BHARAT HEAVY ELECTRICALS LIMITED
PROJECT ENGINEERING MANAGEMENT, NOIDA

Date-19-Jul-19

CORRIGENDUM- 04

PROJECT	**:**	**3×800 MW PVUNL PATRATU TPP Phase-I**
PACKAGE	**:**	**PRETREATMENT PLANT**
ENQUIRY NO	**:**	**E-6223/2019 Dated. 10.06.2019**
SUBJECT	**:**	**TECHNICAL AMENDMENT**

Type of Corrigendum			
Technical Corrigendum -	☑	Commercial Corrigendum -	☐

Please note the following:

1. **Technical Amendment-1 (of 5 Pages) attached with this corrigendum shall be treated as part of NIT.**

All the other terms and conditions of the tender enquiry shall remain unchanged. All the bidders are requested to quote accordingly.

Yours faithfully,

For and on behalf of BHEL

SHARAD CHANDRA

Digitally signed by SHARAD CHANDRA
DN: c=IN, o=BHARAT HEAVY ELECTRICALS LIMITED, ou=BHEL / PS-PEM- Noida, postalCode=201301, st=Uttar Pradesh, 2.5.4.20=089a1601 8da25cac45670e8f7d15d00fb0f21f752b7d5defc65e3d0da378946fd, cn=SHARAD CHANDRA
Date: 2019.07.19 15:58:44 +05'30'

Sharad Chandra
Dy. Manager

	AMENDMENT TO TECHNICAL SPECIFICATION FOR PRE TREATMENT PLANT (PT PLANT) 3X800 MW PATRATU STPP EXT.PH-I	BHEL DOCUMENTS NO.: PE-TS-434-158A-A001 REV. NO. 01 AMENDMENT NO # 1 DATE: 19-Jul-19 Page **1** of **4**

The following modifications with respect to Technical Specification for PRE TREATMENT PLANT, BHEL's Technical specification no PE-TS-434-158A-A001 REV. NO. 01 shall apply.
Bidder to note that existing clauses as appearing in the specification stands deleted and clauses as mentioned in "Modified to" column shall be applicable and complied by the bidder.

MODIFIED CLAUSES.

Sl no.	Vol. No.	Section/ Description	Clause no	Page no	Existing	Modified to
1.	IIB	SECTION – C1/ SPECIFIC TECHNICAL REQUIREMENT-MECHANICAL	41.	26 of 1565	Four (4) nos. Alum Dosing Pumps [4 nos. (3W + 1S) for PT-clarifiers of ACW system], [2 nos. (1W + 1S) for PT-clarifiers of DM system] & [2 nos. (1W + 1S) for Lamella Clarfiers] with Piping, valves & instrumentation etc.	Four (4) nos. Alum Dosing Pumps [4 nos. (3W + 1S) for PT-clarifiers of ACW system] & Two (2) nos. Alum Dosing Pumps [2 nos. (1W + 1S) for PT-clarifiers of DM system] with Piping, valves & instrumentation etc.
2.	IIB	SECTION – C1/ SPECIFIC TECHNICAL REQUIREMENT-MECHANICAL	8.0 (9)	29 of 1565	Potable water pipe to colony shall be terminated near plant boundary (approximate co-ordinate 324821.96 E, 2615656.60 N). The pressure at Terminal Point will be 1 Kg/cm2 with respect to the elevation FGL.	Potable water pipe to colony shall be terminated near plant boundary (approximate co-ordinate 324821.96 E, 2615656.60 N). The pressure at Terminal Point will be 2 Kg/cm2 with respect to the elevation FGL.
3.	IIB	SECTION – C1/ SPECIFIC TECHNICAL REQUIREMENT-MECHANICAL	11.0	29 of 1565	**PERFORMANCE GUARANTEE TEST** The Performance guarantee test shall be as per Annexure-III/Section-C1A.	**PERFORMANCE GUARANTEE TEST** The Performance guarantee test shall be as per Annexure-III/Section-C1
4.	IIB	SECTION – C1/ SPECIFIC TECHNICAL REQUIREMENT-MECHANICAL	12.0	29 of 1565	**DESIGN CRITERIA AND TECHNICAL DETAILS** In addition to the requirements of Section C & D the following shall also be complied under scope of this specification. The P&ID for Pre Treatment Plant (**Dwg.No.- PE-DG-434-158-A001**) is enclosed herein in this section for bidders compliance. The material of construction specified in data sheet-A are minimum requirements and material of construction for other components not specified shall be similarly selected by the bidder for intended duty which shall be subject to BHEL / Customer approval during detail engineering without any commercial & delivery implication to BHEL. The other technical requirement shall be as per Technical Requirement of water treatment system. Please refer Section-D1 of this specification.	**DESIGN CRITERIA AND TECHNICAL DETAILS** In addition to the requirements of Section C & D the following shall also be complied under scope of this specification. The P&ID for Pre Treatment Plant (**Dwg.No.- PE-DG-434-158-A001**) is enclosed herein in this section for bidders compliance. The material of construction specified in data sheet-A are minimum requirements and material of construction for other components not specified shall be similarly selected by the bidder for intended duty which shall be subject to BHEL & Customer approval during detail engineering without any commercial & delivery implication to BHEL. The other technical requirement shall be as per General Technical Requirement of water treatment system/plant. Please refer Section-D of this specification.

5.	IIB	SECTION – C1/ SPECIFIC TECHNICAL REQUIREMENT-MECHANICAL	32.	32 of 1565	Additional Clause	The capacity of all equipment shall be based on system requirement & design criterion specified but not less than the specified values wherever indicated in Technical specification.
6.	IIB	SECTION – C1/ SPECIFIC TECHNICAL REQUIREMENT-MECHANICAL	ANNEXURE-V-MANDATORY SPARES/S.No.14	291 of 1565	Ventilation System	Stands Deleted.
7.	IIB	SECTION – C1/ SPECIFIC TECHNICAL REQUIREMENT-MECHANICAL	ANNEXURE-V-MANDATORY SPARES	293 of 1565	**Part C (Mandatory Spares for Clarifier)**	Annexure-A
8.	IIB	SECTION – C1/ DATASHEET-A	13.	300 of 1565	SUPERNATANT COLLECTION SUMP	Stands Deleted.
9.	IIB	SECTION – C1/ DATASHEET-A	14.3	300 of 1565	Capacity-As Required	Capacity (Each)-As per system requirement & design criterion specified but not less than 5cum/hr.
10.	IIB	SECTION – C1/ DATASHEET-A	15.3	300 of 1565	Design Capacity (each) Net Output-170 Cum/hr for PW System & 100 Cum/hr for PW System	Design Capacity (each) Net Output-190 Cum/hr for DM System & 100 Cum/hr for PW System
11.	IIB	SECTION – C1/ DATASHEET-A	15.4	300 of 1565	Maximum Flow (each)- 170 Cum/hr + 2% for PW System & 100 Cum/hr + 2% for PW System	Maximum Flow (each)- 190 Cum/hr + 2% for DM System & 100 Cum/hr + 2% for PW System.
12.	IIB	SECTION – C1/ DATASHEET-A	23.0	303 of 1565	**MOC and type of the pumps shall be as per the following details.**	**MOC and type of the pumps shall be as per the following details.** The capacity of all pumps shall be based on system requirement & design criterion specified but not less than the specified values. The pump head shall be selected based on system & design criterion specified in Technical specification.
13.	IIB	SECTION – C1/ DATASHEET-A	23.5	303 of 1565	Supernatant transfer pumps	Stands Deleted.

14.	IIB	SECTION – C2/ SPECIFIC TECHNICAL REQUIREMENT-ELECTRICAL	-	306 of 1565	TECHNICAL SPECIFICATION FOR DM PLANT/ CW TREATMENT/ PRE TREATMENT PLANT/EFFLUENT TREATMENT PLANT/ GAS CHLORINATION PLANT/SEWAGE TREAMENT PLANT (ELECTRICAL PORTION)	TECHNICAL SPECIFICATION FOR PRE TREATMENT PLANT (ELECTRICAL PORTION)
15.	IIB	SECTION – C3/ SPECIFIC TECHNICAL REQUIREMENT- C&I	10)	355 of 1565	All the transmitters supplied by Bidder shall be rack & enclosure mounted. The transmitter racks shall be in Bidder's scope of supply (Please refer the detailed specification sheet under clause 5.00.00, Local Instrument Enclosure & Racks). All transmitters shall be HART compatible.	All the transmitters supplied by Bidder shall be rack & enclosure mounted. The transmitter racks shall be in Bidder's scope of supply (Please refer the detailed specification sheet under clause 5.00.00, Local Instrument Enclosure And Racks under Instrument Installation Drawing). All transmitters shall be HART compatible.
16.	IIB	SECTION – C3/ SPECIFIC TECHNICAL REQUIRMENT-C&I)	MANDATORY SPARES	505 To 508 of 1565	MANDATORY SPARES	MANDATORY SPARES- Refer Annexure-V/Section-C1 of the technical specification. Bidder to consider all applicable spares, in case any spares is not applicable the relevant equivalent spares shall be provided by bidder within quoted price.
17.	IIB	SECTION – C4/ SPECIFIC TECHNICAL REQUIRMENT-CIVIL)	5.09.00	603 of 1565	Sewerage System	Stands Deleted.
18.	IIB	SECTION – D/ GENERAL TECHNICAL REQUIREMENT OF WATER TREATMENT SYSTEM/PLANT	1.03.03, 1.03.04, 1.03.05	1283 To 1285 of 1565	Waste Service Water Treatment System, Coal Handling Plant Run-Off Water Treatment System, Central Monitoring Basin	Stands Deleted.
19.	IIB	SECTION – D/ GENERAL TECHNICAL REQUIREMENT OF WATER TREATMENT SYSTEM/PLANT	3.09.00	1296 of 1565	Separation of Plant drain (effluents) from Storm water drain	Stands Deleted.
20.	IIB	SECTION – D/ GENERAL TECHNICAL REQUIREMENT OF WATER TREATMENT SYSTEM/PLANT	**3.10.00**	1296 of 1565	All liquid effluent shall be collected and treated to meet the latest effluent norms prescribed by SPCB/CPCB. The treated effluents conforming to the prescribed standards only shall be recirculated and reused within the plant and the complete plant shall be designed as a Zero Liquid Discharge (ZLD) Plant.	Stands Deleted.

<table>
<tr>
<td>21.</td>
<td>IIB</td>
<td>SECTION – D/ GENERAL TECHNICAL REQUIREMENT OF WATER TREATMENT SYSTEM/PLANT (CONT.)</td>
<td>10.02.00 (3)</td>
<td>1347 of 1565</td>
<td>
<table>
<tr><th>DISCRIPTION</th><th>PT-DM System (Ion Exchange)</th><th>PT-DM System (UF+RO+MB)</th><th>PT-Potable water System</th></tr>
<tr><td>Design flow per gravity filter (net output)</td><td>170 m^3/h</td><td>220 m^3/hr</td><td>100 m^3/hr</td></tr>
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<table>
<tr><th>DISCRIPTION</th><th>PT-DM System (Ion Exchange)</th><th>Not Applicable</th><th>PT-Potable water System</th></tr>
<tr><td>Design flow per gravity filter (net output)</td><td>190 m^3/h</td><td>Not Applicable</td><td>100 m^3/hr</td></tr>
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<td>22.</td>
<td>IIB</td>
<td>SECTION – D/ GENERAL TECHNICAL REQUIREMENT OF WATER TREATMENT SYSTEM/PLANT (CONT.)</td>
<td>10.02.00 (4)</td>
<td>1347 of 1565</td>
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<table>
<tr><th>DISCRIPTION</th><th>PT-DM System (Ion Exchange)</th><th>PT-DM System (UF+RO+MB)</th><th>PT-Potable water System</th></tr>
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<td>23.</td>
<td>IIB</td>
<td>SECTION – D/ GENERAL TECHNICAL REQUIREMENT OF WATER TREATMENT SYSTEM/PLANT (CONT.)</td>
<td>10.05.00 C,D & E</td>
<td>1363 to 1367 of 1565</td>
<td>Waste Service Water Treatment System, Treated/Service Water System. Coal Handling Plant Run-Off Water Treatment System</td>
<td>Stands Deleted.</td>
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<tr>
<td>24.</td>
<td>IIB</td>
<td>SECTION – D/ GENERAL TECHNICAL REQUIREMENT OF WATER TREATMENT SYSTEM/PLANT (CONT.)</td>
<td>19.00.00</td>
<td>1400 to 1405 of 1565</td>
<td>WASTE WATER RO</td>
<td>Stands Deleted.</td>
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ANNEXURE-A

MANDATORY SPARES FOR CLARIFIER

Part C S.no.	Item Description	Quantity
I	**CLARIFIERS : PT-CW System**	1 no.
1	Turbine drive motor	
II	**CLARIFIER: PT-DM System**	1 no.
1	Turbine drive motor	1 no.
2	Lime Slurry Transfer Pump motor	1 no.
3	Lime Dosing Pumps motor– PT System	1 no.
4	Alum Dosing Pump motor : PT – CW System	1 no.
5	Alum Dosing Pump motor : PT – DM System	1 no.
6	Alum Dosing Pump motor – LET (for tube settlers) System	1 no.
7	Chlorine Water Booster Pump motor – CW System	1 no.
8	Chlorine Water Booster Pump motor – PT System	1 no.
9	Absorbant circulation Pump motor –Chlorine Leak Absorption system	1 no.
10	Vertical Sump Pumps – Filter Back wash water pump motor	1 no.
11	Vertical Sump Pumps – Sludge recirulation pump motor	1 no.
12	Agitator Assembly with Motor & Gear Box – Lime Slaking Tank	1 no.
13	Agitator Assembly with Motor & Gear Box – Lime Preparation Tank – PT System	1 no.
14	Agitator Assembly with Motor & Gear Box – Alum Preparation Tank	1 no.
15	Agitator Assembly with Motor & Gear Box – Coagulant aid Tank – PT Plant.	1 no.
16	Air Blowers motor for Gravity Filters	1 no.
17	Vertical (wet pit) Pumps- Potable water pump motor	1 no.
18	Vertical (wet pit) Pumps- Waste Service water transfer pump motor	1 no.
19	Vertical (wet pit) Pumps- Coal Decanted water pump motor	1 no.
20	Treated Service Water Pump motor	1 no.
21	Service Water Pump motor	1 no.
22	Air Pre-heater Wash Water Pump motor	1 no.
23	Final Effluent Disposal Pump motor	1 no.
24	HVAC Pump motor	1 no.
VENTILATION SYSTEM		
Electric motor		1

Notes:

1) Identification: Each spare shall be clearly marked and labelled on the outside of the packing with its description. When more than one spare part is packed in single case, a general description of the contents shall be shown on the outside of such case and a detailed list enclosed. All cases, containers and other packages must be suitably marked and numbered for the purpose of identification.