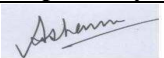
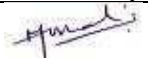
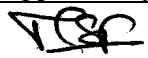


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TECHNICAL SPECIFICATION FOR CENTRIFUGE SKID for SEWAGE TREATMENT PLANT (Decanter Type)

PROJECT :	1 X 4.5 MLD SEWAGE TREATMENT PLANT
OWNER :	BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL

Revisions: Refer to record of revisions	Prepared by :	Checked by :	Approved by :	Date :
	 ANUPAM SHARMA	 R. MURALIDHAR	 M. SIVA PRASAD BABU	16.06.17



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Sheet **3** of **15****DOCUMENTS TO BE SUBMITTED ALONG WITH BID:****A. Decanter Type Centrifuge Skid**

Bidder must submit the following documents along with their bid so as to enable BHEL to evaluate their offer.

Bidder to note that in case following documents are not submitted along with offer, the offer **may be liable for Technical Rejection.**

- Checklist for the offer (Annexure-4)
- Documents mentioned in checklist.
- Unpriced “price-bid format” (Annexure-3)

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1.0 INTENT OF SPECIFICATION

- 1.1 The specification is intended to cover Design, Engineering, Fabrication, Assembly & Inspection and Testing at vendor's / sub-vendor's works, painting, proper packing and forwarding, shipment & delivery at site of **1No. of Decanter Type Centrifuge Skid for Sewage Treatment Plant** as per the specifications and requirements indicated in different sections of this specification
- 1.2 Erection and Commissioning is not in the scope of bidder. However, bidder to furnish recommended Erection and Commissioning procedures along with all the drawing / documents required to facilitate Erection and Commissioning of the Skids by others.
- 1.3 The contractor shall be responsible for providing all material, equipment & services required to ensure operability, maintainability, reliability and safety of the Gas Conditioning System as covered under this specification, irrespective of whether they have been specifically indicated in this specification or not.
- 1.4 It is not the intent to specify herein all the details of design and manufacture. However, the equipment/system shall conform in all respects to high standards of design, engineering and workmanship and shall be capable of performing the required duties in a manner acceptable to purchaser who will interpret the meaning of drawings and specifications and shall be entitled to reject any work or material which in his judgement is not in full accordance herewith.
- 1.5 The general terms and conditions, instructions to tenderer and other attachment referred to elsewhere are hereby made part of the tender specifications. The equipment / material and works covered by their specification are subject to all the attachments referred in the specification. The tenderer shall be responsible for adherence to all requirements stipulated herein.
- 1.6 All text/ numeric in the document / drawings to be generated by the successful bidder will be in English language only.
- 1.7 Unless specified otherwise, all through the specification, the word contractor shall have same meaning as successful bidder/vendor and customer /purchaser/ employer will mean BHEL and /or KPCL as interpreted by BHEL in the relevant context.



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PROJECT : 4.5 MLD Sewage Treatment Plant

PROJECT INFORMATION

	Owner	M/s BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL
1.	Project	4.5 MLD SEWAGE TREATMENT PLANT
2.	Owner's Consultant	--
3.	Location	Bhopal
4.	Nearest Airport	Bhopal
5.	Nearest Railway Station	Bhopal Railway station
6.	Access to site	Roadways, Railways and Airways
7.	Coordinates	Later
8.	Maximum Ambient Air Temperature (deg. C)	Later
9.	Minimum Ambient Air Temperature (deg. C)	Later
10.	Dry Bulb Temperatures (deg. C)	Later
11.	Highest recorded :	Later
12.	Lowest recorded :	Later
13.	Wet Bulb Temperatures (deg. C)	Later
14.	Design Ambient for Electrical equipment/system	Later
15.	Relative Humidity	Later
16.	Design AMB Humidity	Later
17.	Annual Mean Rainfall	Later
18.	Annual Total Rainfall	Later
19.	Wind data	Later
20.	Wind Speed	Later
21.	Prevailing Wind Direction	Later
22.	Wind Pressure	Later
23.	Seismic coefficient	Later

Note: Any data required for designing the equipment, bidder may ask prior to the submission of bid.

General Description of the Project:

4.5 MLD Sewage Treatment Plant is proposed to be installed at BHEL Bhopal to treat the incoming sewage water.

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2.0 SPECIAL INSTRUCTIONS TO BIDDERS

- 2.1 This specification shall be read in conjunction with all its Annexures. In case of any discrepancy arising between this specification & its Annexures, the most stringent of all (as determined by purchaser) shall be followed. Further, if a requirement in this specification or any of the enclosures, calls for a decision from the Purchaser, it shall be bidder's sole responsibility to clearly bring out/highlight the same distinctively in his pre-bid queries, so as to enable purchaser to furnish their decision/clarification. If such issues/requirements are not duly addressed by bidder during the pre-bid stage and if such issues/requirements are observed later during order execution stage, it shall be binding on the bidder to comply with the final decision made by the purchaser subsequently, without any cost, delivery, or any other commercial implications.
- 2.2 Any additional equipment, material, services etc., which are not specifically mentioned in this specification, but required to make the Gas Conditioning System complete in all respects, in accordance with the intent of this technical specification, contractual agreement, statutory requirements, relevant/applicable codes/standards, good engineering practices, and for safe and trouble-free operation, shall be deemed to be covered under the scope of this specification.
- 2.3 Any specific hardware/software/item/ etc. required as indicated in 2.2. Above but not listed elsewhere in this specification or its enclosures, shall be deemed to be included in the basic price quoted by the bidder. Also, all mounting hardware/ accessories/fittings/conduits/etc. required for the Erection & Commissioning of the Gas Conditioning System shall be deemed to be included in the basic price quoted by the bidder. Bidder, at no point of time, shall be eligible to raise any extra claim in this regard.
- 2.4 The Bidder shall accept full responsibility for the completeness and for the reliable operation of Gas Conditioning System as a whole. These shall be executed on the basis of proven design principle. Standardization of equipment, materials etc. shall be employed in the design. Care shall be taken to ensure safe operation as well as simplicity of Erection & Commissioning of the Gas Conditioning System. Even though, the requirements are specified in detail to the extent possible, bidder to apply good engineering practices in the design, selection of equipment, manufacturing, procurement, transportation, fabrication, painting, inspection & testing, supervision of erection & commissioning of system etc., wherever same is not clearly spelt out.
- 2.5 By accepting the contract, the bidder shall be deemed to have accepted the obligation of supplying everything that is necessary for the purpose mentioned above, regardless of any omission in the specification or on the drawings for the fulfillment of complete main plant package.
- 2.6 Bidder to note that the Purchase Order for the Scope of supply shall be placed on lump sum fixed prices based as per tender specification requirements.

Bidder to further note that they shall not be permitted for any claim for additional commercial implication on any account during the detail engineering stage.



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- 2.7 Bidder shall quote strictly as per the scope of supply and requirements of this specification. Bidder offer shall be strictly as per these specification requirements. Unsolicited or alternate offers from the bidders will not be entertained.
- 2.8 In case bidder feels that it is necessary to exclude some components of scope of supply or some of the features of specification requirements due to any technical constraints, bidder shall bring the same to the notice of purchaser during pre-bid stage and take their prior approval before submission of their bid. All such clarifications required by the bidder shall be intimated to BHEL together as a single notice within a week of receipt of enquiry by bidder and clarifications on the same shall be obtained by the bidder from the purchaser. In case no such clarifications are sought during pre-bid stage, it will be assumed that bidder has no comments or observations on BHEL's specification and no deviations to the specifications will be taken by the bidder.
- 2.9 Bidder to quote strictly as per BHEL's Price Bid format (Annexure-3). Failure to do shall make their offer liable for rejection. Any tampering/modification/change of the BHEL's price format is not allowed and is liable for rejection of bidders offer.
- 2.10 In case Bidder is unable to offer due to any specific requirement of specification, Bidder shall bring out the same in their regret letter. Otherwise it will be considered that non participation by the bidder is attributable to reasons other than any specification requirements.
- 2.11 Compliance with 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.
- 2.12 The design information, specifications and drawings indicate the "Minimum" requirements and are intended to enable Bidders to ascertain the extent of the work involved. Bidders are expected to supplement the information included in this specification as required and submit a comprehensive bid.
- 2.13 The intending tenderers shall be deemed to have visited the site and have studied the conditions before submitting the Bids. Non-familiarity with the site conditions will not be considered a reason either for extra claims or for not carrying out the work in strict conformity with the drawings and specifications.
- 2.14 **The successful bidder shall furnish design calculations(in native/original format) to BHEL during detailed engineering stage for approval along with the relevant pages of authentic supporting literature e.g. Code, Hand book, National / international Standards etc. All steps including formulas and abbreviations shall be clearly shown in the calculation. All inputs / assumptions shall be indicated in the first sheet of the calculation. Calculation shall be necessarily done in SI UNITS only for the followings: -**
- 2.15 Civil works will be done by BHEL based on civil inputs furnished by the bidder during detail engineering. In case of any changes in the civil input drawing after civil work is completed,



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necessary prices on account of modification of the civil work shall be deducted from bidder's account.

3.0 JOB SPECIFICATION:

3.1 SCOPE OF SUPPLY:

A. No. of systems required

i. Supply of 1 No. of Centrifuge Skid(Decanter Type) for Sewage Treatment Plant

B. Scope of supply for each system:

MAIN OFFER:

- The scope of supply of each system shall be strictly as per **P & ID** enclosed as **Annexure-1** wherein, Centrifuge skid boundaries are clearly marked. The system shall be provided as per P&I D taking into all requirements including for testing, painting, documentation, sub vendor list, equipment specifications etc., specified in this specification and enclosures. **Bidder to comment on the completeness of the P&ID proposed by BHEL.**
- Suitable Electric Motor for centrifuge skid is in Bidder Scope of Supply.
- Control panel for operation of centrifuge skid is in Bidder Scope of Supply.
- Suitable vibrational dampener shall be provided along with the centrifuge skid.
- **Counter flanges:** Counter flanges at all terminal points along with bolts, nuts and gaskets are in the scope of bidder.
- **Foundation bolts:** Foundation bolts for skids along with shims (if required), are in the scope of bidder.
- One set of special tools and tackles
- ~~Canopy for the skid, considering that the centrifuge skid is mounted outdoor without shed.~~
- **Commissioning spares:** Required commissioning spares(Minimum Seal Rings & Gaskets) shall be considered by the bidder.

OPTIONAL ITEMS:

- **2-years operational spares: Unit rates for** 2 years operational spares shall be considered by the bidder and same shall be quoted as per **Annexure-3.**
- **Per Diem Rates for "Supervision of Erection and commissioning" to be quoted as per Price Bid-Format, Annexure-3**

EXCLUSIONS:

- All cables required from control panel to centrifuge and vice versa, input cable to control panel are excluded from bidder's scope of supply.
- Polyelectrolyte Dosing is excluded from bidder's scope of supply
- Feed Pumps to Centrifuge Skid is excluded from bidder's scope of supply
- Civil works of Centrifuge Skid are excluded from bidder's scope of supply

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3.2 TECHNICAL DETAILS:

Refer Annexure-2 for Technical Datasheet for Centrifuge Skid.

3.3 PRICE BID-FORMAT

Bidder to quote price as per price bid format enclosed as **Annexure-3 without any deviations. Any clarifications/queries related to the above technical specification shall be raised by Bidder prior to the submission of Techno-Commercial Offer. These queries are to be raised vide Annexure-5**

4.0 INSPECTION AND TESTING OF CENTRIFUGE SKID

Bidder shall adopt standard inspecting and testing procedures internationally accepted.

- I. Bidder shall follow Quality Assurance Plan attached as Annexure-9 as a minimum, to ensure that all equipment and material supplied meet required Quality standards and specifications.
- II. After award of contract, bidder shall submit completely filled Quality Assurance Plan attached as Annexure-9 for approval in-line with QAP guidelines enclosed as Annexure-9. The quality plan shall be submitted in BHEL quality plan format(Annexure-9), Bidder to note that all the cost involved in any of the inspection & testing requirements as per the approved quality plan shall be deemed to be included in the price quoted by the bidder. Bidder shall not be eligible to raise any extra claim on account of any inspection & testing as per the approved quality plan.

5.0 STORING, HANDLING, PACKING AND DISPATCH OF EQUIPMENTS / COMPONENT

Packing Suitable for domestic transport/standard seaworthy packing for equipment to be provided.

6.0 SPARES:**a) Commissioning spares:**

Bidder to consider the required commissioning spares and price for the same shall be quoted as per **Annexure-3**.

b) Mandatory spares:

Nil.

c) Two years operational spares:

Two years operational spares shall be recommended by the bidder and optional price for the same shall be quoted as per **Annexure-3**.



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7.0 CONFLICTS IN SPECIFICATION REQUIREMENTS:

In case of any conflict between this specification and Annexures stringent of the requirement will govern.

8.0 DRAWINGS/ DOCUMENTS REQUIRED DURING DETAIL ENGINEERING

The successful bidder shall submit as per the Master Document List enclosed vide **Annexure-7**.

Master Document List:

- a) Documentation shall be submitted by bidder during detailed engineering stage, as per the Master Document List (Annexure-7).
- b) Bidder shall ensure submission of all documentation as per approved Master Document List.
- c) Bidder to note that the dates of submission of all the documents shall be finalized by him considering the time required for approval of various documents at Purchaser's end. It shall be solely bidder's responsibility to get approval on the entire document from purchaser to meet project schedule.

8.2 Drawing approval category:

1) The master document list shall clearly identify the class of review to be performed against each document.

2) Following classes of review shall be followed for all the documents engineered by the bidder

- **APPROVAL (A)**

Approval is mandatory and bidder cannot proceed without obtaining Purchaser's approval.

- **INFORMATION / RECORDS (I)**

This type of documents shall be submitted to Purchaser for his information. Bidder can proceed if Purchaser's comments are not received within 14 working days of receipt in Purchaser's office.

However, if any deviation to contract specification for any design deficiency is detected in the course of review after stipulated period, it shall be the responsibility of the bidder to see that such deviations and deficiencies are corrected to ensure compliance to contract without any cost and time implication to purchaser

Drawings Review & Approvals:

- 12.3.1 Bidder to understand that efficient handling of drawings and documents to be prepared by him under the contract is the key to the timely completion of the skid package. By accepting the contract the bidder undertakes to ensure that all drawings and documents to be



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submitted by him to the Purchaser / End Customer shall be of professional quality and conforming to the contractual requirements.

- 12.3.2 Bidder to note that the dates of submission of all the documents shall be finalized by him considering the time required for approval of various documents at Purchaser's end. It shall be solely bidder's responsibility to get approval on the entire document from purchaser to meet project schedule.
- 12.3.3 Each drawing submitted by the bidder shall be clearly marked with the name of the Owner, the unit designation, the specifications, title, the specification number and the name of the Project with revision No. and date. If standards, catalogue pages are submitted the applicable items shall be indicated therein. All titles, noting, markings and writings on the drawings shall be in English.
- 12.3.4 The approval and /or review by the Purchaser /End customer shall not be construed by the bidder as limiting any of his responsibilities and liabilities for mistakes and deviations from the requirements, specified under these specifications and drawings.
- 12.3.5 The sole responsibility of the correctness of Design, Engineering shall lie with the bidder, irrespective of the fact that the Drawings / Documents submitted are reviewed or not by the Purchaser /End customer.
- 12.3.6 The bidder shall correct all faulty designs & constructions detected at any stage of work (irrespective of the fact whether drawings related to such faulty designs & or constructions are approved by purchaser), without any cost and time implication to the Purchaser.
- 12.3.7 Revisions in drawings/documents shall be clearly marked within clouds. No revision without clouding shall be recognized and the same shall not be considered reviewed and approved. All revised drawings / documents shall be associated with comments compliance report,
- 12.3.8 During detailed Engineering stage, bidder to furnish list of drawings as per Master Document format (Annexure-7).

NO. OF COPIES OF EACH DOCUMENT TO BE FURNISHED:

SL NO	DESCRIPTION	NO OF COPIES/ PIECES TO BE SUBMITTED	WHEN TO SUBMIT
1	Initial drawings/documents under approval and information category.	Soft copy only	Within 2 weeks of placement of order.
2	BHEL shall furnish their observation on submitted documents	Soft copy only	Within 2 weeks of document submission.
3	Revised drawings/documents incorporating BHEL's comments.	Soft copy only	Within 1 week of receipt of commented Drawings from BHEL



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4	BHEL shall furnish their observation on submitted documents	Soft copy only	Within 2 weeks of document submission.
5	Final Drawings/documents	05	Within 2 months of placement of order.
6	Erection Documentation	5	2 Months before dispatch of equipment, The list of documents identified under master document list for erection to be furnished in 5 nos. of folders.
7	Draft O & M Manuals with out test certificates	2	2 months before the delivery date of equipment
8	Revised O & M Manuals with Test Certificates to be submitted to BHEL (Hyderabad)	17	Within one month after dispatch of equipment
9	PO status of bought out items		Status to be furnished by vendor every 15 days.
10	Final O&M Manuals in a CD	05	Within one month after dispatch of equipment

NOTES:

- 1) The above schedule for drawing approval is only indicative. Bidder to furnish a bar chart for dispatch of skid as per the agreed delivery requirement of project. This schedule also shall indicate drawing submission and approval schedules meeting the delivery schedule of the equipment. Bidder and BHEL shall put all the efforts to meet the planned schedules.
- 2) The O&M manuals shall contain the following as minimum.
 - The identification details of the equipment like BHEL P.O. No., Vendor's Job Identification No., and full contact address with telephone, fax, & e-mail details.
 - Brief description of the system.
 - System unloading, storage, erection, startup, commissioning, shut down requirements.
 - System operating and maintenance requirements.
 - Operational & Environmental safety instructions.
 - Final data sheets and drawings.
 - O&M Manuals, Catalogues of the equipment (like pump, motor, etc.) & instrumentation
 - Recommended 2 years operational spares
- i) Test reports & certificates. The draft O&M manual can be submitted without test reports.



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9.0 PRE-BID CLARIFICATIONS AND DEVIATIONS

- a) Bidders shall comply with various requirements of this specification. It may please be noted that the requirements specified here in this specification are the standard practices being followed by the bidders. However, same things are presented in a structured form so that it can be ensured that the requirements of ultimate customer are complied with.
- b) Bidders can bring out only those deviations which are impractical to meet, for our review in pre bid clarification only as per Annexure-5 before submission of techno-commercial offer.
- c) Bidders may also please note that the data sheets for, valves, instruments etc., submitted along with the offer will be considered as indicative only, as the requirements specified in the specification are standard in nature. These will not be reviewed by BHEL before award of contract. Same will be reviewed during order execution stage in line with the requirements of specification and agreed deviations.

10.0 SUB VENDOR LIST

- a) Sub-vendor list shall be as per Annexure-8.

Note: Any item which are not figuring in the vendor list, bidder may follow their own standard list. However all the credentials of such vendors shall be submitted for BHEL review and approval.

11.0 EQUIPMENT QUALIFICATION CRITERIA

The bidder shall be an established manufacturer of Centrifuge Skid(Decanter Type) for Sewage Water Treatment applications & having adequate engineering, manufacturing & testing facilities for centrifuge confirming to the relevant applicable codes and standards. The centrifuge model offered shall be from the existing regular manufacturing range of bidder.

The offered centrifuge model shall meet the minimum service & manufacturing experience specified as below:

Centrifuge shall be identical or validly similar in terms of

- Type i.e Decanter Type for Sewage Water Treatment Plant with sludge as a feed
- Capacity/Flow Rate
- Materials etc.
- Application.

as compared to at least 10 Units of the proposed model designed, manufactured, tested and supplied from the proposed manufacturing plant in the last 7(seven) years from the date of Technical bid opening and at least Five of these units shall have successfully operated in the field for at least 8000 hours individually without any major problem as on the date of issue of enquiry in the last three years. **As a proof for the same, Date of Supply/ Commissioning report/Customer Satisfaction report will be considered and same to be provided by bidder.**

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Accordingly, Bidder to furnish reference list for the Centrifuge(Decanter Type) consisting of year of supply, application, Customer Name, Quantity etc. as a minimum.

12.0 PAINTING

Painting for Centrifuge Skid along with control panel, motor(including canopy) shall be as per OEM standard.

- VARIANT TABLE:**

<u>Variant</u>	<u>Item</u>	<u>Material Code</u>
01	Decanter Type Centrifuge Skid	PY9851280010



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RECORD OF REVISIONS

[illegible]

ANNEXURE-I: P&ID FOR SEWAGE TREATMENT SYSTEM

Sl. No.	LEGEND	REFERENCE
1.		PRESSURE INDICATOR
2.		MOTOR
3.		SLUICE VALVE
4.		NON RETURN VALVE
5.		REDUCER / ENLARGER
6.		KNIFE VALVE
7.		LEVEL TRANSDUCER
8.		SLUICE GATE
9.		MOTOR ACTUATOR CONTROL
10.		LEVEL INDICATOR
11.		FLOAT VALVE
12.		DIFFERENTIAL VALVE
13.		HIGH LEVEL SENSOR
14.		PRESSURE RELEASE VALVE
15.		SLUICE GATES
16.		MAGNETIC FLOW METER
17.		DO SENSOR
18.		LEVEL SWITCH
19.		MOTORIZED BUTTERFLY VALVE
20.		Y STRAINER
21.		BALL VALVE

Sl. No.	DESCRIPTION	QTY.
1.	COLLECTION TANK	1
2.	MECH. COARSE SCREEN	1
3.	RAW SEWAGE SLUMP	1
4.	STRAIN SCREEN	1
5.	FINE SCREEN MECHANICAL	1
6.	GRT CHAMBER	1
7.	SRB BASIN	2
8.	CHLORINE CONTACT TANK	1
9.	CHLORINATION POOL	1
10.	SLUDGE SLUMP	1
11.	SCREEN PUMP	1
12.	CENTRIFUGAL PUMP	1
13.	SRB SLUDGE PLATFORM	1
14.	DIFFRACTOR	1
15.	SWITCH GEAR UNIT FOR P&ID	1
16.	RAW SEWAGE LIFTING PUMP	3
17.	SLUDGE LIFTING PUMP	2
18.	CENTRIFUGAL	1
19.	AIR BLOWER FOR SRB	3
20.	WAS PUMP	2
21.	WAS PUMP	2
22.	AIR BLOWER TO SLUDGE SLUMP	1
23.	POLYMER SOLUTION TANK	1
24.	VETERINARY PUMP	1
25.	CHLORINE COIL PUMP	1
26.	WATER CHARGE TANK	1

1 No. of Centrifuges Skid

NO.	DATE	REVISION	BY
R2	01.06.17	REVISE AS COMMENT	
R1	27.05.17	REVISE AS COMMENT	

PREMIER TECH
AQUA
DELHI, INDIA

TITLE:	TM ECOPROCESS SBR P&ID 4.5 MLD BHEL-BHOPAL
CLIENT:	BHEL-HYDERABAD

PREPARED BY:	SHRIKANT	DATE:	27.05.17
VERIFIED BY:	B.N. SEN	DATE:	27.05.17
APPROVED BY:	VARSHA SINGH	DATE:	27.05.17

REFERENCE DRAWING:	
VERIFIED BY:	DATE:
DRAWING BY: DIPEN SARKAR	DATE: 27.05.17

PROJECT NO:	T6982017	SIZE:	A1
SCALE:	NOT TO SCALE	REVISION:	0
DRAWING NUMBER:	T6982017- P&ID		

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Annexure-2 Technical Datasheet for Centrifuge Skid
[For Technical Specification, PY 51280, Rev00]

S.No.	Description	Unit	Value
1.	Number of centrifuge	No.	1
2.	Daily Sludge Generation	m3/day	120
3.	Working Hours	hr	16
4.	Centrifuge feed Pump	m3/hr	8.0
5.	Centrifuge capacity	m3/hr	8.0
6.	Type		Bowl Type
7.	Feed solid	(%)	0.8-1
8.	Cake solid	(%)	15-20
9.	Filtrate solid recovery	(%)	>90
10.	Expected polyelectrolyte doze (Dosing is excluded from Bidder Scope of Supply)	(Kg/ton of dry solid)	1.5-1.7
11.	Operating Temperature	Deg C	Ambient
12.	Main Motor for decanter		
	Design		TEFC as per IS-325
	Energy Efficiency		IE-3 as per IS 12615
	Rating of motor (HP)		Bidder to indicate
	Motor type		3 Phase, 2 Pole, 1500RPM
	Degree of protection		IP 55
	Insulation class		Class F
	Mounting		Bidder to indicate
	Design ambient temperature	Deg C	60
	Motor protection		Thermistor

13.	Decanter protection		Bidder to provide as per OEM practice.
14.	Commissioning Spares(Minimum seal rings & gaskets)	Set	Commissioning Spares to be offered as per bidder recommendation and price for same shall be quoted as per Annexure-3
		Set	1
15.	Special Tools and tackles.	Set	1.
16.	Flow Configuration		Counter Current
17.	Max. Design Temperature	Deg C	60
18.	Bowl Assembly		Bidder to select suitable bowl assembly
19.	Main Drive Assembly		Bidder to select suitable Main Drive Assembly
	Material of Construction		
20.	Conveyor		SS316
21.	Impeller		SS316
22.	Feed Tube		SS316
23.	Casing		SS304

Notes:

1. The above requirements are indicated as minimum. However, bidder shall consider all other considerations for the process requirements for centrifuge skid in their offer.
2. Material of Construction indicated above is minimum. Equivalent or superior material is also acceptable. Also for any other material bidder may consider OEM standard material.



BHARAT HEAVY ELECTRICALS LIMITED
R.C.PURAM, HYDERABAD-502032

PROJECT ENGINEERING & SYSTEMS DIVISION

Annexure-3: PRICE FORMAT (R00) FOR VARIANT-1 : SUPPLY OF CENTRIFUGE SKID

PROJECT : 4.5 MLD SEWAGE TREATMENT PLANT
OWNER: M/s BHARAT HEAVY ELECTRICALS LIMITED, BHOPAL

SL NO	ITEM DESCRIPTION	QTY	UNIT	UNIT RATE (RS.)	TOTAL (RS.) [UNIT RATE X QTY]
	Bidder's Offer No. & Dt. : <Bidder to indicate> Bidder's Ref No. & Dt. : <Bidder to indicate> BHEL Enq. No. & date : <Bidder to indicate>				
I	MAIN OFFER				
A	CENTRIFUGE SKID FOR SEWAGE TREATMENT PLANT				
A.1	Centrifuge Skid as per Specification PY-51280_Rev. 00; Variant 01.	1	SET		
A.2	Commissioning Spares (Minimum Seal Rings & Gaskets); Commissioning spares as per manufacturer's recommendation. Minimum 1 Set of Seal Rings & Gaskets for centrifuge skid. 1 set stands for requirement of one centrifuge skid. Bidder to furnish the list along with the offer. (Ref. Note-5 below)	1	SET		
A.3	Special tools & tackles as per manufacturer's recommendations. 1 set stands for requirement of one centrifuge skid. Bidder to furnish the list along with offer	1	SET		
B	Supervision Charges for Erection & Commissioning at site				
B.1	Travel expenses from vendor works to site and back per visit /person	Refer Note-2 Below	Refer Note-2 Below		
B.2	Per day charges per person for supervision of erection & commissioning at site including boarding, lodging, local transportation etc., except for travel expenses as above	Refer Note-2 Below	Refer Note-2 Below		
II	Optional Items	--	--		
A	2 Years Recommended Spares				
1	Bidder shall recommend the list of recommended spares required for 2 years of operation of centrifuge skid (List with price break up to be enclosed with offer) (1 set stands for quantity required for the replacement of one centrifuge (or) its accessories)	As per bidder's recommendation	SET		
	TOTAL				

Notes:

1) Bidder to quote strictly as per BHEL's NIT requirements

2) Prices quoted by bidders for items under main offer : **Sl. No. IA & IB** will be considered for evaluation of lowest bidder.

For the purpose of tender (L1 bidder evaluation):

For Supervision of E&C, total no of **2 Man days** to be covered in **1 Visit** have been considered. However, either or both of the number of man days or no of visits may change on either side based on the actual site requirement. However, BHEL reserves the right

(a) To include any of the optional items in scope of supply (as per customer contract requirements) and accordingly consider the same in evaluation. Any such scope increase and change in evaluation will be intimated to vendor during technical evaluation (before price bid opening).

(b) To place PO for any of the Optional items within the contract period.

Hence bidders need to mandatorily quote reasonable prices for all optional items considering such requirement and keep the validity of the prices till the end of contract period.

3.a) For all items including Optional items, prices to be furnished in this prescribed price bid format only for each individual item. No combined prices, common prices or any other format will be accepted and such bids may be liable for rejection.

3.b) Bidder must not change the indicated item description, quantity & units in the price bid format. Bidder should only fill the unit rates & total price.

3.c) Bidder to quote for all the items as per price bid format. Incomplete/partial offer may be liable for rejection.

4) Bidder to quote the base rates only. All other commercial charges for packing, freight, transportation, insurance, taxes & duties etc., shall be indicated separately.

5) Commissioning spares are those spares which are required at the time of commissioning and shall be recommended (as per bidders experience) and quoted by bidder.

6) The above items shall be quoted as per tender specification (spec no. PY51280_Rev 00). Responsibility of ensuring correctness & completeness of scope of supply as per spec. requirement solely lies with bidder.

7) Unpriced price bid format indicating as quoted against each item shall be submitted duly signed & stamped along with technical offer by bidder as a token of concurrence that prices would be submitted in this format only. The technical offer shall be liable for rejection in case if un-priced price bid format is not submitted or any modification is carried out in price bid format.

8) In case the systems/equipment are being supplied from outside India, reputed Third Party Inspection like Llyods or equivalent has to be considered and the charges should be included in the Main offer. For those bidders who are supplying from India, such third party inspection charges need not be considered and same will be arranged by BHEL/BHEL nominated inspection agency.

ANNEXURE-4 : CHECKLIST FOR THE OFFER
[For Technical Specification, PY 51280, Rev00]

Sl.No:	Description	Enclosed(Yes/No)
1.	Bidder to confirm that offered Items(as per Annexure-3, Price-Bid format) are in line with BHEL tender specification PY-51280 & its Annexures.	
2.	Documents submitted duly filled up with bidder's signature & stamp along with the offer a) Signed and stamped copy of Job spec. b) Completely filled Checklist for the offer (Annexure-4) along with the documents mentioned in checklist. c) Unpriced "price-bid format" (Annexure-3) d) Signed and stamped copy of Annexure-7, MDL (Master Doc. Schedule)	
3.	Special requirements: <u>Bidder to furnish confirmation against each point.</u>	
	a) Bidder to conform compliance with Annexure-1: P&ID for Sewage Treatment Plant enclosed with Technical specification, Doc. No. PY 51280.	
	b) Following are considered in bidders scope of supply: • Counter Flanges at skid terminal point • Foundation Bolts • Commissioning Spares list as per bidders recommendation • Special Tools and Tackles • Control Panel for operation of Centrifuge skid	
	c) Functional test shall be carried out at vendor works	
4.	Bidder shall ensure that any other requirements not specified in Technical Specification, however the same are required for process shall be considered by bidder in their offer. Additional price during details engineering shall not be entertained. Bidder to confirm.	
5.	Bidder has raised pre-bid clarifications in Annexure-5 enclosed with BHEL tender specification PY-51280. Bidder to confirm	
6.	All other requirements except for the deviation brought out under deviation list, have been taken into consideration.	
7.	As per Cl. No. 3.1 of tender Specification, Doc. No. PY 51280, all required cables, Polyelectrolyte Dosing, Feed Pumps to Centrifuge Skid, civil works are excluded from Bidder's Scope of Supply. Bidder to Confirm.	
8.	As per Cl. No. 3.1 of tender Specification, Doc. No. PY 51280, vibrational dampener shall be provided along with the centrifuge	

	skid and the same are considered in bidder's offer. Bidder to Confirm.	
9.	As per S.No. 12 of Technical Datasheet for Centrifuge Skid (Annexure-2) of Tender Specification, Motor Shall be of IE-3 Energy Efficiency. Bidder to Confirm.	
10.	Un priced "price bid format" submitted:- Un priced "price bid format", clearly indicating all the applicable items are quoted, and not applicable items are not quoted.	
11.	Inspection & testing:- All the inspection and testing requirements shall be as per approved Quality Assurance Plan. Bidder to Confirm.	
12.	Vendor list: For sub vendor items, Bidder to confirm compliance with vendor list enclosed as per Annexure-8.	
13.	Master Document List (MDL): Bidder to confirm that all the documents figuring in MDL as per Annexure- 7 of Technical Specification PY 51280 shall be submitted during detailed engineering.	
14.	Deviation list Attached (Yes/No) along with Bidders Offer.	
15.	Completely filled Technical Datasheet for Centrifuge Skid(Annexure-2) is submitted along with bidders offer. Bidder to confirm.	
16.	Bidder in their offer has considered standard painting specification. Bidder to confirm.	
17.	Bidder to confirm compliance with Quality Assurance Plan enclosed as Annexure-9 with Technical Specification, Doc. No. PY 51280.	
18.	If Centrifuge Skid is supplied from outside India, Seaworthy packing shall be considered by Bidder and the same is in Bidders scope. Bidder to confirm.	
19.	If Centrifuge Skid is supplied from outside India, inspection charges for TPI(Third Party Inspection) shall be in Bidders Scope. However Skid is supplied within India, TPI charges shall be in Purchaser's scope. This is as per Annexure-3, Price Bid Format enclosed with Technical Specification, Doc. No. PY 51280. Bidder to confirm.	

SIGNATURE: _____

NAME : _____

DESIGNATION: _____

COMPANY: _____

DATE: _____

ANNEXURE-5: PRE-BID QUERIES FORMAT
[For Technical Specification, PY 51280, Rev00]

Sl. No.	Section / Part/Subsection	Page No.	Clause No.	Bid Specification	Bidder's Query	Purchaser's Reply

Note: During Preparation of Pre-Bid Queries, Complete Tender Specification Doc. No. PY-51280(along with all Annexures) shall also be referred.

Annexure-7(Master Document List)												
PROJECT: 4.5 MLD SEWAGE TREATMENT PLANT												
PO NO.												
S.No.	Category	Drg./ Doc. Name	Vendor Doc. No.	SCHEDULE DATE OF SUBMISSION	Rev.0		Rev.1		Rev.2		Status	Remarks
					vendor submission	BHEL reply	vendor submission	BHEL reply	vendor submission	BHEL reply		
1.0 Mechanical												
1.	A	Design Calculations		Within 2 weeks of placement of Purchase Order.								
2.	A	GA Drawing of skid		Within 2 weeks of placement of Purchase Order.								
3.	I	Foundation Details		Within 2 weeks of placement of Purchase Order.								
4.	A	BOM of skid		Within 6 weeks of placement of Purchase Order.								
5.	A	Technical Datasheet of skid		Within 6 weeks of placement of Purchase Order.								
6.	A	Motor Datasheet		Within 6 weeks of placement of Purchase Order.								
7.	A	Painting Specification		Within 6 weeks of placement of Purchase Order.								
8.	I	List of Commissioning spares		Within 8 weeks of placement of Purchase Order.								
9.	I	Recommended List of 2 Yrs spares		Within 8 weeks of placement of Purchase Order.								
10.	I	Sub vendor list		Within 4 weeks of placement of Purchase Order.								
2.0 Erection Documents												
1.	I	QAP of Skid		Within 8 weeks of placement of Purchase Order.								
2.	I	Inspection and Testing Procedure		Within 8 weeks of placement of Purchase Order.								
3.0 Erection Documents												
1.	I	Erection Documents										
2.	I	Storage & preservation procedures										
4.0 Dispatch Documentation												
1.	A	Packing List										
7.0 Final Documentation												
1.	I	Draft of O&M Manual for Engg. Review										
2.	A	Final O&M Manual(17 Hard Copies as per Tender Spec)										
3.	I	Final O&M Manual(In Cd 04 Nos)										

Note: Above documents are required as a minimum and bidder shall propose any other additional required design documents during detail engineering.

Annexure-8: Sub Vendor List

	Item	Vendor Name
1	LT MOTORS(SAFE AREA)	SIEMENS INDIA LTD SECBAD.
		GE T&D INDIA LIMITED
		ABB INDIA LIMITED, HYD
		KIRLOSKAR ELEC.CO.LTD
		LAXMI HYDRAULICS PVT. LTD.
		BHARAT BIJLEE LTD, MUMBAI
		CROMPTON GREAVES

Note: Any item which are not figuring in the vendor list, bidder may follow their own standard list.

However all the credentials of such vendors shall be submitted for BHEL review and approval.



ANNEXURE-9: TYPICAL MANUFACTURING QUALITY PLAN

MQP. NO.:

PROJECT ENGINEERING & SYSTEMS
DIVISION BHEL,
RC PURAM, HYD-502032

PO NO:
PROJECT:
ITEM: **CENTRIFUGE SKID**
BHEL TECH SPEC:

REV NO:

DATE:

PAGE 1 OF 2

SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY				REMARKS
										P	W	V		

1.0 RAW MATERIALS & BOUGHT OUT ITEMS

1.1	Material check(main Bowl Parts)	Chemical+ mechanical analysis	MAJOR	MATERIAL CONFIRMITY	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	MTC	√	2	-	1	100% PMI for SS materials
1.2	GEAR BOX	Technical requirement	MAJOR	VISUAL	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	Inspection Report	√	2	-	1	
1.3	MOTOR	ROUTINE TEST	MAJOR	VISUAL	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.		√	2	-	1	
									√	2	--	1	

2.0 FINAL INSPECTION & TESTING

2.1	Function Test, vibration measurement, noise measurement, balancing, thickness of layer measurement	Technical parameters	MAJOR	VISUAL, measurement, test	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	INSPECTION REPORT	√	2	1	--	
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LEGEND: P: PERFORM, W: WITNESS, V: TEST CERTIFICATE REVIEW. INDICATE 1 FOR BHEL / BHEL NOMINATED INSPECTION AGENCY& 2 FOR VENDOR/SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT /CHARACTERISTIC UNDER P, W & V COLUMNS. * FOR ITEMS MARKED ✓ (TICK) IN COLUMN 'D', TEST CERTIFICATES SHALL BE SUBMITTED TO BHEL FOR RECORDS.

PREPARED BY

APPROVED BY

APPROVED BY

VENDOR'S SIGNATURE

BHEL QA SIGNATURE

CUSTOMER'S SIGNATURE & STAMP

		ANNEXURE-9: TYPICAL MANUFACTURING QUALITY PLAN						MQP. NO.:					
								REV NO:		DATE:			
		PROJECT ENGINEERING & SYSTEMS DIVISION BHEL, RC PURAM, HYD-502032				PO NO: PROJECT: ITEM: CENTRIFUGE SKID BHEL TECH SPEC:				PAGE 2 OF 2			
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY			REMARKS
										P	W	V	
2.2	Dimension check	Dimension	MAJOR	measur ement	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	INSPECTION REPORT	√	2	1	--	
2.3	Centrifuge control & VFD-Functional Test	Technical parameters	MAJOR	TEST	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	INSPECTION REPORT	√	2	-	1	
2.4	Spares	Make/model/BOM	MAJOR	visual	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	INSPECTION REPORT	√	2	-	1	
3.0 PRESERVATION & PACKING													
3.1	COMPLETE ASSEMBLY	PACKING & PRESERVATION	MAJOR	PACKIN G	100%	Approved Datasheet/ Approved Drawing/ Tech. spec.	Approved Datasheet/ Approved Drawing/ Tech. spec.	PACKING LIST	√	2	-	1	

NOTE:-

1. This MQP should be read along with specification (latest revision), approved drawings & approved data sheet.
2. Drawing/data sheet shall prevail over quality plan for contradiction if any between quality plan and drawing/specification.
3. All test certificates/reports reviewed and certified by TPI/BHEL shall be submitted to BHEL as documentation package.

LEGEND: P: PERFORM, W: WITNESS, V: TEST CERTIFICAT REVIEW. INDICATE 1 FOR BHEL / BHEL NOMINATED INSPECTION AGENCY& 2 FOR VENDOR/SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT /CHARACTERISTIC UNDER P, W & V COLUMNS. * FOR ITEMS MARKED ✓ (TICK) IN COLUMN 'D', TEST CERTIFICATES SHALL BE SUBMITTED TO BHEL FOR RECORDS.	PREPARED BY	APPROVED BY	APPROVED BY	
	VENDOR'S SIGNATURE	BHEL QA SIGNATURE	CUSTOMER'S STAMP	SIGNATURE &

TD-201 Rev No. 00 Form No.		PRODUCT STANDARD PROJECT ENGINEERING & SYSTEMS DIVISION HYDERABAD	ANNEXURE
			Rev No. 00
			Page 1 of 3
COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED, It must not be used directly or indirectly in any way detrimental to the interest of the company.	QAP GUIDELINES & FORMAT (ANNEXURE -) The QAP format and guidelines for filling up the format shall be used by vendor for preparation and submission of QAP after order placement. Note : 1. Typical /Indicative /Standard QAP(s) for equipment /package attached is reference document and to use by successful bidder in future for preparation and submission of QAP for BHEL /CUSTOMER approval. 2. No deviation to reference document is acceptable.		

Form No.	 HYDERABAD	PRODUCT STANDARD PROJECT ENGINEERING & SYSTEMS DIVISION HYDERABAD	ANNEXURE
			Rev No. 00
			Page 2 of 3
<u>GUIDELINES TO VENDORS FOR PREPARATION OF QUALITY ASSURANCE PLAN</u> - QAP shall be made in landscape mode on A4 size paper as per the format enclosed. Font size shall be minimum 10. - Each page of QAP shall contain the following information. - Vendor's name & address. - Customer: BHEL, Hyderabad. - Project. - BHEL Product Standard Number/revision number as referred in P.O. - BHEL Purchase Order Number & Date. - Product as per P.O. description. - QAP Number (unique and shall not repeat)/revision number/date. - Page number and number of pages - QAP shall contain four parts / stages as follows. - Raw materials and bought out items. - In process Control / Inspection. - Final assembly, Inspection & Testing. - Painting, preservation & packing. - Under 'Component', indicate name of the component (say casing, rotor, pressure gauge, etc). - Under 'Characteristics', indicate appropriately (say chemical analysis, mechanical properties, NDT (UT,DP etc.), hydrostatic test, calibration check etc.) - Under 'Class', indicate minor, major or critical depending on the importance of characteristic. - Under 'Type of check', indicate appropriately (say chemical, mechanical, UT, DP etc.) - Under 'Quantum of check', indicate appropriately (say 100%, 10%, sample, per melt, per heat, all pieces etc.) - Under 'Reference document' and 'Acceptance norms', appropriate National & International standards, BHEL standards, approved drawing references etc. should be indicated. It is not correct to mention as "Vendor's internal standards or Vendor's standard practice etc.". If vendors' internal standards are referred, same shall be in line with BHEL Spec. indicated in the P.O. These may require review & approval by our Engineering dept. - Under 'Format of record', indicate appropriately supplier's test certificate, calibration certificate, lab report, inspection report etc. - Please refer 'Agency' in QAP format. Under P: Perform, W: Witness, V: Verify Indicate against each characteristic 1: (BHEL CQS/Nominated inspection agency), OR 2: (Vendor / Sub vendor)			
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Ref. Doc			

Form No.	 HYDERABAD	PRODUCT STANDARD PROJECT ENGINEERING & SYSTEMS DIVISION HYDERABAD	ANNEXURE
			Rev No. 00
			Page 3 of 3
Ref. Doc	Note: Performing agency is normally vendor or his sub vendor (Legend 2). Where witness points are indicated in specification, P.O., Drawing etc., for such operations, under Witness (W) column use 1. Under 'Verify' column, use code 1. 12. Under 'D' please put (☐ Tick) against each characteristic where vendor proposes to submit test certificate/report etc. OR as required as per BHEL Specification. 13. Vendor's signature & stamp should be available on each page of QAP. 14. Vendor should read the BHEL Product Standard thoroughly and QAP should be made only inline and relevant to the Specification & Approved Drawings. 15. The following operations/characteristics/check points may be included (AS APPROPRIATE) a) Visual check b) Dimensional check c) Mechanical and Chemical properties. d) Surface preparation before painting (by chemical cleaning, sand blasting, shot blasting etc. as the case may be.) e) Painting check for shade, Dry Film Thickness (DFT), Adhesion/ peel off test etc. f) Check for correctness for all components mounted as per General arrangement Drawing, Bill Of Materials (BOM), etc. for range, rating, make, color, size, location as per GA, quantity, label description including tag nos., annunciator facia, loose components, accessories, spares etc. g) Verification of test certificate for protection class for the enclosures. h) Mechanical functioning of switches. i) Continuity of earthing and provision of earth points. j) Colour coding of wiring, size, tightness & dressing of wiring. k) Review of test certificates of assembled items, raw materials, internal test reports etc. l) Witness of functional checks, which may include mechanical run & electrical run, H.V.test, IR measurement, Electrical and Mechanical tests etc. m) PQR, WPS, Welder Qualification Record, welding records (fit up, DP) etc. n) Material identification (for punch marks of serial numbers, Heat No, Melt No, Inspector's stamp etc.) o) Hydraulic Pressure Test, Pneumatic Pressure Test, Liquid Penetration Examination and other Non Destructive Tests. p) Tests on Galvanised items (Visual, Hammer Test, Knife Test, Thickness, Pierce Test (Copper sulphate test), Hydrogen evaluation test, Stripping test (for Mass of Zinc coating) q) All tests as per BHEL Product Standard & approved drawings including Type tests and Routine tests on individual items and on System as a whole. r) Packing and Preservation. 16. QAP Format enclosed.		

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VENDOR'S NAME & ADDRESS:			MANUFACTURING QUALITY PLAN						QP. NO.:				
			CUSTOMER: BHEL, HYDERABAD – 32.			BHEL P.O.NO.:			REV NO:		DATE:		
			PROJECT:			P.O.DATE:			PAGE 1 OF 1				
			PRODUCT:			BHEL SPEC:							REV:
SL NO	COMPONENTS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	* D	AGENCY P W V			REMARKS
1.0	RAW MATERIALS & BOUGHT OUT ITEMS												
2.0	INPROCESS INSPECTION												
3.0	FINAL INSPECTION & TESTING												
4.0	PRESERVATION & PACKING												

VENDOR TO NOTE: THIS FORMAT IS IN MICROSOFT WORD. HEADER & FOOTER SHALL BE AVAILABLE IN EACH PAGE OF QP. QP SHALL BE IN LANDSCAPE & A4 SIZE ONLY. FONT SIZE SHALL BE MIN 10. VENDOR SHALL SIGN & STAMP IN EACH PAGE OF QP. LOI REF. & DATE ARE NOT ACCEPTABLE. P.O.NO. & DATE SHALL BE INDICATED. QP NO. SHOULD BE UNIQUE AND SHALL NOT REPEAT. ALL THE TESTS / CHECKS INDICATED IN THE BHEL SPEC. SHALL BE INDICATED IN THE QP.

LEGEND: P: PERFORM, W: WITNESS, V: VERIFICATION. INDICATE 1 FOR BHEL CQS (OR BHEL NOMINATED INSPECTION AGENCY) & 2 FOR VENDOR/SUB VENDOR AS APPROPRIATE AGAINST EACH COMPONENT /CHARACTERISTIC UNDER P, W & V COLUMNS. * FOR ITEMS MARKED ✓ (TICK) IN COLUMN 'D', TEST CERTIFICATES SHALL BE SUBMITTED TO BHEL FOR RECORDS.	PREPARED BY	APPROVED BY	APPROVED BY
	VENDOR'S SIGNATURE & STAMP	BHEL QA SIGNATURE & STAMP	CUSTOMER'S SIGNATURE & STAMP