest bidder has to fax/e-mail the duly signed and filled-in prescribed format for price breakup including that of line items, to the Service provider within two working days of Auction without fail.

12. Bidders are be required to read the "Terms and Conditions" section of the auctions site of Service provider, using the Login IDs and passwords given to them by the service provider before reverse auction event. Bidders should acquaint themselves of the „Business Rules of Reverse Auction“, which will be communicated before the Reverse Auction.

13. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action as per extant BHEL guidelines, shall be initiated by BHEL and the results of the RA scrapped/ aborted.

14. The Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party.
15. The bidders have to necessarily submit online sealed bid less than or equal to their envelope sealed price bid already submitted to BHEL along with their offer. The envelope sealed price bid of successful L1 bidder in RA, if conducted, would also be opened after the RA and the order will be placed on lower of the two bids (RA closing price & envelope sealed price) thus obtained. It is considered that the bidder having submitted their offer specifically agrees to this condition and undertakes to execute the contract on thus awarded rate/s.
16. If it is found that L1 bidder has quoted higher in the online sealed bid in comparison to the envelope sealed bid for any item(s), the bidder will be issued a warning letter to this effect. However, if the same bidder again defaults on this count in any subsequent tender, it will be considered as fraud and will invite action by BHEL as per extant guidelines for suspension of business dealings with suppliers/ contractors (as available on www.bhel.com)."
17. The calculation sheet e.g. excel sheet (which will help to arrive at 'Total Cost to BHEL') will be communicated to respective bidders of RA by BHEL. In line with the NIT terms, BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at "Total Cost to BHEL" like Packing & forwarding charges, Taxes and Duties, Freight charges, Insurance, Goods & Services Tax (GST) and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) for each of the bidder to enable them to fill-in the price and keep it ready for keying in during the Auction.]
18. This calculation sheet will be finalized based on the evaluation criteria specified in the NIT.
19. Suppliers are required to submit their best price bid in a separate sealed cover along with techno-commercial bid. After evaluation of Techno-Commercial Bids:
- a) In case BHEL decides not to conduct RA, the envelope sealed price bids of all techno-commercially qualified bidders, along with price impact, if any, would be opened and processed as per extant the internal Purchase/ Works Policy as applicable to BHEL.
 - b) In case BHEL decides to conduct RA, business rules of RA will be sent to service provider.(See Annexure for Model General Business Rules of RA.)
20. Generally the start price for the RA would be the lowest of
- a) Lowest online sealed bid and
 - b) Internal Estimate of BHEL
- Note: Wherever more than one lowest online sealed bids are identical and lower than the estimate, the start price, would be that price arrived by reducing the lowest online sealed bid by maximum of one decrement.*
21. Reverse auction process would deemed to have started upon receipt of 'Online Sealed Bids' from the bidders within the prescribed time frame as per Business Rules.
22. After receipt of 'online sealed bids', the start price & bid decrement will be decided by BHEL and the same would be communicated to the service provider, to start the bidding process.
23. Only those bidders who have submitted the 'online sealed bid' within the scheduled time would be eligible to participate further in RA process. However, the H1 bidder (whose quote is highest in online sealed bid) will not be allowed to participate in further RA process provided minimum three bidders are left after removal of H1 bidder. In case of tie for H1 bid (identical online sealed bids), 15 minutes additional time

would be provided and all the participating bidders would be informed by mail/ message on bidding screen to enable bidders submit revised online sealed bids so as to break the tie.

24. If the lowest online sealed bid is the starting price, then the lowest bidder in online sealed bid shall be shown as current L1 automatically by the system. System would have the provision to indicate this bid as current L1 for further bidding.

25. If the start price is lower than the lowest online sealed bid, on acceptance of such start price by any bidder, this bid would be indicated as current L1 for further bidding.

26. In case of no further bidding, RA will be deemed to have been successful with current L1 bidder.

27. All bidders who had given online sealed bid would be able to see their rank and L1 price and their ranking L1, L2 etc. would be based on their last quoted price irrespective of quote received in RA or online sealed bid.

28. RA shall be treated as failed in the following scenarios:

a) In cases where the start price is (a) estimate or (b) one decrement (maximum) lower than the lowest of the online sealed bids and no bidder accepts the start price.

b) In cases where the number of online sealed bids are less than four before removal of highest bidder.

c) In cases of tie among H1 bidders, even after extension of submission of online sealed bids once by 15 minutes.

d) Wherever, the evaluation is done for individual line items, RA shall be treated as failed only for those line item(s) for which any of the above a), b) or c) satisfies.

29. In cases of failure of RA, sealed envelope price bids (of item(s) for which RA has failed) of all the techno-commercially qualified bidders would be opened and the tender would be processed accordingly. However, the envelope sealed bid(s) of techno-commercially acceptable bidder(s) who had agreed to participate in the RA and had failed to submit the online sealed bid would not be opened.

30. After declaring L1 upon completion of RA, the envelope sealed price bid of L1 bidder would also be opened for placement of order on lower of the two bids (RA closing price & envelope sealed price) and the offers would be processed as per extant their internal Purchase/ Works policy provisions of BHEL. Action as per NIT terms would be taken if online sealed bid is higher than the envelope sealed bid.

31. Relative position of bidders (for usage in cases of predefined splitting the quantities) would also include bidders who have given 'online sealed bids' but have not given further bids in auction. In case of splitting requirement, H1 bidder may be considered for counter offer if the pre-stated (NIT) numbers of suppliers do not accept the counter offer. However, principle of splitting to N-1 bidder would be maintained.

32. In case H1 bidder happen to be MSE and was removed from further bidding but is within L1 + 15% band, then this bid would be considered and to be processed in line with 'Public Procurement Policy for Micro & Small Enterprises (MSEs) order, 2012'.

33. For providing preference to domestically manufactured Electronic Products, in accordance with Department of Electronics and Information Technology (DeitY) Gazette Notification No. 33(3)/2013-IPHW dated 23.12.2013 and its related notifications issued from time to time, H1 bidder removed from further bidding would be considered for counter-offer to meet domestic bidder requirement for the item(s) under procurement.

34. In case BHEL decides not to go for Reverse Auction for the tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL would be opened as per BHEL's standard practice.

35. In case of enquiry through e-Procurement, the sealed electronic price bid (e-bid) would be treated as sealed envelope price bid.

Note: In order to bring more transparency and to address any queries of Bidders on Reverse Auction, an abridged version of BHEL's "Common Guidelines for conducting Reverse Auction (RA)" has been hosted in BHEL's web site www.bhel.com under the links "Supplier Registration Page" and "Tender Notification". All Bidders are requested to visit the link and familiarize themselves with BHEL's RA procedures and guidelines before submission of their bid/s. Submission of Bid shall mean that the Bidder has read and understood BHEL's RA procedures and the bid is in agreement with the same.

H] Force Majeure

If at any time during the currency of this contract, the performance in whole or in part, by either party of any obligations under this contract shall be prevented or delayed by reason, of any war, hostilities, acts of the public enemy, civil commotion, sabotage, fires, explosions, epidemics, quarantine, restrictions or acts of GOD (hereinafter referred to as events), then provided notice of happening of any such events is given by either party to other within ten days from the date of occurrence thereof, neither party shall reason of such events be entitled to terminate this contract nor shall either party have any such non performance and delay is resumed as soon as practicable after such events has come to an end or ceased to exist. If the performance in whole or part of any obligation under this contract is prevented or delayed by reason or any such event claims for extension of time shall be granted for period considered reasonable by the purchaser subject to prompt notification by the seller to the purchaser of the particulars of the events and supply to the purchaser if required of any supporting evidence. Any waiver of time in respect of partial installment shall not be deemed to be a waiver of time in respect of remaining deliveries.

I] Cancellation of Order:

In the event of non-performance of the contract by the Supplier, BHEL reserves the right to cancel the order with issue of a written notice. BHEL would provide a curing period of 30 days, for the Supplier to rectify the situation. If the Supplier fails to rectify the reason/s that led to the issue of cancellation notice by BHEL, then the cancellation order would be issued automatically by BHEL, without further recourse to the Seller. BHEL will not pay any cancellation charges or any other charges / damages to the Supplier, arising out such cancellation. In the event of the non-performance of the supply contract, by the Supplier, the rights of BHEL include, in addition to cancelling the order, to take alternate purchase action at the cost and risk of the supplier. The additional expenditure to be incurred by BHEL in such alternate purchase would be to the account of the supplier. (Risk Purchase). This remedy would be in addition to the invoking of the CEBG on grounds of failure of the Supplier in executing the Contract and any other legal remedies." BHEL reserves the right to initiate the alternate purchase action at the cost and risk of the erring supplier by issue of a simple notice of intention for the alternate purchase action duly sent by any electronic means and / or by a letter. The cancellation of the order would not be a pre-condition for initiation of the alternate purchase action.

J] Contract Execution Bank Guarantee:

To demonstrate the fidelity of the successful bidder, in executing the Contract, on receipt of the Letter of Intent / Purchase Order, the Supplier shall arrange to provide a contract execution bank guarantee (CEBG). The format of the CEBG is a part of this enquiry. The format may be downloaded and necessary stamping may be obtained from the Banker towards submission of the CEBG. The indigenous suppliers have to provide the CEBG from any one of the Nationalized Banks, listed in the annexure to these terms. Overseas suppliers can submit the CEBG from any of the reputed International / National Bankers. However the CEBG is to be confirmed by any of the Bankers listed by us. In the event of failure by the Supplier to execute the contract either fully or partially, BHEL would encash the entire CEBG. The CEBG shall be valid for the period covering the agreed delivery date of the order with a further claim period of 3 months on the last specified delivery date. In the event of the failure of delivery BHEL would proceed with encashing the CEBG without reference to the Supplier. In the event of BHEL granting extension of the delivery dates, then the CEBG validity shall also be got extended by the Supplier to the extent of the extended delivery times together with the claim period as specified elsewhere. **The CEBG shall be for a value of 2% of the Purchase order.**

Suppliers who are all already registered with BHEL and having a vendor performance rating of A or A+ grade would be exempted from submission of CEBG.

Performance Bank Guarantee

Where ever so required, the Supplier shall arrange to provide a Performance bank guarantee (PBG). The indigenous suppliers have to provide the PBG from any one of the Nationalized Banks, listed in the tender terms. Overseas suppliers can submit the PBG from any of the reputed International / National Bankers. However the PBG shall be confirmed by any of the Bankers listed by us. The PBG shall guarantee the performance of the equipment / materials / items supplied and shall cover the guarantee period. The PBG shall have a claim period of 3 months in addition to the guarantee period. In the event of failure of the supplies made within the guarantee period, BHEL would encash the entire PBG. **The PBG shall be for a value of 10% of the Purchase order.**

The supplier/s have to get the PBG format (pre-printed) from BHEL and get the same stamped by the Banker. Change of PBG terms either by the supplier's Banker or by the supplier, after servicing of the order is not acceptable. Similarly PBG prepared by the supplier (typed by them) will also not be acceptable to BHEL. The pre-printed form issued by BHEL shall be used for making the PBG.

K] Post-order submission of documents for approval

In the event of the release of Letter of Intent (LoI) / Purchase order/s (PO) against this tender, Bidders have to submit the applicable documents as called for in the tender / LoI / PO/s, such as drawings, data sheets, design calculations etc. These documents for approval have to be submitted within the agreed timelines between BHEL and Bidder. Normally the time period for submission for approval is 15 days from the date of receipt of the LoI / PO by the supplier. The actual time period within which the documents have to be submitted for approval would be specified in the LoI / PO.

Such documents would be subjected to evaluation and approval by BHEL and / or by BHEL's customer / Consultant / Customer's Consultant. Bidders have to give their specific acceptance for this.

After approval of such documents and after getting clearance from BHEL, only the items ordered can be taken up for manufacture.

Any changes required by BHEL / Customer etc. in the documents submitted for approval shall be incorporated by the Bidder and no extra cost would be payable by BHEL for such changes.



In the event that the Bidder does not carry out the required corrections, then the LoI / PO would be liable for cancellation by BHEL and BHEL would resort to alternate purchase action at the risk and cost of the Bidder under the Risk Purchase Condition of the Purchase Order.

Note: After receiving the LoI / PO, supplier shall also forward the acknowledgement / acceptance of the LoI / PO by signing and returning the second copy of the LoI / PO as the token of acceptance.

L] Others

a) In case of any contradiction in the terms and conditions given here and elsewhere in the other documents of the tender, it shall be the responsibility of the tenderer to get it clarified from BHEL. The officer authorized to provide such clarifications is the tender issuing officer.

b) Alterations to the conditions of the Tender can be done only by the authorized officer, at any time before the date and time of tender opening and would be duly communicated through a corrigendum.

c) Suspension of Business dealings with Suppliers:

(i) Before submitting offer, prospective bidders are advised to visit our web-site www.bhel.com / supplier registration to familiarize themselves with BHEL's policy and procedures of Suspension of Business Dealings with Suppliers.

Submission of offer shall be deemed to be evidence of the Bidder to have read and understood the above said policy.

ii) Treatment of Banned / Under-performing Vendors:

Any supplier who has been put on "Hold" or "Banned" from having business dealings with BHEL, Ranipet or any other unit of BHEL shall not submit their offer against this tender. If any such offers are received they would be summarily rejected and sent back. During the processing of tender, if any unit of BHEL puts a supplier on "Ban" then further processing of the offer will not be taken up and in case an order is placed, BHEL, Ranipet may resort at their discretion to cancel the PO either fully or partially.

If any of the supplier who is supplying similar material to BHEL, Ranipet has a Vendor Performance Rating (VPR) score of 'C' or below, then offer given by such parties will not be considered for ordering in this tender.

If any of the Bidders have unexecuted order/s with BHEL and if in such orders, the deliveries have been delayed beyond a reasonable period (say 30 days of agreed delivery period), the offer of such Bidders will also be liable for rejection.

Offers of such of those bidders against whom action for suspension of business dealings has been initiated by BHEL, Ranipet or any other Units/Division of BHEL will also not be considered in this tender.

d) Fraud Prevention Policy:

The Bidder along with its associate/ collaborators/ sub-contractors/ sub-vendors/ consultants/ service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.

e) Applicability of Integrity Pact:-

IP is a tool to ensure that activities and transactions between the Company and its Bidders/ Contractors are handled in a fair, transparent and corruption free manner. A panel of Independent External Monitors (IEMs) on the present panel have been appointed by BHEL with the approval of CVC to oversee implementation of IP in BHEL.



Sl	IEM	Address	Phone & Email
1.	Shri.D.R.S Chaudhary, IAS (Retd.)	E-1/164,Arera Colony Bhopal 462016 (M.P.)	dilip.chaudhary@icloud.com
2.	Shri Pravin Tripathi, IA & AS (Retd.)	D-243, Anupam Gardens, Lane IB, Sarai, Sainik Farms, New Delhi – 110 068.	pravin.tripathi@gmail.com

The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory) along with techno-commercial bid(Part-I, in case of two/three part bid). Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.

Please refer Section-8 of IP for Role and Responsibilities of IEMs. In case of any complaint arising out of the tendering process, the matter may be referred to the IEM(s).All correspondence with the IEMs shall be done through email only.

Note:

No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department's officials whose contact details are provided below:

For all clarifications/ issues related to the tender, please contact:

Name: (1) (2)

Dep't:

Address:

.....

Phone:(Landline/Mobile) (1) (2)

Email:

Fax:

Integrity Pact are applicable for all the BHEL enquiries whose estimated value is equal to or more than Rupees 05 Crores.

Copy of Integrity Pact with applicable nominated IEM is attached along with the tender documents for ready reference of Suppliers.

f) If any Supplier attempts to bribe, or pay commission, gift or any advantage or bring in undue influence either by himself or on his behalf any one including a stranger to the tender, in addition to instituting legal proceedings as per the extant laws prevailing, will disqualify the supplier from this tender and all future tenders of BHEL. Decision of the Purchaser would be final in this matter.

g) The laws governing this transaction shall be the laws in India.

h) Wherever not specified, Inco terms 2010 shall be used to interpret the Commercial terms and conditions and

i) In the event of an order, Supplier shall agree to settlement of disputes or differences, if any, by way of arbitration, in accordance with the “Rule of Arbitration” of the Indian Council of Arbitration.

The language in the tender documents downloaded by the Bidders shall at no point of time be changed, altered or modified in any manner by the Tenderer. If such changes are made by any tenderer, it shall be considered as tampering with BHEL’s terms and the offer shall be summarily rejected, whenever it is noticed by BHEL. Such Bidders would be disqualified from the Bidding Process and their offers would be forfeited / Bank Guarantees invoked. They would also not be allowed to participate in future tenders of BHEL.

M. Conditions for rejection of offers:

Following is the list of situations which would lead to rejection of offer/s.

This list is not exhaustive but only indicative.

BHEL reserve the right to reject one or all offers without assigning any reason. The decision of BHEL will be final in this regard.

1. *If the offer fails to meet the technical requirements/specifications of the tendered item/s.*
2. *If the offer does not meet the commercial terms & conditions, such as but not limited to delivery period specified in the tender, Delivery terms, payment terms, Liquidated damages, Risk Purchase, cancellation clause etc., including the load factors specified in the tender.*
3. *If the bidder fails to respond to clarification sought, within a reasonable period. In case of doubts / lack of clarity on the technical and commercial offer of the bidder, BHEL will seek clarifications. Bidders are required to respond completely to such BHEL’s queries within 3 working days unless otherwise agreed to in writing by BHEL for period beyond 3 days. If supplier fails to respond within 3 working days or maximum 2 working days on a reminder thereon, the offer of such bidders will be automatically dis-qualified in the tender without further recourse to informing the bidder.*
4. *If any of the conditions listed below are applicable to the bidder, the offer is liable to be rejected:*

If any

- Debt recovery / Winding up Proceedings are initiated against the Company in Courts / Debt Recovery Tribunals (DRTs),
 - Proceedings are there against the Company in National Company Law Tribunal (NCLT) with respect to Insolvency and Bankruptcy Code (IBC) or otherwise,
 - Any proceedings are there against the Company under the “Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest (SARFAESI) Act,
 - Any restructuring proceedings are underway for the Company under Corporate Debt Restructuring (CDR), Strategic Debt Restructuring (SDR) or otherwise,
 - Divestment / demerger proceedings are underway for the Company under the Companies Act.
 - If action under guidelines of suspension of business dealings (Ref AA/MM/SB/01 Rev 02 dt 22.07.2016) and its latest revisions has been initiated against the company/bidder.
5. *Failure to sign & accept the Integrity Pact (where applicable). Bidders are hereby informed that the contents of the Integrity Pact are firm and fixed and cannot be changed.*

The above list is not exhaustive but is indicative only.

N. Special Note:

BHEL is a Government of India Undertaking. Its procurement practices are governed by the (Internal) Purchase Policy issued by the management of the company and as per Annexure B applicable at the time of finalising the order against this tender.

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Record of Revisions:

Revision No.	Revision Date	Modification
01	17.08.2016	Payment terms for Foreign suppliers modified wrt loading- Clause k.ii
02	29.08.2016	Treatment of banned vendors – Para 3 added - Clause L.ii
03	14.09.2016	Opening of offers – clause B – sub clause ‘b’ included and existing clause ‘b’ renamed as ‘c’.
04	14.09.2016	Opening of offers – Note – sub clause (ii) modified
05	12.10.2016	Clause N. Special Note added
06	22.10.2016	Clause G Reverse Auction modified. Annexure on General Business Rules for Reverse Auction appended Role of Principals added under ‘Miscellaneous’
07	20.01.2017	Clause L (e) is modified. Clause L (f ,g ,h) renumbered.
08	24.02.2017	Clause F(c) modified.
09	08.07.2017	Clause M, Point 4 is added – regarding the financial health of the Bidder - as a criterion for disqualification.
10	20.07.2017	Duties and Taxes replaced with GST; Applicability of GST for LD inserted in Clause E; Treatment of poor performing current vendors inserted in clause L.c.(ii)
11	25.07.2017	Clause A.Note (iii) CST etc., replaced with GST; Clause C.f Deleted;
12	15.09.2017	Clause M, Point 5 inserted regarding Integrity Pact
13	21.03.2018	Clause A, Point xi inserted regarding Overwriting in Price Bids
14	28.05.2018	Clause A, a),b),c),d) amended for M/s E-Procurement technologies, https://bhel.abcprocure.com . Clause A, (f, g, h) – modified. Clause M, Point 4, - regarding suspension of business dealings inserted.
15	23.07.2018	Clause L,(e)- Applicability of Integrity Pact – modified.
16	31.08.2018	Clause C,(n)- Preference to Make in India – added.
17	04.12.2018	Clause C,(n)- Preference to Make in India & Clause K.2 Note - MSE concessions– modified.
18	13.02.2019	Clause C,(n)- Preference to Make in India – modified. Page no 9 Clause o – Extended credit period - removed.

ANNEXURE

Model General Business Rules for Reverse Auction

This has reference to tender no {tender number....date...}. BHEL shall finalise the Rates for the supply of {item name} through Reverse Auction mode. BHEL has made arrangement with M/s. {Service provider}, who shall be BHEL's authorized service provider for the same. Bidders should go through the instructions given below and submit acceptance of the same.

The technical & commercial terms are as per (a) BHEL Tender Enq. No. {...} dated {...}, (b) Bidders' technical & commercial bid (in case of two part bid) and (c) subsequent correspondences between BHEL and the bidders, if any.

1. Procedure of Reverse Auctioning

- i. Online Sealed Bid: This duration of online sealed bid will be {...} minutes. All bidders to submit their online sealed bids during this period.
- ii. Online Reverse Auction: The 'opening price' i.e. start price for RA and 'bid decrement' will be decided by BHEL.
- iii. If BHEL decides the lowest online sealed bid as the starting price, then the lowest bidder in online sealed bid shall be shown as current L1 automatically by the system and no acceptance of that price is required. System shall have the provision to indicate this bid as current L1.
- iv. Bidders by offering a minimum bid decrement or the multiples thereof can displace a standing lowest bid and become "L1" and this continues as an iterative process.
- v. After the completion of the online reverse auction, the Closing Price (CP) shall be available for further processing.

2. Schedule for Reverse Auction: The Reverse Auction is tentatively scheduled on {date}: and the duration of online sealed bid will be {...} minutes. All bidders to submit their online sealed bids during this period.

- Online Sealed Bid:-

- {Start Time:
- Close Time: }

- Online Reverse Auction:-

- {Start Time:
- Close Time: }

3. Auction extension time:

If a bidder places a bid in the last {...} minutes of closing of the Reverse Auction and if that bid gets accepted, then the auction's duration shall get extended automatically for another {...} minutes, for the entire auction (i.e. for all the items in the auction), from the time that bid comes in. Please note that the auto-extension will take place only if a bid comes in those last {...} minutes and if that bid gets accepted as the lowest bid. If the bid does not get accepted as the lowest bid, the auto-extension will not take place even if that bid might have come in the last {...} minutes. In case, there is no bid in the last {...} minutes of closing of Reverse Auction, the auction shall get closed automatically without any extension. However, bidders are advised not to wait till the last

minute or last few seconds to enter their bid during the auto-extension period to avoid complications related with internet connectivity, network problems, system crash down, power failure, etc.

The above process will continue till completion of Reverse Auction.

Complaints/ Grievances, if any, regarding denial of service or any related issue should be given in writing thru e-mail/ fax to M/s. {Service provider} with a copy to BHEL within 15 minutes prior to initial closing time of Online Reverse Auction.

4. Bid price: The Bidder has to quote the {.....} Price inclusive of Packing & Forwarding charges, all the routine & type tests as per tender scope, GST, Freight (bidder to provide original Freight paid receipt), insurance charges, etc. including loading (if indicated by BHEL due to deviations in technical/ commercial terms) for the Items specified. Details are as shown in Excel Sheet for calculation of total cost to BHEL (To be specified by Unit as per NIT conditions).

5. Bidding currency and unit of measurement:

Bidding will be conducted in *Indian Rupees per Unit* of the material as per the specifications {...}

In case of foreign currency bids, exchange rate (TT selling rate of State Bank of India) as on scheduled date of tender opening (Part-I bid) shall be considered for conversion in Indian Rupees. If the relevant day happens to be a Bank holiday, then the forex rate as on the previous bank (SBI) working day shall be taken.

6. Validity of bids: Price shall be valid for {... days} from the date of reverse auction. These shall not be subjected to any change whatsoever.

7. Lowest bid of a bidder: In case the bidder submits more than one bid, the lowest bid at the end of Online Reverse Auction will be considered as the bidder's final offer to execute the work.

8. Bidders shall be assigned a Unique User Name & Password by M/s. {Service provider}. Bidders are advised to change the Password and edit the information in the Registration Page after the receipt of initial Password from M/s. {Service provider} to ensure confidentiality. All bids made from the Login ID given to the bidders will be deemed to have been made by the bidders/ bidders' company.

9. Post auction procedure: BHEL will proceed with the Lowest Bid in the Reverse Auction for further processing.

10. Any commercial/ technical loading shall be intimated to bidders prior to RA. The excel sheet provided in this regard shall cover all these aspects. Commercial/ technical loading if any, shall be added by the respective bidder in its price during online sealed bid & Online Reverse Auction. Modalities of loading & de-loading shall be separately intimated to the bidders. The responsibility for correctness of total cost to BHEL shall lie with the bidders.

11. Computerized reverse auction shall be conducted by BHEL (through M/s. {Service Provider}), on pre-specified date, while the bidders shall be quoting from their own offices/ place of their choice. Internet connectivity shall have to be ensured by bidders themselves.

During the RA process if a bidder is not able to bid and requests for extension of time by FAX/ email/ phone then time extension of additional 15 minutes will be given by the service provider provided such requests come before 5 minutes of auction closing time. However, only one such request per bidder can be entertained. Despite this extension if bidder fails to upload his prices due to extreme case of failure of Internet connectivity, (due to any reason whatsoever may be) it is the bidders' responsibility/ decision to send fax communication immediately to M/s. {Service provider}, furnishing the price the bidder wants to bid online with a request to the service provider to upload the faxed price online so that the service provider will upload that price online on behalf of the Bidder. It shall be noted clearly that the concerned bidder communicating this price to service provider has to solely ensure that the fax message is received by the service provider in a readable/ legible form and also the Bidder should simultaneously check up with service provider about the clear receipt of the price faxed. It shall also be clearly understood that the bidder shall be at liberty to send such fax communications of prices to be uploaded by the service provider only within the closure of Bid time and under no circumstance it shall be allowed beyond the closure of Bid time /reverse auction. It shall also be noted that the service provider should be given a reasonable required time by the bidders, to upload such prices online and if such required time is not available at the disposal of the Service provider at the time of receipt of the fax message from the bidders,

the service provider will not be uploading the prices and either BHEL or the service provider are not responsible for this unforeseen circumstances. In order to ward-off such contingent situation bidders are requested to make all the necessary arrangements/ alternatives whatever required so that they are able to circumvent such situation and still be able to participate in the reverse auction successfully. Failure of power or loss of connectivity at the premises of bidders during the Reverse auction cannot be the cause for not participating in the reverse auction. On account of this, the time for the auction cannot be extended and neither BHEL nor M/s. {Service provider} is responsible for such eventualities.

12. Proxy bids: Proxy bidding feature is a pro-bidder feature to safeguard the bidder's interest of any internet failure or to avoid last minute rush. The proxy feature allows bidders to place an automated bid in the system directly in an auction and bid without having to enter a new amount each time a competing bidder submits a new offer. The bid amount that a bidder enters is the minimum that the bidder is willing to offer. Here the software bids on behalf of the bidder. This obviates the need for the bidder participating in the bidding process until the proxy bid amount is decrementally reached by other bidders. When proxy bid amount is reached, the bidder (who has submitted the proxy bid) has an option to start participating in the bidding process.

The proxy amount is the minimum amount that the bidder is willing to offer. During the course of bidding, the bidder cannot delete or change the amount of a proxy bid. Bids are submitted in decrements (decreasing bid amounts). The application automates proxy bidding by processing proxy bids automatically, according to the decrement that the auction originator originally established when creating the auction, submitting offers to the next bid decrement each time a competing bidder bids, regardless of the fact whether the competing bids are submitted as proxy or standard bids. However, it may please be noted that if a manual bid and proxy bid are submitted at the same instant manual bid will be recognized as the L1 at that instant. In case of more than one proxy bid, the system shall bid till it crosses the threshold value of 'each lowest proxy bid' and thereafter allow the competition to decide the final L1 price. Proxy bids are fed into the system directly by the respective bidders. As such this information is privy only to the respective bidder(s).

13. Bidders are advised to get fully trained and clear all their doubts such as refreshing of screen, quantity being auctioned, tender value being auctioned etc. from M/s. {Service provider}.

14. M/s. {Service provider}, shall arrange to demonstrate/ train the bidder or bidder's nominated person(s), without any cost to bidders. M/s. {Service provider}, shall also explain the bidders, all the business rules related to the Reverse Auction. Bidders are required to submit their acceptance to the terms/ conditions/modalities before participating in the Reverse Auction in the process compliance form as enclosed. Without this, the bidder will not be eligible to participate in the event.

15. Successful bidder shall be required to submit the final prices (L1) in prescribed format (Annexure-VI) for price breakup including that of line items, if required, quoted during the Online Reverse Auction, duly signed and stamped as token of acceptance without any new condition (other than those already agreed to before start of auction), after the completion of auction to M/s. {Service provider} besides BHEL within two working days of Auction without fail.

16. Any variation between the final bid value and that in the confirmatory signed price breakup Document will be considered as tampering the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings (as available on www.bhel.com).

17. Bidders' bid will be taken as an offer to execute the work/ supplies of the item as per enquiry No. {...} dt. {...}. Bids once made by the bidder, cannot be cancelled/ withdrawn and bidder shall be bound to execute the work as mentioned above at bidder's final bid price. Should bidder back out and not execute the contract as per the rates quoted, BHEL shall take action as per extant guidelines for suspension of business dealings (as available on www.bhel.com).

18. Bidders shall be able to view the following on their screen along with the necessary fields during Online Reverse Auction:

- a. Leading (Running Lowest) Bid in the Auction (only total price of package).
- b. Bid Placed by the bidder.
- c. Start Price.



- d. Decrement value.
- e. Rank of their own bid during bidding as well as at the close of auction

19. BHEL's decision on award of contract shall be final and binding on all the Bidders.

20. BHEL reserves the right to extend, reschedule or cancel the Reverse Auction process at any time, before ordering, without assigning any reason, with intimation to bidders.

21. BHEL shall not have any liability to bidders for any interruption or delay in access to the site irrespective of the cause. In such cases, the decision of BHEL shall be binding on the bidders.

22. Other terms and conditions shall be as per bidder's techno-commercial offers and other correspondences, if any, till date.

23. If there is any clash between this business document and the FAQ available, if any, in the website of M/s. {Service provider}, the terms & conditions given in this business document will supersede the information contained in the FAQs. Any changes made by BHEL/ service provider (due to unforeseen contingencies) after the first posting shall be deemed to have been accepted if the bidder continues to access the portal after that time..

24. Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action as per extant BHEL guidelines for suspension of business dealings (as available on www.bhel.com), shall be initiated by BHEL.



RA price confirmation and breakup
(To be submitted by L1 bidder after completion of RA)

To
- M/s. Service provider
- Postal address

CC: M/s BHEL

BOILER AUXILIARIES PLANT
INDIRA GANDHI INDUSTRIAL COMPLEX
RANIPET – 632406
TAMILNADU
INDIA.

Sub: Final price quoted during Reverse Auction and price breakup

Dear Sir,

We confirm that we have quoted.

Rs.{ _____ in value & in words _____ } for item(s) covered under tender enquiry
No. {...} dt.{...}

Total price of the items covered under above cited enquiries is inclusive of {Packing & forwarding, GST, freight and insurance charges up to {.....}
District,{.....} State and Type Test Charges etc., [exclusive of Goods & Services tax (GST)],
other as
per NIT}

as our final landed prices as quoted during the Reverse Auction conducted today {date} which will
be valid for a period of { ____ in nos. & in words ____ } days.

The price break-up including that of line items is as given below.

Total	=====
	- Rs.in value & in words
	=====

Thanking you and looking forward to the valuable order from BHEL.

Yours sincerely,
For _____
Name:
Company:
Date:
Seal:



Purchase, Materials Management,
Bharat Heavy Electricals Limited,
Boiler Auxiliaries Plant, Ranipet - 632 406, **INDIA.**
(A Government of India Undertaking)

Sl.No	Annexure-C to Enquiry 3890097E/20.04.2019 for Commercial Terms and Conditions	SUPPLIER COMMENTS: REQUESTED TO OFFER EITHER CONFIRMED OR ACCEPTED OR REMARKS IF ANY DEVIATION IS TAKEN
1	Terms of Delivery- Indigenous Suppliers : FOR Destination: Destination is NTPC / MOUDA STPP / MOUDA / MAHARASHTRA as indicated in the enquiry header (Cost, Packing, Forwarding ,Freight & Insurance etc., are in Supplier's scope i.e. included in the quoted prices.)	
2	Terms of Delivery -Foreign Supplies : CFR CHENNAI SEAPORT (Cost, Packing, Forwarding & Freight etc., are in Supplier's scope i.e. included in the quoted prices). Insurance in BHEL Scope.	
3	Delivery Period: To mention clearly the exact delivery period as it attracts contractual penalty on delays.Delivery is the essence of the contract.	
4	Terms of payment for Indigenous Suppliers: (1).80% payment will be made directly thru' EFT within 45 day for MSE Vendors and 120 days for Non-MSE Vendors from the date of receipt and acceptance of materials at site. (2).Balance 20% payment will be released within 45 days from the date of Erection & Commissioning (E&C) certificate issued by BHEL site officials and on submission of invoice. If E&C not happened within 24 month from the data of supply, then 20% payment will be released after 36 month from the date of supply. (3).100% Supervision charges for erection and commissioning (E&C) will be paid on successful completion of E&C against submission of invoice with E&C completion certificate issued by BHEL site officials. (4).100% within 45 days for MSE vendor and 90 days for Non MSE vendor for enquiry Sl.No 12 & 13 against receipt and acceptance of material at Stores/BHEL/Ranipet-6. If any supplier is asking for payment terms other than the above specified, then suitable loading on cost will be considered. Loading of any deviation in the payment terms w.r.t tender terms will be "MCLR rate of State Bank of India (SBI) (as applicable on the date of bid opening: Techno-commercial bid opening in case of two part bids) + 6%, will be considered for loading for the periods of relaxation sought by bidders. (For details Pl ref Annexure-B-General Terms and conditions.). All bank charges are to seller's account.	
5	Terms of Payment for Foreign Suppliers: (1).80% thru' irrevocable & unconfirmed LC with 120 days usance period from the date of submission of negotiable documents. LC will be established within 3 months prior to PO delivery date through any one of our Bankers listed elsewhere in the tender conditions for 80% value (less Agency Commission, if any) valid upto the PO delivery period and 21 days thereafter for negotiation. (2).Balance 20% payment will be released on submission of invoice directly to BHEL/Ranipet within 45 days from the date of Erection & Commissioning (E&C) certificate issued by BHEL site officials. If E&C not happened within 24 months from the data of supply, then 20% payment will be released after 36 month from the date of supply. (3).100% Supervision charges for erection and commissioning (E&C) will be paid on successful completion of E&C against submission of invoice with E&C completion certificate issued by BHEL site officials. (4).100% payment will be made directly thru' irrevocable & unconfirmed LC with 120 Days usance period from the date of submission of negotiable documents. LC will be established within 3 months prior to PO delivery date through any one of our Bankers listed elsewhere in the tender conditions for alongwith 80% value of main supply (less Agency Commission, if any) valid upto the PO delivery period and 21 days thereafter for negotiation. (Enquiry Sl.No 12&13). All bank charges in India to BHEL's account and all bank charges outside India are to Supplier's account. BHEL reserves the right to load the price of foreign suppliers in order to bring them on common platform as per Indigenous Suppliers on the account of differential payment terms to Indigenous Suppliers. Loading of payment terms will be "Base rate of State Bank of India (SBI) (as applicable on the date of bid opening: Techno-commercial bid opening in case of two part bids) + 6%, will be considered for loading for the periods of relaxation compared to indigenous suppliers i.e. 45days / 90days. Other than BHEL preferred payment term, any demurrage or any penalty arising out of delay in submission of documents or any other financial implications encountered by the act of bidder/s or supplier/s during the clearance of the goods at customs/ports will be borne by the	
6	Whenever there is an Indian Agent to represent a Supplier, it is mandatory to give the details of services to be rendered by Indian Agent and / or the details of agreement between Supplier and Agent. Supplier to indicate the Agency Commission payable. Indian Agency Commission will be paid only in Indian Rupees, calculated at the rate of exchange prevailing on the date of price bid opening. This is payable on satisfactory completion of the contract. Agency agreement copy shall be submitted along with Annexure-C without fail. Note: In order to maintain sanctity of the tender system, it is mandatory that one Agent cannot represent two Suppliers or quote on their behalf in a particular tender enquiry. If any Agent represents more than one Suppliers all such offers will be rejected.	
7	Contract Execution Bank Guarantee (CEBG): The Supplier shall submit a BG for 2% of the contract value valid for the agreed delivery period + 3 Months. Attached CEBG Format is to be signed and submitted along with Annexure-C as a token of acceptance. Please note no deviation is allowed.	
8	PERFORMANCE BANK GUARANTEE (10% OF ORDER VALUE): REQUIRED for a period of 39 months (36+3) from the date of supply of material (including 3 months retention period). If any supplier is asking for any deviation or non-acceptance, then suitable loading on cost will be considered (10% value PO value for 39 months). Loading of any deviation w.r.t tender terms will be "Base rate of State Bank of India (SBI) (as applicable on the date of bid opening: Techno commercial bid opening in case of two part bids) + 6%, will be considered for loading for the relaxation sought by bidders.	
9	OFFER Validity: Minimum 90 days shall be offered from the date of Techno Commercial Bid opening (Part-II) or 30 Days from the date of Reverse Auction and which ever occurs later will be considered. The specific acceptance for this offer validity is must.	
10	Clientele List: Supplier to submit detailed clientele list with their full address including detail of contact person with phone no., fax no. & e-mail ID as per respective clause of Annexure - B (General terms and Conditions).	
11	Price bid opening through Sealed bid / Reverse Auction: BHEL reserves the right to conduct RA/Sealed bid opening depending on the tender outcome. Supplier confirmation required. The sealed price bids alongwith the impact price bids arising out of techno commercial discussions already available with BHEL only will be opened. Please note that no impact price due to non-conductance of RA will be accepted.	
12	Test Certificate: To be submitted. With Chemical and Mechanical properties and dimensions as per Standards and our Technical Delivery Conditions and shall be as per Annexure Q	

Sl.No	Annexure-C to Enquiry 3890097E/20.04.2019 for Commercial Terms and Conditions	SUPPLIER COMMENTS: REQUESTED TO OFFER EITHER CONFIRMED OR ACCEPTED OR REMARKS IF ANY DEVIATION IS TAKEN
13	QP: Specific conformation to Submission of manufacturer/vendor quality plan for our review and approval and shall be as per annexure Q	
14	Guarantee Certificate : Please conform furnishing guarantee certificate in BHEL format for 12 months from the date of commissioning or 18 months from the date of last despatch whichever is earlier.	
15	Warranty shall be as per clause of technical specification	
16	Inspection before despatch: Inspection before despatch at supplier's works by BHEL / BHEL appointed inspection agency / Customer / Customer appointed inspection agency. And other details shall be as per Annexure Q.	
17	Liquidated Damages (LD) : The applicable LD shall be at the rate of 0.5% per week to maximum of 10% for the undelivered portion and for the deliveries made beyond the agreed Delivery Period. Delivery being the essence of BHEL's contract requirements, in the event that a Supplier does not accept the above LD condition, the offer would be loaded to the extent of the shortfall with respect to upper limit specified above. Date of material receipt at our stores (Day Book date) will be considered as the 'Delivery date as mentioned in purchase order.	
18	Risk Purchase Clause (as per clause-I of Annexure-B) (Supplier Confirmation Required) and as per Terms and Conditions. Non acceptance to risk purchase clause may leads to rejection of offer. Hence bidders are requested to accept risk purchase clause and no clarification on this will be entertained.	
19	GST in % (FOR INDIGENOUS SUPPLIER): To be indicated by the supplier.GST invoice is required for availing Input Tax Credit and conformation to pass on ITC.	
20	GSTIN of the supplier/Works	
21	HSN Code(S) of the items offered	
22	Firm Price: Prices shall be kept firm till completion of supplies and acceptance of materials at BHEL stores.	
23	Supplier Registration Form- Online submission is to to be done and soft copy of the same to be uploaded along with Technical Bid by new vendors.	
24	MSE / Non MSE Status with proof for indigenous suppliers.	
25	For Foreign Offers -Manufacturers' Name and address:	
26	For Foreign Offers - Country of Origin:	
27	For Foreign Offers - Mills Letter of Authority	
28	For Foreign Offers- Agency Agreement	
29	Approximate weight and cubage of the consignment.	
30	It is mandatory to incorporate the following details in the Bill of Lading for Foreign Suppliers Import & export Code (IEC) of importer : BHEL, Ranipet IEC No: 0588138690/38	
31	It is mandatory to incorporate the following details in the Bill of Lading for Foreign Suppliers GST Identification No (GSTIN) of importer;	
32	It is mandatory to incorporate the following details in the Bill of Lading for Foreign Suppliers Official email id of importer (to be used for correspondence by shipping lines and Customs).	
33	Contact details of bidders: Contact person/Designation/Mobile No/Email ID/Fax No/Phone No etc.,	
34	Pointwise conformation/acceptance or comments to our technical specification is must and Each page shall be signed BY THE BIDDER and affixed official seal.	
35	The contractual delivery period will be reckoned from the date of LOI, which shall be binding on the contract. Suppliers shall quote their best delivery period. Delivery is the essence of all contracts for BHEL. Before opening the Price Bid, based on the commercial bids received, if required, BHEL shall fix a reasonable delivery period, which would be generally the modal value of the deliveries quoted by the tenderers in the Bid. Bidders, who at the time of tender opening (Opening of Commercial Bids) have quoted for a delivery higher than the delivery required by BHEL, would have to accept the delivery period advised by BHEL. Such of those suppliers, who quote for higher than this delivery (i.e. do not meet BHEL delivery requirement) would not be considered for Price Bid Opening.	
36	Deduction of Income Tax: (i) TDS shall be deducted, as applicable, for the supervision of Erection & Commissioning Charges. (ii) TDS return shall be filed and TDS certificates shall be issued by BHEL	
37	For this procurement, public procurement (preference to make in India) , order 2017 dt 15.06.2017 & 28.05.2018 and subsequent order issued by the restrictive nodal ministry shall be applicable even if issued after issue of this NIT but before finalization of contract/PO/WO against this NIT.In the event of any nodal ministry prescribing higher or lower percentage of purchase preference and/ or local content in respect of this procurement, same shall be applicable	
38	Minimum Local content shall be 50%. Please furnish details of location where this value addition has been done (.....)	
39	Margin of purchase preference to make in India shall be 20%	
40	False declaration will be in breach of the code of integrity under Rule 175 (i)(h) of the General Finance Rule for which a bidder or its successors can be debarred for up to two years as per Rule 151(iii) of the General Finance Rules along with such other actions as may be permissible under Law	

Sl.No	Annexure - F to Enquiry 3890097E/20.04.2019 for Foreign Company / Principal / Mill / Manufacturers	Supplier Comments with necessary supporting documents
1	Name and Address of the Company	
2	Contact Details of Company : Contact person / Designation / Mobile No / Email ID / Fax No / Phone No etc.,	
3	Is the company already registered with any of the BHEL units?. If so details may please be given.	
4	Nature of Business and line of products with respective HSN	
5	Production Capacity per Annum with detailed Manufacturing / Testing Facilities. If required supporting documents shall be uploaded	
6	Report from third party business rating agencies like Dun & Brandstreet, Credit Reform etc.,. For any new supplier this document is mandatory and without which submitted offer is liable for rejection.	
7	Experience list / Performance Certificate for Offered / Similar products : Requested to attach list of present customers with name, address and contact details i.e. email/Phone No etc., for offered / similar type and size of item and equipment with whom you have continuous business since last three years.	
8	Framework Confidentiality Agreement cum Undertaking to be submitted along with offer.	
9	If Foreign Company/Principal/Mill/Manufacturers refuses to deal directly with BHEL (to be put on record) and insists on availing the services of an Indian Agent, deed of agency agreement between the Foreign Company / Principal / Mill / Manufacturers and Indian agent should necessarily be submitted. If not submitted offer is liable for rejection.	
10	In cases other than Indian Agents, valid authorisation certificates are to be submitted. However such authorisation certificates will be examined for technical suitability ,quality, guarantee, warranty, after sales support etc., If not submitted, offer is liable for rejection.	
11	For a document in language other than English, a self-attested English translated document to be attached	
12	Dealer / Trader / Distributor / Stockist / Channel Partners / Holding Company / Non-Manufacturer needs to submit an Authorization Certificate, clearly indicating the validity period as well as rights granted by respective Foreign Company / Principal / Mill / Manufacturers to them. i.e. to negotiate / quote / supply / after sales service etc	
13	Quality - Requested to enclose copy of certificate for Quality Management System (QMS) obtained and Table of Contents of quality manual.	
14	If not certified for ISO 9001, requested to enclose copy of Company owned Quality Management System or written down procedure	
15	Banker's Certificate- Requested to enclose banker's certificate certifying credit worthiness.	

Sl.No	Annexure-Q to Enquiry 3890097E/20.04.2019	##Specific confirmations by the manufacture
1	Quality Plan Requirement:	
1a.	(i) MQP (Manuafcutering Quality Plan) shall be submitted in attached format for BHEL/Customer review & approval. Typical MQP is attached for indicative purposes for guidance & use.	
1b.	(ii) MQP shall invariably cover w.r.t Inward inspection including on Raw materail Procurement, In process and Final inspection in elaborated way/details.	
1c.	(iii) Bidder shall also to give specific confirmation that on need basis, their competent officials shall visit to BHEL/customer for finalization of Quality plan including test procedure/methodology during preaward / post award approval / detailed engineering in the event of an order.	
1d.	(iv) No deviation on BHEL/Customer approved MQP is acceptable.	
1e.	(v) Bidder shall agree to submit all cross referred documents other than codes/standrads to BHEL/Customer/Consultant.	
2	Important Notes shall be included in MQP : (a) Latest revision of Standard s & Specification shall apply. Only International Standards are applicable. Indian & Chinese Standards are not applicable (b) Materials shall be procured in compliance to Functional Technical Specification. (c) Inspection shall be in compliance with Approved Quality Control Procedure for the Product. (d) NDT shall be carried out by Qualified Personnel with compliance to Approved NDT Procedures and Acceptance Norms, as per ASME Section V. (e) Gauges and measuring Instruments, with valid calibration only shall be used. (f) Cleaning and Painting of products shall be carried out as per Approved Painting Schedule. (g) Finished Products shall be packed to comply with Approved Packing Schedule. (h) Welding shall be carried out by Qualified Personnel with compliance to Approved NDT Procedures and Acceptance Norms, as per ASME Section V.	
3	Domastic / Inland Inspection will be carried out by BHEL/BHEL apointed Third Party Inspection Agency (TPIA) / Customer/Customer Apointed Inspection Agency/Consulatnat. This is applicable for all Stage inspection and Final Inspection identified as "W" - Witness or "CHP" - Customer Hold Point as per customer approved Quality Plan/ Technical specification / Approved Drawing/ Approved Data sheet / Scheme / PID / PFD / SLD (Process Instrumentaion Diagram / Process Flow Diagram / Single Line Diagram) etc (As applicable).	
4	Inspection Agency for Foreign Bidders and also for Indian Bidder but importing from Foreign Sources: (1) Any one of the flollowing Third Party Inspection Agency (TPIA) shall be appointed by the bidder and same shall be furnished by the bidder in techno commercial bid itself. (2) The details of TPIA with contact details like Name of the official, Phone no, Email id shall also to be submitted during pre/post award. However cost for such inspection agency shall be borne by the bidder only. Inspection charges for such inspection agency shall be indicated separately so that if BHEL/Customer is undertaking the inspection by on their own , then these charges non claimable by the bidder. List of TPIA 1.M/s Bureau Veritas 2.M/s TUV-Nord 3.M/s TUV-SUD 4.M/s TUV Rheinland 5.M/s Lloyds Register 6.M/s SGS 7.M/s Germanischer Lloyds 8.M/s QUEST 9.M/s Certification Engineers International 10.M/s Intertek 11.M/s IR Class Systems and Solutions 12.M/s DNV 13. M/s Fichtner 14. M/s ABS Inspection Services	

Sl.No	Annexure-Q to Enquiry 3890097E/20.04.2019	##Specific confirmations by the manufacture
5	Stage Inspection during manufacturing Process : Stage Inspection during manufacturing shall be carried out as per approved quality plan and all necessary documents shall be provided for review, verification and clearance for further processing. This inspection call shall be given well in advance (atleast 2 weeks before) to TPI/Bidder's own inspection agency to avoid delay in the manufacturing processes.	
6	Inspection before despatch for domestic supplier : Inspection before despatch at supplier's works shall be carried out by BHEL/BHEL appointed Inspection agency. Inspection shall be done as per approved Quality plan/ Technical specification/ Approved Drawing/ Approved Data sheet .	
7	Inspection at Foreign Source/Supplier: (a) As in sl no: 3. shall be ensured without fail (b) No materail / items shall be despatched without getting the written communication from BHEL / Customer inspection carried out by BHEL/BHEL apointed Third Party Inspection Agency (TPIA) / Customer/Customer Apointed Inspection Agency/Consulatnat. This is applicable for all Stage inspection and Final Inspection identified as "W" - Witness or "CHP" - Customer Hold Point as per customer approved Quality Plan/ Technical specification / Approved Drawing/ Approved Data sheet / Scheme / PID / PFD / SLD (Process Instrumentaion Diagram / Process Flow Diagram / Single Line Diagram) etc (As applicable). Inspection before despatch for Foreign supplier : Inspection before despatch at supplier's works shall be carried out by bidder appointed inspection agencies having international presence at vendors and or vendor's sub vendor works. Inspection shall be done as per approved Quality plan/ Technical specification/ Approved Drawing/ Approved Data sheet by TPIA mentioned in Sl no: 03 at supplier's cost.	
8	Painting shall be done strictly as per BHEL/Customer approved painting schedule / scheme only. Paint Thickness / Paint shade shall be ensured as per BHEL / Customer approved painting schedule / specification / data sheet etc. No deviation is acceptable unless otherwise accepted by BHEL/Customer in writing. Any conflict if any among BHEL / Customer approved painting schedule / Spec / data sheet etc shall be brought to the notice to BHEL well in adavnce before proceding including the BOI being procured for assy / skid like motors etc	
9	Specific conformation for document package in the event of an order (2 Hard copies & soft copy in PDF file) is to be given containing the following with proper linkages (i) Index Sheet (ii) MQP/RQP/Endorsement Sheet (As applicable) (iii) TCs identified by BHEL/ Customer for record for "CHP" / "W" and Verification portion ("V") as given in approved QP. (iv) Final inspection report + TC including Chemical + Mechnaical + HT + NDT etc (v) Third party Inspection report + TC (vi) Customer CHP/ MDCC (vii) Type test / Performance Test reports conducted (viii) Type test / Performance Test approval/ clearance obtained from BHEL/Customer (ix) BOM with As Build Drgs with actual make / rating used with BHEL/customer approved drawings.	
10	Packing / Seaworthy Packing shall be as per BHEL Packing schedule / approved drg / sketch. This shall be ensured to take care tarsnit / handling / transhipment in Road / Sea / Air. Photographs are to be submitted for BHEL review before despatching the material as per contract conditions.	
11	Outsourcing of test facilities: Bidder shall ensure all the testing facilities in house. However If any of the test facilities are not available with successful bidder, then bidder shall ensure the same at NABL accreadted third party lab / Govt / Govt Lab for major testing such as NDT, Electrical & Mechanical testing.	
12	Important Note: No deviation on the above requirement 01 to 10 is acceptable w.r.t Quality Requirement and those offers not meeting these specific customer requirement is liable for rejection and hence the bidder shall submit all the required documentary evidences in the offer itself.	
13	## Necessorily to be filled up by the bidder at the time of offer itself otherwise the offer may not be considered w.r.t Quality Requirement being customer specific requirement.	

GUIDELINES ON ACCEPTANCE OF BANK GUARANTEES GIVEN BY VENDORS

1. INTRODUCTION

As a part of the business operations, BHEL is taking Bank Guarantees from its Vendors/contractors/sub-contractors for various purposes. These Bank Guarantees are structured according to the terms of the Tender/ Agreement/ Contract.

2. TYPES OF BANK GUARANTEES TAKEN FROM VENDORS/CONTRACTORS/ SUB-CONTRACTORS BY BHEL

Generally, following types of Bank Guarantees are being taken by BHEL-

i. Bank Guarantees for Earnest Money Deposit

EMD is to be paid by tenderers for securing fulfilment of any obligations in terms of the NIT. In case of total EMD amount is more than Rs.20 lakh, the amount in excess of Rs.20 lakh may be accepted in the form of Bank Guarantee from scheduled bank. The Bank Guarantee in such cases shall be valid for atleast six months.

ii. Bank Guarantee (in lieu of Security Deposit):

Security Deposit is to be collected from the successful Bidder. In addition to other modes of furnishing Security Deposit, Bank Guarantee from Scheduled Banks can be submitted in lieu of Security Deposit by the contractors/sub-contractors/vendors, subject to the compliance with the provisions of Works Policy/Purchase Policy and/or Tender Conditions/ Extant Guidelines

iii. Bank Guarantee against Mobilization Advance/ Initial/ Milestone linked payment:

Normally, no advance payment shall be made to Contractor/ sub-contractors/vendors. Mobilization advance payment in exceptional circumstances shall be interest bearing and secured through Bank Guarantee/s and shall be limited to a maximum of 5% of the Contract Value. The Bank Guarantee shall be for 110% of the value of advance so as to enable recovery of not only principal but also the interest portion.

iv. Performance Bank Guarantee:

These Bank Guarantees may be taken as guarantee for successful performance/ completion of the Contract.

v. Bank Guarantee for Supply of Free Issue Material

BHEL Units sub-contract their jobs to Ancillaries and other fabricators by issuing materials free of cost on returnable basis. Though these fabricators are under contractual obligation to ensure safety of BHEL material and to return the same after carrying out the assigned job, to safeguard BHEL's interest, Bank Guarantee is to be taken in favour of BHEL.

vi Bank Guarantee (For release of Liquidated Damages Amount):

Sometimes, Bank Guarantee against release of Liquidated Damages (LD) is also being obtained by BHEL. In such cases, Bank Guarantee should be valid till the LD issues are settled.

(Compliance with the provisions of Works Policy/Purchase Policy and/or Tender Conditions/ Extant Guidelines may be ensured)

3. STANDARD FORMATS

The following standard format for Bank Guarantees for both Indian and foreign contractors/sub-contractors/vendors which can be used by the Units/Regions are enclosed-

- a. Proforma of Bank Guarantee for Earnest Money Deposit (**Annexure A**)
- b. Proforma of Bank Guarantee in lieu of Security Deposit (**Annexure B**)
- c. Proforma of Bank Guarantee (to secure Advance/ Initial/ Milestone linked payment) (**Annexure C**)
- d. Proforma of Bank Guarantee (Performance) / Contract Execution (**Annexure D**)
- e. Proforma of Bank Guarantee (For release of Liquidated Damages Amount) (**Annexure E**)
- f. Proforma of Bank Guarantee for Supply of Free Issue Material (**Annexure F**)

4. ACCEPTANCE OF BANK GUARANTEES ISSUED BY CONSORTIUM BANKS

List of Banks in BHEL's Consortium of Banks enclosed at **Annexure 1**. For getting Bank Guarantees issued in BHEL's favor preference shall be given to Consortium Banks. As such, Units should insist their contractors/sub-contractors/vendors to submit Bank Guarantees issued by any of the BHEL's Consortium Banks. Therefore, the List of the Consortium Banks along with the Standard Bank Guarantee Format (forming part of these Guidelines) should also form part of the Tender/ Contract document issued by BHEL. (Units may regularly check Corporate Finance- FSD Site (<http://intranet.bhel.in/FSD>) for updated List of Consortium Banks).

5. ACCEPTANCE OF BANK GUARANTEES ISSUED BY NON-CONSORTIUM BANKS

In case any contractors/sub-contractors/vendors expresses difficulty in obtaining Bank Guarantees from any of the BHEL's Consortium Banks and offer to submit Bank Guarantee from any other Nationalized/Public Sector/Private Sector/Foreign Banks, the same may be accepted subject to the following conditions-

A. NETWORTH OF THE BANK ISSUING THE BANK GUARANTEE

- i. In respect of Banks having Net Worth below Rs.500 crores- Exposure Limit is NIL.
- ii. In respect of Banks having Net Worth between Rs.500 to Rs. 2000 crores (As per Latest Annual Report)-The overall exposure limit (at the Unit/Region Level) should not exceed Rs.10 crores for all the non-Consortium Banks put together.
- iii. In respect of Banks having Net Worth above Rs. 2000 crores (As per Latest Annual Report)-The overall exposure limit (at the Unit/Region Level) should not exceed Rs.30 crores for all the non-Consortium Banks put together.

Units/ Regions may insist their contractors/sub-contractors/vendors to provide a Certificate from the concerned Bank along with a Copy of latest Annual Report as supporting documents for Net Worth of the Bank. Additionally, in case required, the figure for Net Worth may be cross checked with the Corporate Office/ Head Office of the concerned Bank. In case, the abovementioned limits have already been exhausted or sufficient balance is not available, the same may be intimated suitably to the contractors/sub-contractors/vendors beforehand.

B. TYPE OF BANKS ISSUING THE BANK GUARANTEE

- i. Bank Guarantee submitted by domestic contractors/sub-contractors/vendors from non-consortium banks-
 1. **Nationalized/ other Public Sector Banks:** Bank Guarantees issued by Nationalized/ other Public Sector Banks (which are not in BHEL's Consortium) can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city in which the Unit is located. i.e. Demand can be presented at the Branch located in the town/city in which the Unit is located.
 2. **Private Sector Banks:** Bank Guarantees issued by Private Sector Banks (which are not in BHEL's Consortium) can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city in which the Unit is located i.e. Demand can be presented at the Branch located in the town/city in which the Unit is located. However, Units may prefer Nationalized/Public Sector Banks over Private Sector Banks in respect of Bank Guarantees issued by non-consortium banks.

3. **Foreign Banks (BG issued by Branches in India):** Bank Guarantees issued by Foreign Banks (which are not in BHEL's Consortium) can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.

4. **Bank Guarantees submitted by Foreign Vendors**

- a. **From Nationalized/Public Sector / Private Sector/ Foreign Banks which are not in BHEL's Consortium (BG issued by Branches in India)** can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.
- b. **From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor Country's Bank)**
- b.1 In such cases, in the Tender Enquiry/ Contract itself, it may be clearly specified that Bank Guarantee issued by any **of the Consortium Banks** will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter- Guarantee by Foreign Bank in favour of the Indian Bank (BHEL's Consortium Bank). **It is advisable that all charges for issuance of Bank Guarantee/ counter- Guarantee should be borne by the Foreign Vendor. The tender stipulation should clearly specify these requirements.**
- b.2 In case, **Foreign Vendors intend to provide BG from Overseas Branch** of our Consortium Bank (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at **sl.no. b.1** will required to be followed.
- b.3 The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time). In case, of Foreign Vendors, the BG Format provided to them should clearly specify the same.

C. Co-Operative Banks/ Financial Institutions: Bank Guarantees issued by Co-Operative Banks/ Financial Institutions is **not to be accepted** under all circumstances.

6. **OTHER IMPORTANT ISSUES-**

- i) **BG Text Related Issues-** Bank Guarantees should be clear and precise and should clearly specify the following:
1. The name and address of the applicant i.e Vendor
 2. The name and address of the beneficiary i.e BHEL. It must be ensured that the concerned Unit's name is clearly mentioned in the Bank Guarantee.
 3. The name and address of the guarantor Bank and Branch
 4. A reference number or other information identifying the underlying contract
 5. A reference number or other information identifying the issued guarantee.
 6. The amount or maximum amount payable and the currency in which it is payable
 7. The validity period/date of expiry of the guarantee including Claim period
 8. Claim is payable without demur, protest or proof and merely on demand from BHEL. BG should be unconditional
 9. It should clearly specify the place of Invocation
 10. Presently, there is no legal requirement for getting signatures of Witnesses on the Bank Guarantees. Therefore, BHEL may not insist for the same.
 11. In case of cutting/ overwriting on the Bank Guarantee have been properly authenticated under signature and seal of the executing Bank.

ii) Confirmation of genuineness/authenticity of the Bank Guarantee

Following safeguards in respect of all Bank Guarantees (including Extensions/ Amendments) issued by any of the Banks (including Consortium Banks) are required to be taken ñ

- a. The prescribed format in which BGs are acceptable from the contractors/sub-contractors/vendors may be formed part of the tender document. On receipt of the Original Bank Guarantee by BHEL, the same may be verified verbatim with the Bank Guarantee format provided by BHEL.

- b. **Use of Structured Financial Messaging System (SFMS) for Sending and receiving Bank Guarantee Instruments**

Structured Financial Messaging System (SFMS) has been/ is being implemented by the Banks as per the Ministry of Finance's instructions for Sending and receiving Bank Guarantee and also Inland Letter of Credit Instruments. The SFMS provides a platform for secure communication within the Bank and between Banks. As such, SFMS can prove to be an excellent IT enabled platform for getting secure confirmations from the Banks in respect of Bank Guarantees issued in favor of BHEL. Therefore, Units should insist the contractors/sub-contractors/vendors to provide the Bank Guarantees from Banks which are already SFMS Compliant.

Under SFMS System, a separate advice of the Bank Guarantee (via SFMS IFN 760COV) to be sent to the Advising bank (Beneficiary's Bank) through SFMS by the Issuing Bank (Applicant's Bank), after which the paper Bank Guarantee would become operative. Similar process to be followed for bank guarantee amendment also and separate advice (via SFMS IFN 767COV) is sent to the Advising Bank. It must be ensured that the Issuing and Advising Bank must be SFMS enabled. The details of Advising Bank / Beneficiary Bank (i.e. IFSC Code & Branch address) have to be provided to the BG issuing Bank along with the application for the Application/Request for issuance of Bank Guarantee.

At the time of application for issuance of a Bank Guarantee, the applicant has to furnish Beneficiary's Bank Branch IFSC, Branch Name and address to the Issuing Bank. In this regard, details of those Banks in BHEL's Consortium may be provided to the contractors/sub-contractors/vendors which have waived Advising Charges for advising the Bank Guarantees (where BHEL is beneficiary) through SFMS. Corporate Office will share the details of those Banks from time to time

- c. In case, any contractors/sub-contractors/vendors show their inability to submit the Bank Guarantee from Issuing Bank which is SFMS Compliant, Units may accept paper Bank Guarantee sent to BHEL directly by the issuing Bank under Registered Post (A.D) /Speed Post/Courier/By Hand. However, a declaration as to List of Vendor Banks along with a confirmation that none of their Banks are SFMS compliant may be obtained. Such a requirement shall be clearly specified in the Tender Document/ Contract
- d. In exceptional cases, BGs received through the contractors/sub-contractors/vendors can be accepted. When a Bank Guarantee is directly received through the contractors/sub-contractors/vendors, the Issuing Branch should be requested to immediately send a confirmation that the said Bank Guarantee has been issued by them or send by Registered Post (A.D) an unstamped duplicate copy of the Bank Guarantee directly to BHEL with a Covering Letter. This will enable BHEL to compare the same with the original BG and ensure that the same is in order.
- e. **Further Verification in respect of Bank Guarantees not advised through SFMS**
As an additional measure of abundant precaution, all the Bank Guarantees received (not advised through SFMS) should be independently verified by BHEL and on receipt of the Original Bank Guarantee, the Issuing Bank may be requested to provide-
 1. Immediate Confirmation over email.

2. The possibility of getting confirmation through digitally signed secured emails from issuing Banks may be explored.
3. Thereafter, Banker may be requested to either provide the Confirmation Letter stating that the said Bank Guarantee has been issued by them and signed by their authorized employees in line with the financial authority/ powers given to these employees, or send by Registered Post (A.D) an unstamped duplicate copy of the Bank Guarantee directly to BHEL with a Covering Letter. Further, a confirmation may be obtained from the Bank that Bank Guarantee has been issued on a Stamp Paper of appropriate value.

All efforts shall be made by the Unit to obtain the confirmation as above within 10 days of receipt of the Bank Guarantees by BHEL.

f. **Additional Safe-guards for all Bank Guarantees (including advised through SFMS)**

The following additional safeguards may please be taken care at the Unit/ Region level in respect of all Bank Guarantees (including Extensions/ Amendments) issued by any of the Banks (including Consortium Banks) to ensure protection of BHEL's interest-

1. Stamp paper related ñ

- a. Wherever, e-stamping has been made compulsory, it is to be ensured that the Bank Guarantees has been issued in serially numbered security forms/ e-stamping. Verification of e-stamp can be done on-line <http://www.shcilestamp.com> (STOCK HOLDING CORPORATION OF INDIA LIMITED (SHCIL)).

An e-Stamp can be verified online by clicking on verify e-Stamp certificate and entering the following details-

- 1.State
- 2.Certificate Number (UIN)
3. Stamp Duty Type (Description of Document)
4. Certificate Issue Date

- b. The BG Should be on Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s) where the BG is submitted or is to be acted upon or the rate prevailing in the State where the BG is executed, whichever is higher.

- c. To ensure that the Stamp Paper is issued in the name of the Issuing Bank or in the name of the Contractor/sub-contractor/ vendor.

2. To ensure that the Bank Guarantees has been issued in serially numbered security forms.
3. As per RBI Guidelines, all Bank guarantees issued for Rs.50,000/- and above should be signed by two officials jointly. Further, the name, designation and code numbers of the officer/officers signing the guarantees should be mentioned under the signature(s) of officials signing the bank guarantee.

- g. **Authorized Officials for dealing with Banks in respect of Bank Guarantees-** Units/Regions to assign responsibility for verification, timely renewal and timely encashment/ invocation of the Bank Guarantees to one or more Finance Executives depending upon the volume of work at the Unit/Region. **All correspondence with the Banks for matters related to Bank Guarantees are required to be carried out by Finance executives only**

iii) **Other issues**

a. **Addition of jurisdiction Clause in the Bank Guarantee-**

If required, Units/ Region may include the following jurisdiction Clause for dispute resolution at local level

" Any claim or dispute arising under the terms of this-Guarantee shall be-subject to the exclusive jurisdiction of-the court at _____ (Unit or HQ Location for ex. in case of PSWR - "Nagpur" /PSNR- Delhi, PSER- Kolkata/ PSSR0-Chennai) only.

However, it may be noted that the exclusive jurisdiction can form a part of the Bank Guarantee formats but it has to be seen that the Court upon whom the exclusive jurisdiction is being conferred must otherwise have jurisdiction for this clause to be effective under law.

iv) Safe Custody of Bank Guarantees-

Following steps may be taken by the concerned Finance Officials to ensure safety of Bank Guarantees-

1. Safe custody of the Bank Guarantees shall be the responsibility of Finance executive(s)
2. On receipt of the Bank Guarantee, the complete details of the Bank Guarantee should be entered in BG Register (physical register and also in separate file in soft form) **(As per Format at Annexure 2)** maintained centrally at the Unit/ Region/site. The data entered in the Register should be duly verified by the concerned official/officials.
3. Periodic physical verification and reconciliation of the Paper Bank Guarantees should be done with the BG Register.
4. Original Bank Guarantees including Extensions must be kept in safe Custody in **“Fire Proof”** Cabinets/ Cash Chests.

v) Long Duration Bank Guarantees

In case of Long Duration Bank Guarantees, it is advisable that only Bank Guarantees with validity for full period of the contract may be accepted by BHEL.

vi) Expiry Period and Claim Period

It may be ensured that the Expiry/Validity date and Claim date mentioned in the Bank Guarantee is in line with the Contract with the vendor.

Further, there should be an adequate gap, preferably 3-6 months, in the Expiry date and Claim Period so as to ensure that sufficient time is available with BHEL to submit Invocation Claim, if required under the Bank Guarantee. BHEL can claim the amount from the bank for the act which has happened before the validity (expiry) date but within the claim period. However, it is advisable that the Invocation Claim may be submitted within the Expiry date.

In this regard, it is to be noted that unless the Bank receives a written claim or demand on or before the Expiry date (in case there is no separate claim date) or Claim date (in case both Expiry date and claim date are included in the text) mentioned in the Bank Guarantee, all the rights of BHEL under the Bank Guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under the said Bank Guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

vii) Extension of the Bank Guarantee-

In case of non-fulfillment or non-completion of the Contractual Commitments by the concerned contractor/sub-contractor/vendor, action for extension of the validity of the Bank Guarantee should be taken atleast 60 days before the Expiry date and in accordance with the terms and conditions of the Bank Guarantee. Commercial/Executing Agency/Construction Manager of the Unit/Region/site concerned should intimate the custodian i.e. Unit's Finance of the Bank Guarantees sufficiently in advance for the action to be taken for Extension of the Bank Guarantee. In case, no response is received by Unit's Finance 60 days before the Expiry Date from the concerned Commercial/Executing Agency/Construction Manager, the concerned Finance Official may take action for extension to ensure that BHEL's interest is safeguarded.

In this regard following points are required to be ensured-

- a. Request for Extension of the validity is to be lodged atleast 60 days before the Expiry Date mentioned in the Bank Guarantee.
- b. The letter seeking extension should be addressed to the contractor/sub-contractor/vendor as the extension is normally done by the Bank on the request of the Applicant (Contractor/sub-contractor/Vendor). The same should be sent through Registered Post with A.D/ Speed Post. Courier/By hand with a copy to the Issuing Bank with a request to invoke Bank Guarantee in case the same is not extended before expiry date and this should be treated as a Provisional Claim.
- c. Regular follow-up with the contractor/sub-contractor/vendor through email/FAX for extension of BG need to be ensured.

- d. In case the extension of the validity is not done 15 days before the expiry date, immediate action for Invocation of the Bank Guarantee should be taken by sending Final Invocation Claim to the Issuing Bank at the place of issue or such other place as is specified in the guarantee with a copy to the contractor/sub-contractor/vendor. All provisions in respect of Invocation Claim as per **Para viii** is required to be followed

viii) Invocation Claim

In event of Breach by the contractor/sub-contractor/vendor (s) of the terms and conditions of said Contract or failure of the contractor/sub-contractor/vendor to perform the said Contract for which the Bank Guarantee has been given or in case of failure of the contractor/sub-contractor/vendor to extend the validity of the Bank Guarantee (as per Para vii), the concerned Unit shall take immediate action for lodgment of Claim with the Issuing Bank's Branch for Invocation of Bank Guarantees. Commercial/Executing Agency/Construction Manager of the Unit/Region/site concerned should intimate the custodian of the Bank Guarantees sufficiently in advance for the action to be taken for invocation of the Bank Guarantee.

In this regard, following points may please be ensured-

- a. Invocation Claim is to be lodged well before the Expiry date (in case there is no separate claim date) or Claim date (in case both Validity date and claim date are included in the text) mentioned in the Bank Guarantee.
- b. Invocation Claim is to be typed on BHEL Letter Head with full Postal Address of BHEL's Unit. It should also contain contact details of BHEL's dealing official.
- c. Invocation Claim is to be sent at the place of issue or such other place as is specified in the guarantee. Correctness of Issuing Bank's Address may be ensured before sending the Invocation Claim.
- d. The scanned copy of the Invocation letter may be sent immediately through email followed by sending the Invocation letter by Speed Post/ Registered Post (with Acknowledgement Card)/ By Hand (to be got personally acknowledged) to ensure timely receipt by the Bank's Branch mentioned in the Bank Guarantee. The Acknowledgement/Receipts should be positively obtained and the same should be preserved as evidence of sending Invocation Claim well in time. Confirmation of receipt of the Invocation Letter may be obtained through email or over phone.
- e. Invocation letter should clearly specify the Bank Guarantee Number.
- f. A demand may be made for an amount less than the full amount available (partial demand). Further, more than one demand (multiple demands) upto the total value of Bank Guarantee may be made by BHEL within the validity period. **However, it may be ensured that demand should not be made for more than the amount available under the guarantee as the Bank will consider it a non-complying demand and may not act on the same.**
- g. **It may be noted that Banks, as per the regulations, are required to promptly honour the guarantees issued by them as and when Bank Guarantees are invoked in accordance with the terms and conditions of the guarantee deeds. Payment should be made to the beneficiaries without delay and demur.**

Under a Bank Guarantee, the Bank undertakes to pay to the beneficiary, any money so demanded notwithstanding any dispute or disputes raised by the of the contractor/sub-contractor/vendor(s) in any suit or proceeding pending before any Court or Tribunal relating thereto and the Banks liability is absolute and unequivocal. As such, the Banks cannot delay and deny honoring the invocation Claim.

Therefore, all steps should be taken to ensure timely payment by the Bank.

- h. In case, the Bank does not act and pay within three working days from the date of presentation of Final Claim/ Demand, the matter may be immediately escalated to the Regional Office of that Bank's Branch and thereafter to their Head Office under intimation to Corporate Office. In case of no response, matter may be referred to Ombudsman, RBI etc.

- i. After one month, if the amount is still not paid, unit may consider filling a legal case against the bank **in consultation with the Corporate Law Department.**

(Formats for Extension Letter /Invocation Claims are as per Format at Annexure G (1ST Letter), Annexure H (Reminder Letter), Annexure I (Final Claim/Invocation Letter) and Annexure J (Invocation Letter))

ix) Return of Bank Guarantee

a. After Expiry Period

The Expired Bank Guarantees which are not further required by BHEL due to fulfillment of the Contractual Commitments by the concerned of the contractor/sub-contractor/vendor may be returned to the concerned Bank under intimation to the Vendor/Contractor within 3 months from the date of expiry after ensuring completion of all the activities. The same is to be done on the specific recommendation/ approval of Commercial/Executing Agency/Construction Manager of the Unit/Region/site concerned.

b. Within Validity Period

In case, any Bank Guarantee is to be returned by BHEL due to fulfillment of the Contractual Commitments by the concerned of the contractor/sub-contractor/vendor within its validity period, the same has to be done on the specific recommendation/ approval of Commercial/Executing Agency/Construction Manager of the Unit/Region/site concerned after performing due-diligence.

x) Use of software

For timely and automatic alert in respect of Bank Guarantees due for expiration, use of software application is advisable. In case, the software is not available at a Unit, the same may be developed in a time bound manner.

PROFORMA OF BANK GUARANTEE FOR EARNEST MONEY
(On non-Judicial paper of appropriate value)

Bank Guarantee No.....

Date.....

To

(Employer's Name and Address)
.....

Dear Sirs,

In accordance with the terms and conditions of Invitation for Bids/Notice Inviting Tender No.....1(Tender Conditions), M/s. having its registered office at2 (hereinafter referred to as the 'Tenderer'), is submitting its bid for the work of.....3 invited by4.(name of the Employer) through its Unit at (

The Tender Conditions provide that the Tenderer shall pay a sum of Rs as Earnest Money Deposit in the form therein mentioned. The form of payment of Earnest Money Deposit includes Bank Guarantee executed by a Scheduled Bank.

In lieu of the stipulations contained in the aforesaid Tender Conditions that an irrevocable and unconditional Bank Guarantee against Earnest Money Deposit for an amount of5 is required to be submitted by the Tenderer as a condition precedent for participation in the said Tender and the Tenderer having approached us for giving the said Guarantee,

we, the[Name & address of the Bank] having our Registered Office at(hereinafter referred to as the Bank) being the Guarantor under this Guarantee, hereby irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer without any demur, merely on your first demand any sum or sums of Rs. 5(in words Rupees.....) without any reservation, protest, and recourse and without the beneficiary needing to prove or demonstrate reasons for its such demand.

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Vendor/Contractor/Vendors in any suit or proceeding pending before any Court or Tribunal, Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment hereunder and the Tenderer shall have no claim against us for making such payment.

We, _____ Bank further agree that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Tender or to extend the time of submission of from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Tenderer and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Tenderer or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Tenderer or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Tenderer and notwithstanding any security or other guarantee that the Employer may have in relation to the Tenderer's liabilities.

This Guarantee shall be irrevocable and shall remain in force upto and including _____ and shall be extended from time to time for such period as may be desired by the Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Tenderer but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms hereof. However, unless a demand or claim under this Guarantee is made on us in writing on or before the _____ we shall be discharged from all liabilities under this Guarantee.

We, _____ Bank lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed _____
- b) This Guarantee shall be valid up to _____
- c) Unless the Bank is served a written claim or demand on or before _____⁷ all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank

We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of

(Name of the Bank)

Date _____

Place of Issue _____

¹ *Details of the Invitation to Bid/Notice Inviting Tender*

² *Name and Address of the Tenderer*

³ *Details of the Work*

⁴ *Name of the Employer*

⁵ *BG Amount in words and Figures*

⁶ *Validity Date*

⁷ *Date of Expiry of Claim Period*

Notes:

1. Units are advised that expiry of claim period may be kept 3-6 months after validity date. It may be ensured that the same is in line with the agreement/ contract entered with the Vendor.
2. The BG should be on Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s) where the BG is submitted or is to be acted upon or the rate prevailing in the State where the BG was executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Contractor/sub-contractor /vendor/ Bank issuing the guarantee.
3. In line with the GCC, SCC or contractual terms, Unit may carry out minor modifications in the Standard BG Formats. If required, such modifications may be carried out after taking up appropriately with the Unit/Region's Law Deptt.

4. In Case of Bank Guarantees submitted by Foreign Vendors-

- a. **From Nationalized/Public Sector / Private Sector/ Foreign Banks (BG issued by Branches in India)** can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.
- b. **From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)**
 - b.1 In such cases, in the Tender Enquiry/ Contract itself, it may be clearly specified that Bank Guarantee issued by **any of the Consortium Banks only** will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter- Guarantee by Foreign Bank in favour of the Indian Bank's (BHEL's Consortium Bank) branch in India. It is advisable that all charges for issuance of Bank Guarantee/ counter- Guarantee should be borne by the Foreign Vendor. The tender stipulation should clearly specify these requirements.
 - b.2 **In case, Foreign Vendors intend to provide BG from Overseas Branch of our Consortium Bank** (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at **sl.no. b.1** will required to be followed.
 - b.3 The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time). The BG Format provided to them should clearly specify the same.

PROFORMA OF BANK GUARANTEE (in lieu of SECURITY DEPOSIT)

In consideration of Bharat Heavy Electricals Limited (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at _____¹ through its Unit at _____ (name of the Unit) having agreed to exempt (Name of the Vendor / Contractor / Vendors) with its registered office at _____² (hereinafter called the said "Contractor" which term includes vendors), from demand under the terms and conditions of the Contract reference No. _____ dated _____³ valued at Rs _____⁴ (Rupees -----)⁴ (hereinafter called the said Contract), of Security Deposit for the due fulfilment by the said Contractor of the terms and conditions contained in the said Contract, on production of a Bank Guarantee for Rs. _____⁵ (Rupees _____ only),

we _____ (indicate the name and address of the Bank) having its Head Office at _____ (address of the head Office) (hereinafter referred to as the Bank), , at the request of _____ [Contractor(s)], being the Guarantor under this Guarantee, do hereby irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer, , an amount not exceeding Rs. _____ without any demur, immediately on demand from the Employer and without any reservation, protest, and recourse and without the Employer needing to prove or demonstrate reasons for its such demand

Any such demand made on the bank, shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Contractor(s) in any suit or proceeding pending before any Court or Tribunal or Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

The payment so made by us under this guarantee shall be a valid discharge of our liability for payment hereunder and the Contractor(s) shall have no claim against us for making such payment.

We, further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied & the Employer certifies that the terms and conditions of the said Contract have been fully and properly carried out by the said contractor(s) or acceptance of the final bill or discharge of this guarantee by the Employer, whichever is earlier. This guarantee shall initially remain in force upto and including _____⁶ and shall be extended from time to time for such period as may be desired by the Employer. Unless a demand or claim under this guarantee

is made on us in writing on or before the _____⁷, we shall be discharged from all the liability under this guarantee thereafter.

We, _____ (indicate the name of the Bank) further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by any reason of any such variation or extension being granted to the said contractor(s) or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Contractor and notwithstanding any security or other guarantee that the Employer may have in relation to the Contractor's liabilities.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Contractor but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).

We, _____ BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed _____⁵
- b) This Guarantee shall be valid up to _____⁶
- c) Unless the Bank is served a written claim or demand on or before _____⁷ all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

Date _____ Day of _____
for _____ (indicate the name of the Bank) _____

(Signature of Authorised signatory)

¹ ADDRESS OF THE EMPLOYER. I.e Bharat Heavy Electricals Limited

² ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER .

³ DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

⁴ CONTRACT VALUE

⁵ BG AMOUNT IN FIGURES AND WORDS

⁶ VALIDITY DATE

⁷ DATE OF EXPIRY OF CLAIM PERIOD

Note:

1. Units are advised that expiry of claim period may be kept 3-6 months after validity date. It may be ensured that the same is in line with the agreement/ contract entered with the Vendor.
2. The BG should be on Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s) where the BG is submitted or is to be acted upon or the rate prevailing in the State where the BG was executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Vendor/Contractor/Supplier /Bank issuing the guarantee.
3. In line with the GCC, SCC or contractual terms, Unit may carry out minor modifications in the Standard BG Formats. If required, such modifications may be carried out after taking up appropriately with the Unit/Region's Law Deptt.

4. In Case of Bank Guarantees submitted by Foreign Vendors-

- a. **From Nationalized/Public Sector / Private Sector/ Foreign Banks (BG issued by Branches in India)** can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.
- b. **From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)**
 - b.1 In such cases, in the Tender Enquiry/ Contract itself, it may be clearly specified that Bank Guarantee issued by **any of the Consortium Banks only** will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter- Guarantee by Foreign Bank in favour of the Indian Bank's (BHEL's Consortium Bank) branch in India. It is advisable that all charges for issuance of Bank Guarantee/ counter- Guarantee should be borne by the Foreign Vendor. The tender stipulation should clearly specify these requirements.
 - b.2 **In case, Foreign Vendors intend to provide BG from Overseas Branch of our Consortium Bank** (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at **sl.no. b.1** will required to be followed.
 - b.3 The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time). The BG Format provided to them should clearly specify the same.

BANK GUARANTEE FOR ADVANCE

Bank Guarantee No:

Date:

To

NAME

& ADDRESSES OF THE BENEFICIARY

Dear Sirs,

In consideration of Bharat Heavy Electricals Limited¹ (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at _____¹ through its Unit at _____ (name of the Unit) having awarded to _____² (Name of the Vendor / Contractor / Supplier), with its registered office at _____² (hereinafter called "the Vendor/Contractor/Supplier" which expression shall include its successors and permitted assigns) a contract Ref No _____ dated _____³ valued at Rs _____ (Rupees -----) / FC _____ (in words _____) for _____⁴ (hereinafter called the 'Contract')

AND WHEREAS the Employer has agreed to advance to the Vendor/Contractor/Supplier, a sum of Rs _____ (Rupees _____ only), equivalent to _____% of the said value of the Contract (hereinafter called "the said Advance"), upon the condition, that the said Advance shall be secured by a guarantee for Rs/ FC ----- (Rupees/ FC -----)⁵ from a Bank as hereinafter appearing.

We, _____, (hereinafter referred to as the Bank), having registered/Head office at _____ and a branch at _____ being the Guarantor under this Guarantee, hereby irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer any sum or sums upto a maximum amount but not exceeding Rs/FC ----- (Rupees/FC -----) without any demur, merely on your first demand and without any reservation, protest and recourse and without the Employer needing to prove or demonstrate reasons for its such demand.

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Vendor/Contractor/Supplier in any suit or proceeding pending before any Court or Tribunal, Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment hereunder and the Vendor/Contractor/supplier shall have no claim against us for making such payment.

We, the _____ Bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

We _____ Bank further agree that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Vendor/Contractor/Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Vendor/Contractor/Supplier and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Vendor/Contractor/Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Vendor/Contractor/Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Vendor/Contractor/Supplier and notwithstanding any security or other guarantee that the Employer may have in relation to the Vendor/Contractor/Supplier's liabilities.

This Guarantee shall remain in force upto and including _____⁶ and shall be extended from time to time on the request of the Employer for such period as may be desired by the Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Vendor/Contractor/Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms hereof. However, unless a demand or claim under this Guarantee is made on us in writing on or before the _____⁷ we shall be discharged from all liabilities under this Guarantee.

We, _____ BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed _____⁵
- b) This Guarantee shall be valid up to _____⁶
- c) Unless the Bank is served a written claim or demand on or before _____⁷ all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank

We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of
(Name of the Bank)

Date _____.

Place of Issue _____.

¹ NAME AND ADDRESS OF THE EMPLOYER. i.e Bharat Heavy Electricals Limited

² NAME AND ADDRESS OF VENDOR /CONTRACTOR / SUPPLIER

³ DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

⁴ CONTRACT VALUE AND PROJECT/SUPPLY DETAILS

⁵ BG AMOUNT IN FIGURES AND WORDS

⁶ VALIDITY DATE

⁷ DATE OF EXPIRY OF CLAIM PERIOD

Note:

1. Units are advised that expiry of claim period may be kept 3-6 months after validity date. It may be ensured that the same is in line with the agreement/ contract entered with the Vendor.
2. The BG should be on Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s) where the BG is submitted or is to be acted upon or the rate prevailing in the State where the BG was executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Vendor/Contractor/Supplier /Bank issuing the guarantee.
3. In line with the GCC, SCC or contractual terms, Unit may carry out minor modifications in the Standard BG Formats. If required, such modifications may be carried out after taking up appropriately with the Unit/Region's Law Deptt.
4. In exceptional circumstances where advance payment is to be made to a vendor and the Unit has contractually agreed with the Contractor/ Vendor for periodic reduction in Advance Bank Guarantee, if required the following clause may be added in the BG Text-

ôThe liability under this Guarantee shall stand reduced proportionally on periodic basis, in accordance with the value of effected shipment/dispatches/services completed on written confirmation by BHEL.ô

5. In Case of Bank Guarantees submitted by Foreign Vendors-

- a. **From Nationalized/Public Sector / Private Sector/ Foreign Banks (BG issued by Branches in India)** can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.
- b. **From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)**
 - b.1 In such cases, in the Tender Enquiry/ Contract itself, it may be clearly specified that Bank Guarantee issued by **any of the Consortium Banks only** will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter-Guarantee by Foreign Bank in favour of the Indian Bank's (BHEL's Consortium Bank) branch in India. It is advisable that all charges for issuance of Bank Guarantee/ counter-Guarantee should be borne by the Foreign Vendor. The tender stipulation should clearly specify these requirements.
 - b.2 **In case, Foreign Vendors intend to provide BG from Overseas Branch of our Consortium Bank** (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at **sl.no. b.1** will required to be followed.
 - b.3 The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time). The BG Format provided to them should clearly specify the same.

BANK GUARANTEE FOR PERFORMANCE SECURITY

Bank Guarantee No:

Date:

To

NAME

& ADDRESSES OF THE BENEFICIARY

Dear Sirs,

In consideration of Bharat Heavy Electricals Limited (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at _____¹ through its Unit at _____ (name of the Unit) having awarded to (Name of the Vendor / Contractor / Supplier) with its registered office at _____² hereinafter referred to as the 'Vendor / Contractor / Supplier', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No _____ dated _____³ valued at Rs _____⁴ (Rupees -----)/FC _____ (in words _____) for _____⁵ (hereinafter called the 'Contract') and the Vendor / Contractor / Supplier having agreed to provide a Contract Performance Bank Guarantee, equivalent to _____ % (_____ . Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract,

we, _____, (hereinafter referred to as the Bank), having registered/Head office at _____ and inter alia a branch at _____ being the Guarantor under this Guarantee, hereby, irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer any sum or sums upto a maximum amount of Rs -- -----⁶ (Rupees -----) without any demur, immediately on first demand from the Employer and without any reservation, protest, and recourse and without the Employer needing to prove or demonstrate reasons for its such demand.

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Vendor / Contractor / Supplier in any suit or proceeding pending before any Court or Tribunal, Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the Vendor / Contractor / Supplier shall have no claim against us for making such payment.

We the _____ bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract/satisfactory completion of the performance guarantee period as per the terms of the Contract and that it shall continue to be enforceable till

all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

We, _____ BANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Vendor / Contractor / Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Vendor / Contractor / Supplier and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Vendor / Contractor / Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Vendor / Contractor / Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Vendor / Contractor / Supplier and notwithstanding any security or other guarantee that the Employer may have in relation to the Vendor / Contractor / Supplier 's liabilities.

This Guarantee shall remain in force upto and including _____⁷ and shall be extended from time to time for such period as may be desired by Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Vendor / Contractor / Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

Unless a demand or claim under this guarantee is made on us in writing on or before the _____⁸ we shall be discharged from all liabilities under this guarantee thereafter.

We, _____ BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed _____⁶
- b) This Guarantee shall be valid up to _____⁷
- c) Unless the Bank is served a written claim or demand on or before _____⁸ all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of
(Name of the Bank)

Dated _____.

Place of Issue _____.

¹ NAME AND ADDRESS OF EMPLOYER I.e Bharat Heavy Electricals Limited

² NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER.

³ DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

⁴ CONTRACT VALUE

⁵ PROJECT/SUPPLY DETAILS

⁶ BG AMOUNT IN FIGURES AND WORDS

⁷ VALIDITY DATE

⁸ DATE OF EXPIRY OF CLAIM PERIOD

Note:

1. Units are advised that expiry of claim period may be kept 3-6 months after validity date. It may be ensured that the same is in line with the agreement/ contract entered with the Vendor.
2. The BG should be on Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s) where the BG is submitted or is to be acted upon or the rate prevailing in the State where the BG was executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Vendor/Contractor/Supplier /Bank issuing the guarantee.
3. In line with the GCC, SCC or contractual terms, Unit may carry out minor modifications in the Standard BG Formats. If required, such modifications may be carried out after taking up appropriately with the Unit/Region's Law Deptt.

4. In Case of Bank Guarantees submitted by Foreign Vendors-

- a. **From Nationalized/Public Sector / Private Sector/ Foreign Banks (BG issued by Branches in India)** can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.
- b. **From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)**
 - b.1 In such cases, in the Tender Enquiry/ Contract itself, it may be clearly specified that Bank Guarantee issued by **any of the Consortium Banks only** will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter- Guarantee by Foreign Bank in favour of the Indian Bank's (BHEL's Consortium Bank) branch in India. It is advisable that all charges for issuance of Bank Guarantee/ counter- Guarantee should be borne by the Foreign Vendor. The tender stipulation should clearly specify these requirements.
 - b.2 **In case, Foreign Vendors intend to provide BG from Overseas Branch of our Consortium Bank** (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at **sl.no. b.1** will required to be followed.
 - b.3 The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time). The BG Format provided to them should clearly specify the same.

BANK GUARANTEE FOR RELEASE OF AMOUNTS WITHHELD/LIQUIDATED DAMAGES AMOUNT

Bank Guarantee No:

Date:

To

NAME

& ADDRESSES OF THE BENEFICIARY

Dear Sirs,

In consideration of the Bharat Heavy Electricals Limited (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at _____¹ through its Unit at _____ (name of the Unit) having awarded to (Name of the Vendor / Contractor / Supplier) incorporated under the _____ having its registered office at _____² (hereinafter referred to as the 'Vendor/Contractor/Supplier' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No _____ dated _____³ valued at Rs _____ (Rupees _____)/FC _____ (in words _____) for _____⁴ (hereinafter called the 'Contract')

And Whereas the Vendor/Contractor/Supplier as per Contract should have completed the work/ supplies under the contract by _____ (date)

And Whereas as per terms and conditions of the Contract, the Employer is entitled to levy Liquidated Damages (LD) for delays/ shortfall in performance and the Employer has withheld an amount of Rs _____ by way of LD as per the Contract.

Now, on the request of the Vendor/Contractor/Supplier the Employer having agreed to release the amount of Rs _____ withheld from the Vendor's/Contractor's/Supplier's invoices as Liquidated damages under the terms and conditions of the Contract on production of a Bank Guarantee for Rs. _____ (Rupees _____ only).⁵

We, _____, (hereinafter referred to as the Bank), having registered/Head office at _____ and inter alia a branch at _____ being the Guarantor under this Guarantee, hereby irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer a maximum amount of Rs _____ (Rupees _____) without any demur, merely on a demand from the Employer and without any reservation, protest and recourse and without the Employer needing to prove or demonstrate reasons for its such demand.

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Vendor/Contractor/Supplier on any suit or proceeding pending before any Court or Tribunal Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the Vendor/Contractor/Supplier shall have no claim against us for making such payment.

We the _____ bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract/closure of the Contract/settlement of the issues regarding imposition of liquidated damages and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

We _____ BANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Vendor/Contractor/Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Vendor/Contractor/Supplier and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Vendor/Contractor/Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Vendor/Contractor/Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Vendor/Contractor/Supplier and notwithstanding any security or other guarantee that the Employer may have in relation to the Vendor/Contractor/Supplier's liabilities.

This Guarantee shall remain in force upto and including _____⁶ and shall be extended from time to time for such period as may be desired by Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Vendor/Contractor/Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

Unless a demand or claim under this guarantee is made on us in writing on or before the _____⁷ we shall be discharged from all liabilities under this guarantee thereafter.

We, _____ BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed _____⁵
- b) This Guarantee shall be valid up to _____⁶
- c) Unless the Bank is served a written claim or demand on or before _____⁷ all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of
(Name of the Bank)

Dated _____.

Place of Issue _____.

¹ NAME AND ADDRESS OF THE EMPLOYER I.e Bharat Heavy Electricals Limited.

² NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER.

³ DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

⁴ CONTRACT VALUE AND PROJECT/SUPPLY DETAILS

⁵ BG AMOUNT IN FIGURES AND WORDS

⁶ VALIDITY DATE

⁷ DATE OF EXPIRY OF CLAIM PERIOD

Note:

1. Units are advised that expiry of claim period may be kept 3-6 months after validity date. It may be ensured that the same is in line with the agreement/ contract entered with the Vendor.
2. The BG should be on Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s) where the BG is submitted or is to be acted upon or the rate prevailing in the State where the BG was executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Vendor/Contractor/Supplier /Bank issuing the guarantee.
3. In line with the GCC, SCC or contractual terms, Unit may carry out minor modifications in the Standard BG Formats. If required, such modifications may be carried out after taking up appropriately with the Unit/Region's Law Deptt.

4. In Case of Bank Guarantees submitted by Foreign Vendors-

- a. **From Nationalized/Public Sector / Private Sector/ Foreign Banks (BG issued by Branches in India)** can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.
- b. **From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)**
 - b.1 In such cases, in the Tender Enquiry/ Contract itself, it may be clearly specified that Bank Guarantee issued by **any of the Consortium Banks only** will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter- Guarantee by Foreign Bank in favour of the Indian Bank's (BHEL's Consortium Bank) branch in India. It is advisable that all charges for issuance of Bank Guarantee/ counter- Guarantee should be borne by the Foreign Vendor. The tender stipulation should clearly specify these requirements.
 - b.2 **In case, Foreign Vendors intend to provide BG from Overseas Branch** of our Consortium Bank (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at **sl.no. b.1** will required to be followed.
 - b.3 The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time). The BG Format provided to them should clearly specify the same.

BANK GUARANTEE FOR SUPPLY FREE ISSUE MATERIAL

Bank Guarantee No:

Date:

To

NAME

& ADDRESSES OF THE BENEFICIARY

Dear Sirs,

In consideration of Bharat Heavy Electricals Limited¹ (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at _____¹ through its Unit at _____ (name of the Unit) having awarded to _____² (Name of the Vendor / Contractor / Supplier), with its registered office at _____² (hereinafter called "the Vendor/Contractor/Supplier" which expression shall include its successors and permitted assigns) a contract Ref No _____ dated _____³ valued at Rs _____ (Rupees -----) / FC _____ (in words _____) for _____⁴ (hereinafter called the 'Contract')

AND WHEREAS the Employer having agreed as per the terms and conditions of the Contract to supply free issue material costing Rs. _____ for the manufacture/fabrication of the equipment at the 'Contractor/Supplier/Fabricator's' site on furnishing of a Bank Guarantee for Rs./FC _____ (Rupees/FC _____) in the manner hereinafter specified for the due safeguard of the free issue material, we, _____, (hereinafter referred to as the Bank), having registered/Head office at _____ and inter alia a branch at _____ being the Guarantor under this Guarantee, hereby irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer any sum or sums upto a maximum amount but not exceeding Rs/FC _____ (Rupees/FC -----) without any demur, merely on a demand from the Employer and without any reservation, protest and recourse and without the Employer needing to prove or demonstrate reasons for its such demand.

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the 'Contractor/Supplier/Fabricator' in any suit or proceeding pending before any Court or Tribunal or Arbitrator or any other authority, our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment hereunder and the 'Contractor/Supplier/Fabricator' shall have no claim against us for making such payment.

We the _____ Bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract and till the reconciliation of the free issue material has been carried out and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged.

We, _____ Bank further agree that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said 'Contractor/Supplier/Fabricator' from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Contractor/Supplier/Fabricator and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said 'Contractor/Supplier/Fabricator' or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said 'Contractor/Supplier/Fabricator' or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Contractor/Supplier/ Fabricator and notwithstanding any security or other guarantee that the Employer may have in relation to the Contractor's/Supplier's/ Fabricator's liabilities.

This Guarantee shall remain in force upto and including _____⁶ and shall be extended from time to time for such period as may be desired by Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Contractor/ Supplier/ Fabricator but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

Unless a demand or claim under this guarantee is made on us in writing on or before the _____⁷ we shall be discharged from all liabilities under this guarantee thereafter.

We, _____ BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed _____⁵
- b) This Guarantee shall be valid up to _____⁶
- c) Unless the Bank is served a written claim or demand on or before _____⁷ all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, _____ Bank, have power to issue this Guarantee under law and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of
(Name of the Bank)

Dated _____.

Place of Issue _____.

¹ NAME AND ADDRESS OF THE EMPLOYER. i.e Bharat Heavy Electricals Limited

² NAME AND ADDRESS OF THE CONTRACTOR / SUPPLIER/ FABRICATOR .

³ DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

⁴ PROJECT/SUPPLY DETAILS AND CONTRACT VALUE

⁵ BG AMOUNT IN FIGURES AND WORDS

⁶ VALIDITY DATE

⁷ DATE OF EXPIRY OF CLAIM PERIOD

Note:

1. Units are advised that expiry of claim period may be kept 3-6 months after validity date. It may be ensured that the same is in line with the agreement/ contract entered with the Vendor.
2. The BG should be on Non-Judicial Stamp paper/e-stamp paper of appropriate value as per Stamp Act prevailing in the State(s) where the BG is submitted or is to be acted upon or the rate prevailing in the State where the BG was executed, whichever is higher. The Stamp Paper/e-stamp paper shall be purchased in the name of Vendor/Contractor/Supplier /Bank issuing the guarantee.
3. In line with the GCC, SCC or contractual terms, Unit may carry out minor modifications in the Standard BG Formats. If required, such modifications may be carried out after taking up appropriately with the Unit/Region's Law Deptt.

4. In Case of Bank Guarantees submitted by Foreign Vendors-

- a. **From Nationalized/Public Sector / Private Sector/ Foreign Banks (BG issued by Branches in India)** can be accepted subject to the condition that the Bank Guarantee should be enforceable in the town/city or at nearest branch where the Unit is located i.e. Demand can be presented at the Branch located in the town/city or at nearest branch where the Unit is located.
- b. **From Foreign Banks (wherein Foreign Vendors intend to provide BG from local branch of the Vendor country's Bank)**
 - b.1 In such cases, in the Tender Enquiry/ Contract itself, it may be clearly specified that Bank Guarantee issued by **any of the Consortium Banks only** will be accepted by BHEL. As such, Foreign Vendor needs to make necessary arrangements for issuance of Counter- Guarantee by Foreign Bank in favour of the Indian Bank's (BHEL's Consortium Bank) branch in India. It is advisable that all charges for issuance of Bank Guarantee/ counter- Guarantee should be borne by the Foreign Vendor. The tender stipulation should clearly specify these requirements.
 - b.2 **In case, Foreign Vendors intend to provide BG from Overseas Branch of our Consortium Bank** (e.g. if a BG is to be issued by SBI Frankfurt), the same is acceptable. However, the procedure at **sl.no. b.1** will required to be followed.
 - b.3 The BG issued may preferably be subject to Uniform Rules for Demand Guarantees (URDG) 758 (as amended from time to time). The BG Format provided to them should clearly specify the same.

Format of Letter for Extension/ Invocation of Bank Guarantees

Ref No

Dated

To

The Branch Manager

(Mention complete correct postal address of the BG issuing Bank Branch)

Dear Sir,

Sub: Bank Guarantee No dated issued by your bank valid upto for Rs
 in favor of M/s. BHEL. (Units name) on behalf of. (name of contractor/ vendor/ supplier etc.)

We refer to the above mentioned Bank Guarantee (BG) issued by your bank at the request of (Name of the contractor/ vendor/ supplier etc) towards.... (Nature of the BG issued) bank guarantee in favour of M/s. BHEL. (Unit's name) expiring on (validity date and the claim period). The said BG has to be kept valid till the full settlement/performance of the contractual terms and conditions entered into with (name of the contractor/ vendor/ supplier etc.). We have requested..... (name of the contractor/ vendor/ supplier etc.) to get the above said BG extended for a period of Months i.e. upto (dd/mrn/yy).

In case the validity period of the said BG is not extended within 15 days before the expiry date i.e. and received by us on or before ... or in case the bank is not in a position to extend the validity period of the BG for whatever reasons, then this communication shall be treated as **invocation** of the above said BG and also as our demand on you to pay us the amount of Rs (Rupees only) by means of Demand Draft/Banker's Cheque payable at (name of place)/ through RTGS (as per details attached) being the proceeds of the BG immediately on the date of expiry of the said BG, without any further intimation to you.

Please note that unless we revoke the claim under the above said BG in writing, your bank is liable to make the payment of the full amount of the BG forthwith to BHEL on

In the event this Bank Guarantee is extended for a period of at leastëëë months and such letter of extension, duly executed on non-judicial Stamp Paper of requisite value, is received by us, this claim may be treated as withdrawn. It is requested that the extended Bank Guarantee should be send directly to BHEL.

This without prejudice to our rights under the guarantee and under the law.

Kindly acknowledge receipt of this letter.

Yours sincerely

FOR & ON BEHALF OF BHEL

(Authorised Signatory)

Copy forwarded to: (should be known to the bank).

The Officer concerned (name)

MIS

(Name of the contractor /vendor/ supplier etc. with Complete Postal Address).

Please arrange to extend the BG upto..... as advised by BHEL in our letter dated

(Separate letter also to be sent to the contractor /vendor/ supplier etc. well in advance) latest by..... under intimation to us, failing which this letter be treated as notice of invocation).

Notes:

- 1) To be typed on BHEL's Letter Head with full Postal Address of BHEL's Unit.
- 2) To be sent to the bank by Registered Post with Acknowledgement Due / scanned copy through email as well as through fax / Courier/ by hand (to be personally acknowledged) 60Days prior to the date of expiry of the BG in question and/or in accordance with the terms and conditions of the Guarantee deed.
- 3) Bank's acknowledgement of receipt of Extension/Claim letter should be positively obtained and the same should be preserved.

Format of Reminder letter to be sent to BG issuing bank atleast 15 days before expiry date of the BG in case the extended BG is not received in terms of contract from the issuing bank.

Ref No

Dated

To, .
The Branch Manager
(Mention complete correct postal address of the BG issuing Bank/branch)

Dear Sir,

Sub: Bank Guarantee No Dated issued by your bank valid upto for
Rs in favour of M/s. BHEL (unit's name) on behalf of (name
of contractor/ vendor/supplier etc.)

Please refer to our earlier letter No Dated requesting you to extend the above
Bank Guarantee (BG) for a period of Month(s) i.e. upto (date).

Till date we have neither received any advice from your bank nor received the extended BG in original as
requested by us in our letter dated (date).

In case the said BG is not extended as requested by us in our letter dated , this letter shall also be treated
as **demand for invocation** of the said BG. The amount of Rs (Rupees only) be paid to
BHEL positively on the date of expiry of the BG itself by way of Demand Draft/ Bankers cheque payable at
(name of place).

This without prejudice to our rights under the guarantee and under the law.

Kindly acknowledge receipt of this letter.

Yours sincerely

For & on behalf of BHEL
(Authorised Signatory)

Copy forwarded to:
The Officer concerned(name)
M/s
(Name of the contractor/ vendor/ supplier etc. with complete postal address) for information and necessary
action

Notes:

- (1) To be typed in BHEL Letter Head with full Postal Address of BHEL's Unit.
- (2) To be sent to the bank by Registered Post with Acknowledgement Due/ scanned copy through
email as well as through fax / Courier/ by hand (to be personally acknowledged) atleast 15 days
prior to the date of expiry of the BG in question and/ or in accordance with the terms and
conditions of the guarantee deed.
- (3) Bank's acknowledgement of receipt of Extension/Claim letter should be positively obtained and
the same should be preserved.

Format of third and final invocation letter to be sent to BG Issuing Bank five days before the of expiry of the BG, in case BG is not extended in terms of contract from by issuing bank.

Ref No

Dated

To,
The Branch Manager
(Mention complete correct postal address of the BG issuing Bank/branch)

Dear Sir,

Sub: Invocation of Bank Guarantee No Dated issued by your bank valid upto for Rs
in favour of M/s. BHEL. (unit's name) on behalf of (name of contractor/ Vendor/ supplier etc.)

Please refer to our earlier letter No Dated and letter dated wherein it was requested to extend the above said Bank Guarantee (BG) failing which to pay BHEL the amount of the BG by way of a Demand Draft/ Bankers Cheque.

Your bank has failed to renew the above BG till today as requested by BHEL. As already informed to you that the Contractor has failed to fulfill/ perform the said contract and in view of the same, we hereby demand and lodge our claim against the abovementioned Bank Guarantee for the payment of Rs (Rupees only). Please arrange to pay the amount by means of a Demand Draft/ Bankers' Cheque/ Through RTGS (as per details attached) today itself.

You are requested to immediately meet your obligation under the Bank Guarantee and make the payment.

Kindly acknowledge receipt of this letter.

Yours sincerely,
For & on behalf of BHEL
(Authorised Signatory)

Note:

- 1) To be typed in BHEL Letter Head with full Postal Address of BHEL unit.
- 2) To be sent to the bank by Registered Post with Acknowledgement Due/ scanned copy through email as well as through fax / Courier/ by hand (to be personally acknowledged) atleast 5 days prior to the date of expiry of the BG in question and/ or in accordance with the terms and conditions of the guarantee deed.
- 3) Bank's acknowledgement of receipt of claim letter should be obtained positively and the same should be kept on records.
- 4) This letter will also be taken by an authorized BHEL's official to the bank and acknowledgement is to be received positively. The matter is required to be followed up by the concerned official and efforts to be made for getting the payment immediately.

Format of Letter for Invocation of Bank Guarantees

Ref No
 Dated

To
 The Branch Manager
(Mention complete correct postal address of the BG issuing Bank Branch)

Dear Sir,

Sub: Bank Guarantee No dated issued by your bank valid upto for Rs in favor of M/s. BHEL. (Units name) on behalf of. (name of contractor/ vendor/ supplier etc.)

We refer to the above mentioned Bank Guarantee (BG) issued by your bank at the request of (Name of the contractor/ vendor/ supplier etc) towards.... (Nature of the BG issued) Bank Guarantee in favour of M/s. BHEL. (Unit's name) expiring on (date including the claim period).

We do hereby lodge our claim/ demand in terms of the Bank Guarantee and call upon you to immediately pay us Rsë ë ë ë ë ë (Rupeesë ë ë ë .only) by means of Demand Draft/Banker's Cheque payable at (name of place)/ Through RTGS (as per details attached)

Kindly acknowledge receipt of this letter.

Yours sincerely

FOR & ON BEHALF OF BHEL
 (Authorised Signatory)

Notes:

- 1) To be typed in BHEL Letter Head with full Postal Address of BHEL's Unit.
- 2) To be sent to the bank by Registered Post with Acknowledgement Due/ scanned copy through email as well as through fax / Courier/ by hand (to be personally acknowledged) sufficiently in advance before the date of expiry of the BG in question and/ or in accordance with the terms and conditions of the Guarantee Deed.
- 3) Bank's acknowledgement of receipt Claim letter should be positively obtained and the same should be preserved.
- 4) This letter will also be taken by an authorized BHEL's official to the bank and acknowledgement is to be received positively. The matter is required to be followed up by the concerned official and efforts to be made for getting the payment immediately.

List of Consortium Banks (As on 22.02.2017)			
	Nationalised Banks		Nationalised Banks
1	Allahabad bank	19	Vijaya Bank
2	Andhra bank		Public Sector Banks
3	Bank of Baroda	20	IDBI
4	Canara Bank		Foreign banks
5	Corporation bank	21	CITI Bank N.A
6	Central bank	22	Deutsche Bank AG
7	Indian Bank	23	The Hongkong and Shanghai Banking Corporation Limited
8	Indian Oversea Bank	24	Standard Chartered Bank
9	Oriental bank of Commerce	25	J P Morgan
10	Punjab National Bank		
11	Punjab & Sindh Bank		Private banks
12	State Bank of India	26	Axis Bank
13	State Bank of Hyderabad	27	The Federal Bank Limited
14	Syndicate Bank	28	HDFC
15	State Bank of Travancore	29	Kotak Mahindra Bank
16	UCO Bank	30	ICICI
17	Union Bank of India	31	Indusind Bank
18	United Bank of India	32	Yes Bank

ANNEXURE 2

BANK GUARANTEE REGISTER

SL.N O	DATE OF RECEIPT	NAME OF THE BANK ALONG WITH BRANCH	ISSUE DATE	VENDOR/ CONTRACTOR	PURCHASE ORDER/CONTRACT AGREEMENT/WOR K ORDER NO	AMOUNT OF BANK GUARANTEE TO BE FURNISHED AS PER TERMS AND CONDITIONS	AMOUNT OF BANK GUARANTEE FURNISHED	ORIGINAL VALIDITY	EXTENDED PERIOD OF VALIDITY	ORIGINAL CLAIM DATE	EXTENDED PERIOD OF CLAIM DATE	DATE OF RETUR N	PARTICUL ARS OF LETTER NO. WITH WHICH RETURNE D
1	2	3	5	6	7	8	9	10	11	12	13	14	15

TERMS AND CONDITIONS FOR INDIGENOUS OFFERS

- a) **Quotations :** Each Tender should be sent in duplicate in a sealed cover. Inner cover should be sealed with tenderer's distinctive seal and superscribed with correct Tender No., item of supply and due date of opening. Tender should not be addressed to any individual's names but only by designation and shall be addressed to
Manager/Purchase, BHARAT HEAVY ELECTRICALS LIMITED, BOLIER AUXILIARIES PLANT, INDIRA GANDHI INDUSTRIAL COMPLEX, RANIPET, VELLORE DISTRICT - 632406, INDIA.
- b) Tenders should be neatly typewritten and should be free from CORRECTION AND ERASURES. Corrections, if any, must be attested. All amount shall be indicated both in words as well as in figures. Where there is difference between amount quoted in words and figures, amount quoted in words shall prevail.
- c) Price should be net F.O.R. destination inclusive of risk in transit and remain valid for 90 days from the due date.
- d) If any Sales Tax is payable as extra to the quoted price it should be specifically stated in quotation failing which the purchaser will not be liable for payment of Sales Tax. Our TIN No. 33024364741 & CST Number 1141686.
- e) Products with I.S.I certification marks will be preferred.
- f) The applicable rate of excise duty shall be clearly indicated in the quote itself.
- g) The tenderer shall fill up the specification Deviation Disposition Report either NIL or the deviation taken by the tenderer against the Tender specification.
2. **Samples :** Wherever possible samples should be submitted separately whether specifically requested or not, so as to reach the purchase on or before the due date of the enquiry. They should be clearly marked with the Enquiry No. and the date on the outside cover to facilitate identification.
3. **Packing and Marking :** The supplier shall arrange for securely protecting and packing the stores to avoid loss or damages during transit.
4. **Terms of Payment :** Payment will be made within 45 days for MSME (Small / Micro) Vendors and 90 days for others after receipt and acceptance of materials at BHEL Stores or receipt of site acknowledgment in case of direct to site items of satisfactory receipt of materials at site. Where required by the purchase, the successful tenderer must send the operation and maintenance manuals, test certificates, drawings, etc., as called for, for the materials ordered. These should be sent immediately after despatch of the materials and a statement to that effect should be made in the invoice. Failure to comply with this provision will result in delay in payment of the bills. Goods despatched either by V.P.P. or by the documents presented through bank will not be accepted unless agreed to by the Purchaser.
The transporter's copy of Excise Invoice should accompany the material. The Original Invoice alongwith other documents shall be (a) routed through bank or (b) directly sent to us as called for in the contract. One set of the Advance copies of the above documents shall be sent to Manager / Finance (Stores Bill section), BHEL, BAP, RANIPET - 6 and one set to Manager / Purchase BHEL, BAP, RANIPET - 6.
5. **Liquidated Damages :** It is clearly understood among the parties to the contract that "Time is the essence of the contract". Therefore, the delivery of the goods specified in the purchase order should be made within the time limit prescribed. Where the seller supplies or despatches the goods, beyond the delivery period specified, the Purchaser will have no obligation to accept the goods, if accepted, liquidated damages at the rate of 1/2% of the value of goods delayed for each week of delay or part thereof will be levied without prejudice to any other relief or compensation due to the purchaser under any other condition of this contract.
6. **Risk Purchase :** Alternatively, the purchaser at his option will be entitled to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or despatch within the time stipulated as aforesaid or if the same were not available, the best and the nearest available substitute therefor. The supplier shall be liable for any loss which the purchaser may sustain by reason of such risk purchases in addition to penalty at the rate mentioned in Clause 5 above.
7. **Preferential Delivery :** It should be noted that if a contract is placed on higher tenderer as a result of this invitation to tender in preference to the lowest acceptable offer in consideration to the earlier delivery, the seller will be liable to pay to the purchaser the difference between the contract rate and that of the lowest acceptable tender on the basis of final price F.O.R. destination including all elements of freights, sales tax, duties and other incidentals in case of failure to complete supplies in terms of such contract within the date of delivery specified in the tender and incorporated in the contract.
8. **MODVAT CREDIT :** If any Excise duty is payable, the chapter head/sub - head reference and the rate of duty should be quoted. If the tenderer is availing MODVAT credit for his input materials, the effect of proforma credit should be passed on the purchaser. Tender under "MODVAT" shall be preferred.
9. **General :** a) The Purchaser reserves the right to split up the tender and place for individual items with different tenderers and also increase the quantity.

TERMS AND CONDITIONS FOR FOREIGN OFFERS

Offer : Offer in ENGLISH LANGUAGE AND IN TRIPPLICATE IN A SEALED COVER superscribing the enquiry number and due date shall be submitted addressed to: THE MANAGER / PURCHASE, BHARAT HEAVY ELECTRICALS LIMITED, BOILER AUXILIARIES PLANT, INDIRA GANDHI INDUSTRIAL COMPLEX, RANIPET - 632 406, TAMIL NADU, INDIA.

Offers should be firm for net FOB / FCA nearest Sea / air port price and C & F Chennai Port Price indicating the shipping specifications and the earliest delivery in the respect of others from overseas suppliers.

Documents :

- (i) Offers should be accompanied by detailed technical literature, catalogue and detailed dimensional drawing in ENGLISH and in DUPLICATE, or otherwise the offers will not be considered.
- (ii) In case overseas suppliers route their accredited selling agents, a letter of authority should be furnished mentioning the name and address of their selling agents, who are authorised to bid, negotiate and conclude a contract on their behalf.

Agency Commission : In respect of offers from overseas suppliers, agency commission, if any, payable to their agents in India shall invariably be shown separately in the proforma invoice and this will be paid by us in India, in Indian Rupees, on satisfactory completion of the contract.

Spare : The tenderer should quote separately for spares that are required for two years trouble free operation. The spares offer should accompany the offer of main equipment, otherwise the quotation will be overlooked.

Validity : The offers for main equipment and spares shall be kept open for acceptance for 90 days (Ninety days) for the date of opening of the tender.

Test Certificates, Operating and Maintenance Manuals : The tenderer shall clearly mention in their offer that Test Certificates and Operating and Manuals, etc., as called for in technical specification, in the required number of copies will be provided at no extra cost. If any amount is payable as extra, the same shall be indicated separately in the offer.

Terms and payment : In the event of an order the purchaser will arrange for an unconfirmed irrevocable letter of credit against presentation of documents. Under, no circumstances confirmed irrevocable letter of credit will be established by the purchaser.

General :

- (i) Preference will be given to suitable indigenous or ex-stock imported offers, failing which imported offers from incoming consignment against the indigenous supplies "Stock and sale Licence" will be accepted, if Stock and sale licence is not available with the indigenous suppliers, the same shall be indicated in their offer.
- (ii) The offer should reach us on or before 14.00 Hours of date of tender opening. The offer will be opened at 14.30 hours on the due date in the presence of the tenderers who may like to be present.
- (iii) **BANK GUARANTEE (if applicable) :** The supplier in the event of an order, should furnish a Bank Guarantee from an approved Bank at no extra cost in a proforma which will be supplied to the supplier, along with the order, for an amount equivalent to 10% of the value of the contract. The Bank Guarantee should remain in full force and effect during the period that would be taken of successful completion of the contract and shall continue to be enforceable till 12 months from the date of receipt of consignment at purchaser's site or 18 months from the date of last shipment at the port of Delivery, whichever is earlier.
- (iv) **INCOTERMS :** The definition for terms shall be as per Incoterms 2010
- (v) **PLEASE QUOTE YOUR RATE FOR ALL THE FOLLOWING CONDITIONS.**
 - (a) FOB on at sight L.C.
 - (b) On C & F Chennai Port India with at sight L.C.
 - (c) Rate on credit basis with rate of interest and period of credit.
 - (d) Rates with suppliers credit.

Online SRF Submission Procedure

Following are the formalities to be completed by your company for registration purpose.

NOTE: BEFORE PROCEEDING FOR ONLINE REGISTRATION " PLS READ STEPS FOR FILLING UP ONLINE REGISTRATION FORM - HELP MENU" - DETAILS ATTACHED WITH THIS MAIL

With effect from 01.04.2015 onwards, we have migrated to online Supplier Registration Form (SRF) as per our Corporate guidelines. **Supplier Registration Form (SRF)** is to be fed in our BHEL website portal – **ie., PDF documents of SRF and its annexure as called for shall be signed by authorized signatory & uploaded in portal.**

We request to visit our Web Site : www.bhel.com and click under heading "Supplier Registration" and fill up the **"Supplier Registration Form"** which is available in the Online Supplier Registration Portal.

Or else, copy the following URL Link and paste in the web link address: http://www.bhel.com/vender_registration/vender.php and proceed with.

Or else, type directly as <http://203.129.195.108>

Click the button "search material" on the home page of supplier registration portal and search thoroughly your required material / product

*After completing the material search then proceed for User Id & Password for filling up the details of registration requirements. **Note: If you are an already registered supplier with any of our BHEL Unit - pls select "existing permanent supplier" or else select "New Registration" and then proceed accordingly.***

Please note that for a foreign suppliers' there is a separate format to be filled in, which may be taken care suitably.

After successful submission of SRF along with all annexures as called for thro' online i.e., authorized signatory signed pdf documents of SRF and its annexures are to be uploaded thro' online portal and confirm the same in **"form dispatch"** area ie., registration part-4 – wherein supplier has to confirm that all the documents were submitted "online" and click the button **"confirm"**. After clicking confirmation button, the same will be appearing against BHEL Ranipet for registration.

Looking for a long successful & sustaining business association with BHEL.

Payment Mechanism at BHEL, Ranipet

(Effective for all tenders issued by BHEL Ranipet from 01 July 2011 onwards unless otherwise notified of change/s in writing given by an authorized official of BHEL, Ranipet)

BHEL, Ranipet's payment mechanism will be as follows: (All Bidders are requested to read this carefully and take note of it before submitting their offer)

All bills of Suppliers processed for payment by BHEL, Ranipet shall pass through the following mile stones:

- (1) Receipt of materials at BHEL, Ranipet Stores (evidenced by the Day-Book Number and Date generated at BHEL Stores, Ranipet) or Receipt of materials at Project Site / Destination specified in the Purchase Order (as evidenced by the acknowledgement given by the Consignee).
- (2) Acceptance of the supplied materials at BHEL Stores, Ranipet. (Proof of evidence: Stores Receipt voucher - Short form "SRV", raised by BHEL Stores, Ranipet referenced by the SRV Number and Date)
- (3) Receipt and Registration of the Bills / Invoices of the Supplier at BHEL, Ranipet Accounts Department. (evidenced by the ABS Number and Date)
- (4) Receipt of clarifications, if any that may be required by BHEL, Ranipet Accounts or Purchase Department, from the Supplier. (As evidenced by the IOM Inward Date)
- (5) Bill processing and passing.
- (6) Payment release.

All these events are transparently available in the SCM web-site of BHEL, Ranipet, { <http://bapscm.bhelrpt.co.in/purc> } which can be viewed by all registered suppliers with a password.

Allowed Time frames:

- A] From DB to SRV: 10 Days
- B] From SRV to ABS: 15 Days
- C] From ABS to Bill Pass: 07 Days (if Stage 4 above is not applicable)

OR

From IOM to Bill Pass: 07 Days (if Stage 4 above is applicable)

- D] From Bill Pass to Payment Release: As per payment terms of the Purchase order.

All Suppliers payment/s would be released based on seniority of receipt of the processed bills at the payment section of BHEL, Ranipet Accounts Department.

The seniority would be based on the sequence of milestone events listed above.

In the sequence of the bill processing the preceding mile-stone seniority will be void, if the subsequent event occurs beyond the permitted time frame between two successive events.

Thus for example:

Start seniority would be with the DB date.

If the SRV date is greater than 10 days of the DB date, then the seniority of the DB date would be replaced by the SRV date.

If the ABS date is greater than 15 days of the SRV date, then the seniority would be reckoned by the ABS date.

If the Bill pass date is greater than 07 days of the ABS date then the seniority would be the date of inward receipt of the IOM.

The logics of these sequence is that SRV, ABS, IOM inward entry are dependent entirely on submission of correct documentation by Suppliers, as called for in the Purchase Order. If the documents are correctly submitted each of the milestone listed above will occur within BHEL, Ranipet within the timelines specified above.

Hence, in their own interest all Suppliers are requested to take note of this process and comply with the same.

Caution: Suppliers' payments would get delayed / affected if they fail to adhere to the submission of the documents specified in the Purchase Order / Contract, since the listed milestone events occurrence are contingent upon the availability of the requisite documents.