S.No	Description
	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.
13.4	**SPECIAL TOOLS & TACKLES:**
	Special tools & tackles required for the entire equipment to disassemble, assemble or maintain the units, shall be included in the quotation and furnished as part of the initial supply of the machine. Bidder as per his proven practice shall decide list of special tools & tackles. When special tools are provided, they shall be packed in separate boxes with lifting lugs and marked as "Special Tools for (tag / item number)."Each tool shall be stamped or tagged to indicate its intended usage. Levers and eyebolts for the removal of parts to be serviced shall be submitted with special tools.
14.0	**PERFORMANCE GUARANTEE**
	All performance tests for Recirculation pumps shall be carried out in accordance with the approved procedure in line with latest international codes/standards. 1) Bidder shall furnish Performance guarantee for the design, manufacture, material, safe and trouble-free operation of the Recirculation pump and its accessories 2) Capacity and head of the pump to be guaranteed. 3) All the wear parts of the pump shall be guaranteed for a minimum wear life of not less than 14000 hrs. 4) Noise level-≤85 dB (A) at 1m horizontal distance from equipment/enclosures and 1.5m above operating floor is to be guaranteed. 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. 6) Acceptance tests to be carried out as per the procedure defined by the bidder that shall be submitted for BHEL/ NTPC approval. 7) 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.

S.No	Description
15.0	**BID EVALUATION CRITERIA FOR POWER CONSUMPTION:**
1.	**POWER GUARANTEE :-** Bidder to specify the guaranteed Shaft power per Pump operating at the duty point in their offer.(i.e. the guaranteed power consumption-GPC)
2.	**BID EVALUATION CRITERIA FOR POWER CONSUMPTION:** Power consumption quoted by bidder shall be as minimum as possible. Base value for Shaft power for the designated Recirculation pump= Lowest value of the GPC offered by the bidders In case, Guaranteed Shaft power offered by the bidder exceeds the base value, his bid price will be loaded for excess power consumption as per the formula given below. Adjustment factor for excess power consumption in USD = (GPC-BV) X PL X 12 No's of Working pumps GPC- Guaranteed Shaft Power Consumption quoted by bidder in KW per pump BV- Base Value for Shaft Power Consumption PL- Power **Loading @ USD 3272** /KW (Exchange rate on the date of bid opening will be considered for evaluation)
16.0	**LIQUIDATED DAMAGES FOR POWER CONSUMPTION**
	If actual shaft 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 per pump = (APC-GPC) X P X 12 No of working pumps. Where, • GPC- Guaranteed Shaft Power Consumption quoted by bidder in KW per pump • APC- Actual Shaft Power Consumption in KW • P- **Penalty @ USD – 3272 /KW**
17.0	**WARRANTY/DEFECT LIABILITY**
1.	The Bidder warrants that the equipments/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 Defect Liability Period shall be 24 months from the date of supply or 18 months from the date of commissioning, whichever first occurs. If during the Defect Liability

S.No	Description
	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..
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 include supply and filling of all lubricants, grease, and filters if applicable 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.
2.	Detailed specifications for the lubricating oil, grease, gases, servo fluids, control fluids, including item 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 Recirculation pumps - 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 BHEL 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.

S.No	Description
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 a minimum requirement, the following information shall be furnished to fully describe the scope of work and services offered. Duly filled-in Technical Data sheets (Annexure II) and guarantee schedule furnished under Annexure-III. a. PID diagram b. Performance curve c. Terminal point details. d. GA drgs indicating dimensional data with civil loads and pocket details. e. Rotor GD_2 (kg-m2) f. Torque Vs Speed curve g. Calculation of Motor rating, Bearing capacity and selection of coupling h. Bill of material along with material and code i. Overall space and headroom requirement with details of handling during Erection, operation & maintenance of the equipment. j. Erection, Operation & Maintenance manual with lubrication schedule k. Procedure for shop / site performance tests l. Time schedule for delivery. m. Quality Assurance Plan. n. Make of all bought out items. o. Deviation list p. Spares list q. Hoist / Crane requirement. r. Reference list of similar projects executed. s. List of proposed makes and vendors t. Training program and schedule for BHEL/ NTPC Personnel u. Equipment maintenance schedules

S.No	Description
	The above documents are required for proper evaluation purpose 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 with requirements specified under **Annexure-V**. However, as minimum the following shall be Submitted. a. Duly filled technical datasheet. b. Warranted performance curves. c. General arrangement drawings indicating dimension and civil loading details. d. Foundation Drawing . e. Motor Data f. Recommended repair procedure etc. g. Operation and maintenance manuals h. Any unique installation instructions shall be noted on the submitted drawings or be provided as a separate document prior to the submission of the Operation and Maintenance Manual. i. Erection schedule and component list. j. Successful Bidder shall submit Calculation for HT Motor power requirement for sizing HT Motor within 2 weeks from the date of ordering. k. The characteristic curves of Recirculation pumps shall be provided along with the documents. These shall be identical and uniform for all the pumps. The pumps shall be designed for optimum power consumption and should not fall under surge point between the operating range. l. The following characteristic curves of the pump shall be submitted: i. Flow v/s Head ii. Flow v/s NPSH iii. Flow v/s Efficiency iv. Flow v/s power consumption v. Torque vs. speed curve for Motor selection The system-resistance Point at different loads shall be indicated in the above performance curves. 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.

S.No	Description
	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. Bidder in soft and hard copy forms must furnish all necessary GA drawings, sections, sub-assembly drawings, specifications of main, sub components, and necessary set of operation & maintenance manual as asked by NTPC. For all documents softcopy format shall be searchable pdf, however in addition all drawings, diagrams like P&IDS 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, and 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. However all the engineering related information shall be furnished in soft form to **BHEL**.

22.0 ANNEXURES

ANNEXURE-I (PROVENNESS CRITERIA)

QUALIFYING REQUIREMENTS FOR EQUIPMENTS/SYSTEMS

The Bidder 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:

Slurry Recirculation Pumps for the Wet Limestone based Flue Gas Desulphurization (FGD) System offered by the Bidder shall be only from such manufacturer(s) who has previous experience of manufacturing and supplying the respective equipment(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 plant for a period not less than one year as on Techno-Commercial BID opening date.

`**Type and Rating for Qualification (Bidder shall refer the document enclosed).**

Name of Equipment	Type of Equipment	Application	Equipment Rating
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 as Minimum.

Bidder shall offer and supply only the type of the above equipment(s) for which the he himself is qualified.

Bidder to furnish end-user performance certificate to meet the above qualification requirement.

ANNEXURE – II- TECHNICAL DATA SHEET

Sl. No	Description			Data
1.0	**GENERAL**			
	a. Client		:	BHEL-Ranipet
	b. Project		:	Bongaigaon 3X250MW
	c. Ultimate Customer		:	NTPC
	d. Location		:	Bongaigaon, Kokrajhar, Assam, India
	e. Service		:	Continuous
	f. Installation		:	Inside steel structure shed with roof side sheeting
	g. No of pumps for each unit		:	3W + 1S
	h. Total number of pumps for all units		:	12 No's
2.0	**MANUFACTURER DETAILS**			
	a. Model		:	Bidder to provide
	b. Type		:	Centrifugal
	c. Type of Driver		:	
3.0	**OPERATING CONDITION**			
	Medium to be handled		:	Gypsum slurry
	Maximum solid particle size		:	150 mesh (140 microns)
	Normal solid particle size, d 50		:	325 mesh (43 micron) and fine particles
	Concentration of chloride		:	<25,000 ppm (Max)
	Vapor Pressure at Pump		:	0.196 kg/cm^2
	Viscosity of slurry		:	0.01 Pa. s
	Concentration of slurry		:	30(% by weight)
	Specific gravity of slurry		:	1.202@design and 1.201@ guarantee point
	pH of slurry		:	4-8
	Slurry Temperature			59.2 deg.C (normal) & 70 deg.C (max)
4.0	**PERFORMANCE DATA**			
	a. Capacity	m^3/hr	:	10100
	b. Head	M	:	16.7
	c. Pump efficiency	%	:	Bidder to Provide
	d. BKW Normal / Maximum	KW	:	Bidder to Provide
	e. Motor rating	KW	:	Bidder to Provide
	f. Motor Speed	Rpm	:	Bidder to Provide
	g. Differential pressure (inclusive of losses)	Kg/cm2	:	Bidder to Provide
	h. Speed Maximum/ Normal/Minimum	rpm	:	Bidder to Provide
	i. Noise level	dB(A)	:	Bidder to Provide
	j. Performance curve		:	Bidder to Provide

4.0	**CONSTRUCTION DATA**		
	a. Manufacturer	:	Bidder to Provide
	b. Model No.	:	Bidder to Provide
	c. Suction Rating / Size	:	Bidder to Provide
	d. Discharge Rating / Size	:	Bidder to Provide
	e. Type of rotor	:	Bidder to Provide
	f. Size of rotor Dia mm	:	Bidder to Provide
	g. Journal bearing: Type / Size:	:	Bidder to Provide
	h. Thrust bearing: Type / Size:	:	Bidder to Provide
	i. Bearing cooling required	:	Yes / No - Bidder to confirm
	j. Cooling water required	:	Bidder to confirm the quantity
	k. Type of drive	:	With Gearbox
	l. Shaft seal	:	Mechanical
	m. Size / Code	:	Bidder to Provide
	n. Type of coupling	:	Bidder to Provide
	o. Service factor	:	Bidder to Provide
	p. GD^2 at drive shaft end	:	Bidder to Provide
	q. Rotation viewed from coupling end	:	Clock wise / Counter clock wise
	r. Coupling type	:	Bidder to confirm
	s. Coupling make	:	Bidder to Provide
	t. Base plate common to pump, bearing housing, coupling	:	Yes / No - Bidder to confirm
	u. Total weight kg	:	Bidder to Provide
	v. Maximum Erection weight kg	:	Bidder to Provide
5.0	**MATERIALS**		
	a. Casing	:	Bidder to Provide
	b. Impeller	:	Bidder to Provide
	c. Shaft	:	Bidder to Provide
	d. Shaft Seal	:	Bidder to Provide
	e. Base frame	:	Bidder to Provide

SIGNATURE OF BIDDER ----------

NAME ----------

DESIGNATION ----------

ANNEXURE III- SCHEDULE OF GUARANTEES

Sl. No	Description			Data
1.	Rated capacity of pump	m^3/hr.	:	
2.	Total head at design capacity	M	:	
3.	Guaranteed shaft power consumption at rated capacity & head	kW	:	
4.	Noise level at a distance of 1.0 meter from the equipment at site in all directions and 1.5 m above operating floor	dB(A)	:	
5.	Maximum vibration (peak to peak amplitude at site)	microns	:	
6.	Equipment Availability (%)		:	
7.	Pump Efficiency (%)		:	
8.	Life of Pump wear parts including, Casing liners, bearing etc	Hours	:	≥14000 hours operation

SIGNATURE OF BIDDER ----------

NAME ----------

DESIGNATION ----------

ANNEXURE – IV- 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 ----------

ANNEXURE -V

A) DOCUMENTS TO BE SUBMITTED ALONG WITH THE OFFER:

Sl. No.	Description	No of copies With proposal
1.	Clause wise Compliance to Specification	1
2.	Un-Price Sheet	1
3.	Annexure I –Qualification documents along with Attachment 3K	1
4.	Annexure II - Data Sheet	1
5.	Annexure III- Schedule of Guarantee	
6.	Annexure IV- Deviation List	
7.	Annexure VI, Annexure VII	
8.	Performance curve(flow vs total pressure, flow vs efficiency, flow vs power consumption, Torque vs speed for motor selection)	1
9.	Approximate weight of each skid	1
10.	Anchor Plan & Civil foundation Loading details	
11.	Required Electric power & other Utility List	1
12.	General Assembly Drawing	1
13.	Pump and Motor Sizing Calculation	1
14.	Cross-sectional Drawing	1
15.	Sub-Vendor List	1
16.	Spare List (Mandatory, Recommended)	1
17.	Start-up & Commissioning Spares	1
18.	List of Special Tools	1
19.	Delivery Schedule	1
20.	Test Arrangement & Test procedure	1
21.	T-S curve	1
22.	Hoist/Crane requirement	1
23.	P & I Diagram	1
24.	Catalogue	1

B) DOCUMENTS TO BE SUBMITTED AFTER CONTRACT:

Sl. No.	Description	No of copies After award of contract	Delivery Time
1.	Utility Consumption	1	2 weeks after contract
2.	HT Motor sizing calculation	1	2 weeks after contract
3.	Foundation Data including Anchor plan	1	2 weeks after contract
4.	Performance curve(flow vs total pressure, flow vs efficiency, flow vs power consumption, Torque vs speed for motor selection)	2	2 weeks after contract
5.	Assembly drawings of each equipment	1	1 month after contract
6.	Exploded view, Cross section detail drawing	1	1 month after contract
7.	Data Sheet	1	2 weeks after contract
8.	Lubricating oil list	1	2 months after contract
9.	Special tools list	1	2 months after contract
10.	Installation and assembly procedure	1	4 months after contract
11.	Inspection and Test Procedure	1	1 month after contract
12.	Inspection & Test record	1	In 2 weeks after test
13.	Inspection Certificate	1	In 2 weeks after test
14.	Sub vendors List	1	2 weeks after contract
15.	Manufacturing Schedule	1	2 weeks after contract
16.	Progress report	1	Every month
17.	Proforma Packing List	1	2 months prior to shipping
18.	Approximate weight of each skid	1	2 months after contract
19.	Required Electric power	2	2 weeks after contract
20.	Pump and Motor Sizing Calculation	1	2 weeks after contract
21.	Material Test Certificates	2	In 2 weeks after test
22.	Pre Commissioning Check List	2	4 months after contract
23.	Quality Plan	4	1 month after contract

Sl. No.	Description	No of copies After award of contract	Delivery Time
24.	Operation and Maintenance Manual	• 10 hardcopies and 5 electronic copies in English	4 months after contract
25.	Spare List (Mandatory, Recommended)	1	1 month after contract
26.	Start-up & Commissioning Spares	2	1 month after contract
27.	List of Special Tools	1	1 month after contract
28.	Delivery Schedule	1	2 weeks after contract
29.	Test Arrangement & Test procedure	2	1 month after contract
30.	T-S curve	2	2 weeks after contract
31.	P & I Diagram	2	2 weeks after contract
32.	Catalogue	2	2 weeks after contract

SIGNATURE OF BIDDER ----------

NAME ----------

DESIGNATION ----------

ANNEXURE-VI

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 ----------

ANNEXURE-VII

INSPECTION & TESTING

Refer to all clauses for Inspection & testing requirements. Sample QP enclosed

SIGNATURE OF BIDDER ----------

NAME ----------

DESIGNATION ----------

ANNEXURE-VIII

Instruments Specification

Refer to instruments specification enclosed.

SIGNATURE OF BIDDER ----------

NAME ----------

DESIGNATION ----------

ANNEXURE-IX

Painting Scheme

Service Condition : Exposed to atmosphere
Surface Preparation : Power Tool Cleaning to St3 (SSPC-SP3)

Coating Procedure :

Sl No.	Coat	Paint	No. of Coats / DFT	Shade	Total DFT µm (min)
1.	Primer coat	Zinc phosphate Primer	2 Coat/DFT= 30µm per coat	--	100 Microns
2.	Intermediate Coat	--	--	--	
3.	Finish coat	2K Epoxy paint or equivalent / DFT= 20µm per coat --	2	RAL 5015	

Colour Code : Shade RAL5015

Note:-

- The above painting schedule is tentative. Painting shall be carried out as per end customer approved painting schedule, which will be informed during the contract stage.
- Corrosion protection, coating and galvanizing, painting shall be taken care by the bidder.
- Rust preventive paint after inspection at shop floor before dispatch shall be in bidder's scope.

SIGNATURE OF BIDDER ----------

NAME ----------

DESIGNATION ----------

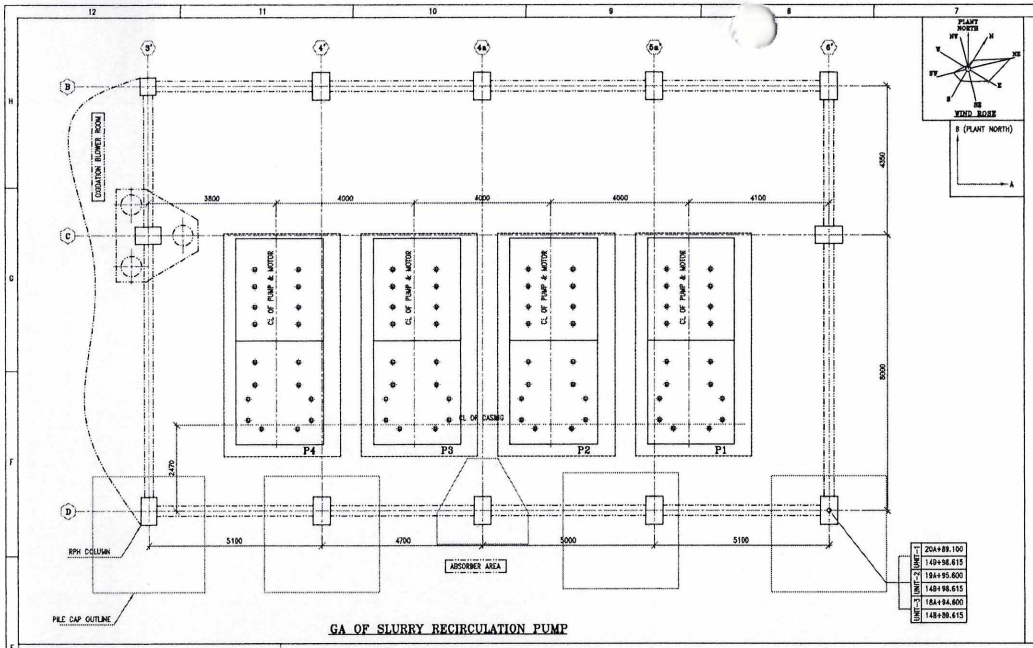
ANNEXURE-X: List of Mandatory Spares

Sl. No.	Description	Quantity
1.	Impeller Assembly	3 no. of each type
2.	Casing Liners (where replaceable liners are provided)	1 no. of each type
3.	Complete Casing	1 no. of each type
4.	Seals	3 no. of each type
5.	Bearings	1 no. of each type
6.	Motor-Pump Coupling	1 no. of each type

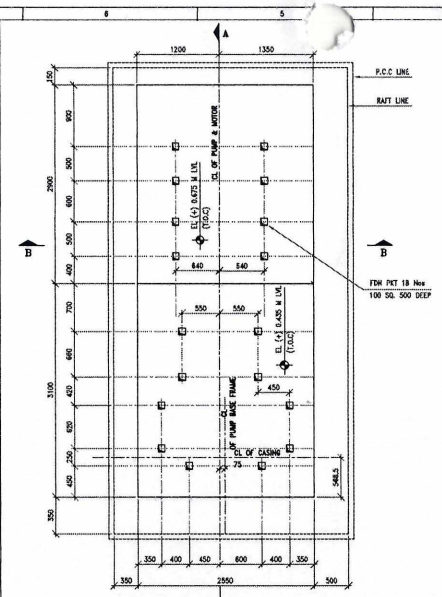
SIGNATURE OF BIDDER ----------

NAME ----------

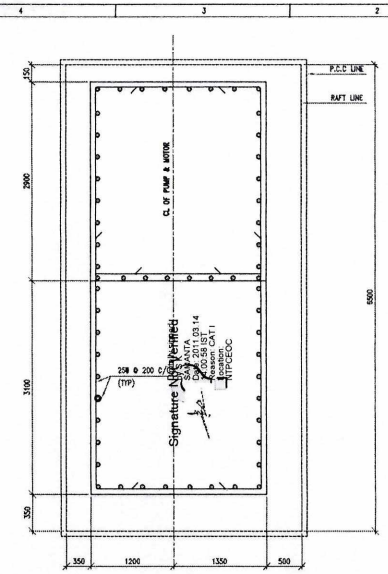
DESIGNATION ----------



GA OF SLURRY RECIRCULATION PUMP

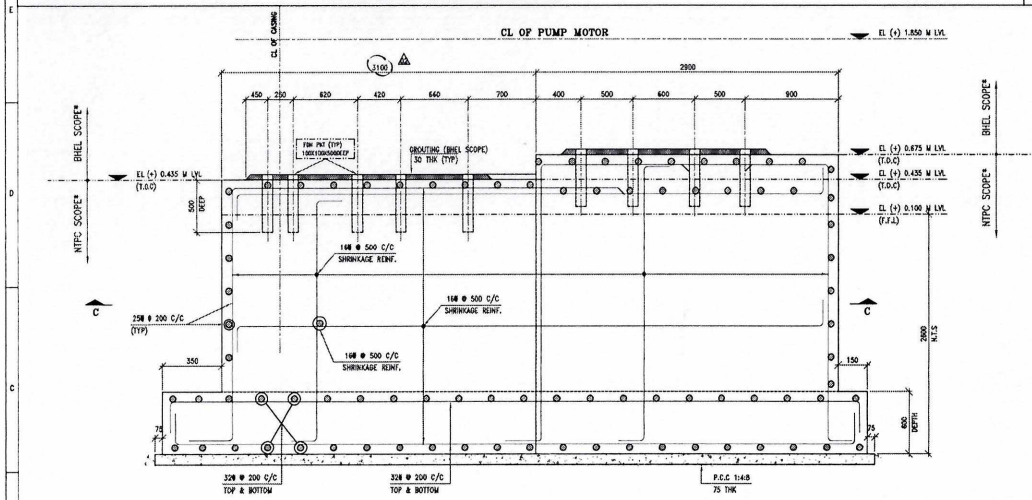


FOUNDATION PLAN FOR P1, P2, P3, P4



SECTION C-C

(SHRINKAGE REINF. NOT SHOWN FOR CLARITY)



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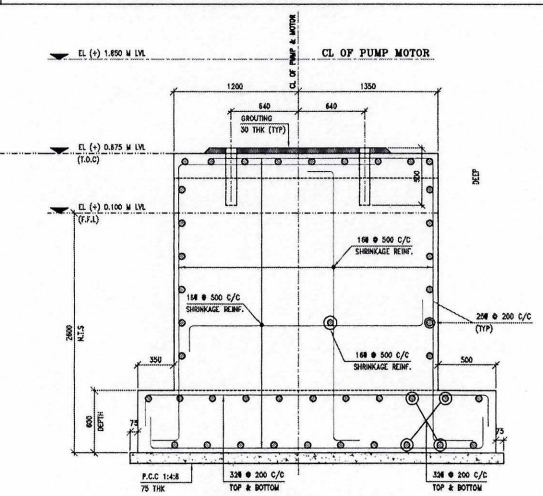
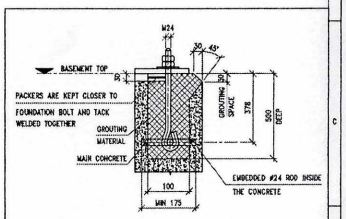


SECTION B-B



TYP. GROUTING DETAIL

REFERENCE DRAWINGS:

ENDG. REFERENCE DWGS:

1. 4610-101-03RP-PVW-F-018/R01 – KEY PLAN OF WET LIME STONE FGD SYSTEM
2. 4610-101-03RP-PVW-F-019/R06 – LAYOUT OF ABSORBER AREA & RECIRCULATION PUMP HOUSE (UNIT #1 & 2)
3. 4610-101-03RP-PVW-B-058/R05 – GA OF SLURRY RE-CIRCULATION PUMP
4. 4610-101-03RP-PVC-B-039-SH-1 – RECIRCULATION PUMPHOUSE – PILE LAYOUT
5. 4610-101-03RP-PVC-B-039-SH-2 – RC PUMP HOUSE PILECAP & PEDESTAL DETAILS

CONSTRUCTION REFERENCE DWG:

1. 4610-101-03RP-PVC-B-039-SH-1 – ABSORBER RECIRCULATION PUMP HOUSE & OXIDATION BLOWER BLDG. – PILING LAYOUT
2. 4610-101-03RP-PVC-B-039-SH-2 – ABSORBER RECIRCULATION PUMP HOUSE & OXIDATION BLOWER BLDG. – PILECAP & PEDESTAL
3. 4610-101-03RP-PVC-B-039-SH-3 – ABSORBER RECIRCULATION PUMP HOUSE & OXIDATION BLOWER BLDG. – ARCHITRATURAL PLAN & SECTIONS
4. 4610-101-03RP-PVC-B-039-SH-4 – ABSORBER RECIRCULATION PUMP HOUSE & OXIDATION BLOWER BLDG. – STRUCTURAL GA
5. 4610-315-POC-C-0052 – GENERAL NOTES ON CONCRETE WORKS

NOTES:

1. ALL DIMENSIONS ARE IN MM AND LEVELS ARE IN METRES UNLESS NOTED OTHERWISE.
2. EL(±)0.00M CORRESPONDS TO RL(+)50.92M.
3. GRADE OF CONCRETE SHALL BE M-30 CONFORMING TO IS:456
4. THE GRADE OF REINFORCEMENT STEEL SHALL BE Fe 500 /TMT CONFORMING TO IS:1786.
5. LAP AND ANCHORAGE SHALL BE 50 TIMES THE DIA OF BAR.
6. FOR GENERAL NOTES ON CONTRETE WORKS REFER DRG. NO.4610-315-POC-C-0052
7. LAP LENGTH SHALL BE 50 TIMES DIA OF SMALLER BAR. LAPS SHALL BE STAGGERED ALTERNATIVELY.
8. MINIMUM CLEAR COVER TO MAIN REINF. OF RAFT AS FOLLOWS:
   TOP – 50MM; BOTTOM – 50MM; SIDES – 40MM.
9. CONTRACTOR HAS TO FURNISH THE QUANTITIES FOR THE VARIOUS ITEMS OF WORK COVERED IN THIS DRG. ALONGWITH BACK UP CALCULATIONS (REFER CL:14.01.02(a) OF PART-A OF NTPC TECH SPEC).
10. REINFORCEMENT BARS SHALL BE SUITABLY ADJUSTED TO CLEAR FOUNDATION POCKETS.
11. ALL FOUNDATION POCKETS SHOULD BE GROUTED WITH THE ITEM 14(a) OF TECH SPEC(BHEL SCOPE)
12. IF ANY LOOSE SOIL IS MET AT FOOTING LEVEL IT SHOULD REPLACED WITH P.C.C 1:4:8.
13. EXCAVATION
    (I) ALL EXCAVATION WORK & BACK FILLING SHALL BE DONE AS PER ITEM NO. 1 OF BOQ
    (II) EXCAVATION MATERIALS REQUIRED FOR BACK FILLING SHALL BE CARRED UPTO A LEA OF 150M AND STACKED AS PER INSTRUCTIONS OF ENGINEER
    (III) SURPLUS EXCAVATED EARTH SHALL BE DISPOSED OFF WITHIN THE PLANT BOUNDARY AS DIRECTED BY THE ENGINEER

* SCOPE:
MACHINE FOUNDATION IS IN THE SCOPE OF NTPC.
GROUTING & ERECTION OF MACHINE IS IN THE SCOPE OF BHEL.
THE EXTENT OF GROUT SHALL BE AS PER MACHINE SPEC/DRG.

14. CONCRETE IN FOUNDATION BLOCK SHALL PREFERABLY DONE IN SINGLE POUR (NO CONSTRUCTION JOINTS).
15. ALL ANCHOR BOLTS AND ASSOCIATED PIPE SLEEVES, MOTOR MOUNTING PLATES, FOUNDATION BOLTS, PACKERS, HANDRAIL, EMBEDDED PLATES, GROUTING ETC. ARE IN THE SCOPE OF BHEL. HOWEVER THESE SHALL BE FIXED/ERECTED BY NTPC CIVIL CONTRACTOR. BHEL HAS TO CHECK AND CLEAR THE LOCATION, LEVEL AND ORIENTATION OF EMBEDMENT BEFORE CONCRETING.

RCC QTY:	180.0 M^3
STEEL QTY:	12.0 Tonnes

REV NO.	ZONE	PARTICULARS	BY	APPD.	DATE
2		REVISED AS PER NTPC COMMENTS	D.M.S	S.S.N	01.03.11
1		REVISED AS PER CUSTOMER COMMENTS.	D.M.S	S.S.N	31.12.10

WORK ORDER No	15023
SCALE	1:75MMTS
DRAWN	D.M.S 07.10.2010
CHECKED	R.R.N 07.10.2010
DESIGNED	R.R.N 07.10.2010
APPROVED	N.R.N. 07.10.2010

PROJECT : BONGAIGOAN – 3 X 250 MW FLUE GAS DESULPHURIZATION SYSTEM

CUSTOMER DWG No: 4610-101-03RP-PVC-B-044 REV. 02

NTPC Limited
(A GOVERNMENT OF INDIA UNDERTAKING)
ENGINEERING DIVISION, NOIDA U.P.

BHARAT HEAVY ELECTRICALS LTD.
UNIT: BOILER AUXILIARIES PLANT, RANIPET – 632 406.
DRAWING NUMBER: BHE-BAP-C10-1747 REV. 02

DUCON TECHNOLOGIES, INC.
"SERVING THE INDUSTRY SINCE 1936"
FARMINGDALE, NEW YORK 11735, U.S.A.
(631) 694-1700 FAX (631) 420-1696

DRAWING TITLE : RC PUMP HOUSE – FOUNDATIONS FOR SLURRY RE-CIRCULATION PUMP

CETHAR CONSULTING ENGINEERS (P) LTD.,
TEMPLE TOWER, NANDANAM, CHENNAI – 600035, TAMIL NADU.

DRAWING NUMBER: CCE-15023-050-CV-1-060 SHEET No. SH 1 OF 1 REV. 02