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CORRIGENDUM-3

Dated: 06.11.2023

The amendments and clarifications regarding Bidding document no. 32/CE/PLG/DCRTPP/FGD-251 (Tender ID: 2023_HBC_308422_1) for Wet Limestone based FGD System Package for DCRPP, Yamunanagar (2x300MW) in respect of queries raised by the bidders are attached as Annexure-A (Amendments) and Annexure-B (Clarifications) respectively.

All other terms and conditions of the bidding documents shall remain the same.

Executive Engineer/Planning-II,
For Chief Engineer/Planning,
HPGCL, Panchkula.

ANNEXURE-A

FGD System Package for DCRTPP,Yamunanagar (2x300 MW)
Bidding Document No: 32/CE/PLG/DCRTPP/FGD-251
Amendment No: 32/CE/PLG/DCRTPP/FGD-251-Amndt.-01

Sr. No	SPECIFICATION REFERENCE				For	Read as
	SECTION / PART	SUB SECTION	CLAUSE NO.	PAGE NO.		
1.	SECTION-III	-	10	Page no 13 & 14 of 16	Work Schedule for FGD package for HPGCL	Add following para in the notes of Clause 10.1, Section-III (BDS): "To carry out the interconnection work and installation of gate / dampers in the existing system, the vendor shall get 20-25 days shut down window (within the duration provided for equipment erection in the work schedule), with 15 days prior information to carry out the job. In case some work not completed, then vendor will be allowed to complete the installation of Booster Fan inlet gate for connecting to main FGD flue gas path within three-five (3-5) days whenever next opportunity for plant shutdown (i.e. it will not be a planned shutdown) arises. Engineering, procurement, supplies of material required for ducts connection work to be done on priority".
2.	VI / PART-B	SUB-SECTION-I-M1	12.02.00	34/52	All the pipes handling slurry shall be provided with replaceable rubber lining of proven quality. The Contractor can provide slurry pipes of size lower than 300 NB made up of FRP material (silicon carbide coating on slurry exposed surface) if it has previous experience of providing the same. Outer surface of the pipes should be fire retardant.	All the pipes handling slurry shall be provided with replaceable rubber lining of proven quality. The Contractor can provide slurry pipes size up to 400NB made up of FRP material as per ASTM 2310 and testing as per ASTM B2583 (silicon carbide coating on slurry exposed surface) if it has previous experience of providing the same. Outer surface of the pipes should be fire retardant.
3.	VI / PART-B	SUB-SECTION-I-M1	5.03.03	16/52	Oxidation nozzles / spargers shall have a minimum redundancy of 10% or as per the contractor's proven practice whichever is maximum.	Oxidation nozzles/spargers shall have a minimum redundancy as per the contractor's proven practice and justification to be provided during detailed engineering.
4.	VI / PART-B	SUB-	13.01.00	34/52	Two (2) Process water Storage tanks (each tank catering to the	Two (2) Process water Storage tanks (each tank catering to

Sr.	SPECIFICATION REFERENCE					
		SECTION-I-M1			requirements of all the units operating at Design Point) along with two numbers of 2x100 % Booster water pumps, if required, (Each pump catering to the process water requirements of all the units operating at Design Point) along with all necessary piping, valves, control & instrumentation to feed the clarified water shall be provided by the Contractor. Process water Storage level shall be automatically controlled at operating level by controlling the water flow from the makeup water from terminal point. The process water storage tank shall be designed to store 30 minutes of total maximum water required for the entire FGD process (including absorber system and mist eliminator washing system, limestone grinding and slurry preparation system and gypsum dewatering system, etc.) for the units operating at Design point. All the process water storage tanks shall be designed, fabricated, erected and tested in accordance with the IS:803, latest edition. Additional Corrosion allowance of 1.50 mm on the minimum tank shell thickness as calculated by IS:803, latest edition shall be provided by the bidder. Tanks shall be made from IS:2062 quality mild steel plates of tested quality. The tank shall receive water supplied (as identified in Subsection titled “Terminal points” in Part-A of Technical Specification) by Employer. The Tanks shall be provided with drain, manholes, over flow& inlet level control valves etc.	the requirements of all the units operating at Design Point) along with two numbers of 2x100 % Booster water pumps, if required, (Each pump catering to the process water requirements of all the units operating at Design Point) along with all necessary piping, valves, control & instrumentation to feed the clarified water shall be provided by the Contractor. Process water Storage level shall be automatically controlled at operating level by controlling the water flow from the makeup water from terminal point. The process water storage tank shall be designed to store 15 minutes of total maximum water required for the entire FGD process (including absorber system and mist eliminator washing system, limestone grinding and slurry preparation system and gypsum dewatering system, etc.) for the units operating at Design point. All the process water storage tanks shall be designed, fabricated, erected and tested in accordance with the IS:803, latest edition. Additional Corrosion allowance of 1.50 mm on the minimum tank shell thickness as calculated by IS:803, latest edition shall be provided by the bidder. Tanks shall be made from IS:2062 quality mild steel plates of tested quality. The tank shall receive water supplied (as identified in Subsection titled “Terminal points” in Part-A of Technical Specification) by Employer. The Tanks shall be provided with drain, manholes, overflow & inlet level control valves etc.
5.	VI / PART-B	SUB-SECTION-I-M1	5.01.00	14/52	(iv) The slurry recirculation pumps shall have motor driven knife gate valve at pump suction and discharge side. In order to optimize power consumption of FGD system at part load operation, Bidder to provide atleast one slurry recirculation pump preferably lower level with Variable Frequency Drive (VFD).	The slurry recirculation pumps shall have motor /pneumatic driven knife gate valve at pump suction and motor /pneumatic operated butterfly valves at discharge side as per the standard practice of bidder. In order to optimize power consumption of FGD system at part load operation, Bidder to provide atleast one slurry
6.	VI	PART-B SUB-SECTION-I-	5.01.00 iv	14 of 52		

Sr.	SPECIFICATION REFERENCE					
		M1				recirculation pump preferably lower level with Variable Frequency Drive (VFD).
7.	Sec-VI PART - A	III-A5	3.04.00	6 of 7	Complete dust extraction system for control of fugitive dust in gypsum storage shed.	Complete dust suppression system with plain water (fogging nozzle type) for control of fugitive dust in gypsum storage shed, complete with pumps, water tanks, drives, hoisting arrangements, ducting, piping, valves etc. electrical, accessories, civil, structural and architectural works and dust extraction system at direct truck loading zone in gypsum storage shed.
8.	SECTION-VI PART A	SUB-SECTION-III A1 (FGD)	4.01.04	4 of 10	2x100% electric driven, single stage, integrally geared, single or dual vane centrifugal type / positive displacement (Helical lobe) type with VFD drive, oxidation blowers complete with integral gearbox, lube oil system, instrumentation and accessories. The blower will be used for supplying a variable volume of air to the absorber reaction tank.	2x100% electric driven i. single stage, integrally geared, single or dual vane centrifugal type OR ii. Multistage Centrifugal type with VFD Drive OR iii. positive displacement (Helical lobe/ screw) type with VFD drive, Oxidation blowers complete with lube oil system, instrumentation and accessories. The blower will be used for supplying a variable volume of air to the absorber reaction tank.
9.	Sec-VI PART - B	I-M1	7.04.03	26 of 52	The complete frame of the filter and all parts in contact with gypsum shall be made with corrosion resistant material.	The complete frame of the filter and all parts in contact with gypsum shall be made with corrosion resistant material i.e. Corten Steel or SS304.
10.	SECTION-VI PART-A	SUB-SECTION-III A1 (FGD)	3.01.05	3 of 10	Limestone slurry piping to each absorber, along with recirculation lines, all isolation and control valves.	Limestone slurry piping to each absorber, along with recirculation lines, all isolation and control valves. On/Off type Diaphragm valves in Limestone circulation lines to be

Sr.	SPECIFICATION REFERENCE					
						provided instead of pinch control valve.
11.	SECTION-VI PART B	SUB-SECTION-I-M1(FGD)	10.01.00	32 of 52	All the slurry tanks (Slurry Tanks, Filtrate Tank, Secondary hydro cyclone feed tank, vacuum receiver tank, Waste water Tank, Lime Neutralization tanks etc.) shall be designed, fabricated, erected and tested in accordance with the IS:803, latest edition. Additional Corrosion allowance of 1.5 mm on the minimum tank shell thickness as calculated by IS:803, latest edition shall be provided by the Contractor. Tanks shall be made from IS:2062 quality mild steel plates of tested quality. The tanks shall be of welded construction. Interior surface of the tanks shall be lined with the following: Wastewater tank, Filtrate tank, Secondary hydro cyclone feed tank: Vinyl Ester based flake glass lining of minimum 3 mm thickness. Slurry tanks: Replaceable Chlorobutyl/ Bromobutyl rubber lining of minimum 4 mm thickness The outside surface of the tanks shall be coated with paint as approved by the Em- ployer. Coarse-screen(s) at suction-side of slurry recirculation pumps shall be provided.	All the slurry tanks (Slurry Tanks, Filtrate Tank, Secondary hydro cyclone feed tank, vacuum receiver tank, Waste water Tank, Lime Neutralization tanks etc.) shall be designed, fabricated, erected and tested in accordance with the IS:803, latest edition. Additional Corrosion allowance of 1.5 mm on the minimum tank shell thickness as calculated by IS:803, latest edition shall be provided by the Contractor. Tanks shall be made from IS:2062 quality mild steel plates of tested quality. The tanks shall be of welded construction. Interior surface of the tanks shall be lined with the following: Wastewater tank, Filtrate tank, Secondary hydro cyclone feed tank: Vinyl Ester based flake glass lining/ Polymeric Epoxy of minimum 3 mm thickness. Slurry tanks: Replaceable Chlorobutyl/ Bromobutyl rubber lining of minimum 5 mm thickness. The outside surface of the tanks shall be coated with paint as approved by the Employer.
12.	SECTION-VI PART B	SUB-SECTION-I-M1 (FGD)	5.06.06	18 of 52	…….. Adequate number of viewing ports with flushing devices connected to automatically operating washing system shall be delivered at following locations: (i) upstream of 1st stage (ii) between 1st and 2nd stage (iii) downstream of 2nd stage. (iv) downstream of 3rd stage	The said content in the clause no. 5.06.06, Sub-Section-I-M1 (FGD), Section-VI, Part-B may be treated as deleted.
13.	SECTION-VI PART B	SUB-SECTION-I-M1(FGD)	5.06.24	20 of 52	It should be possible to discharge the absorber sump into the Auxiliary Absorbent tank within 2 hours.	It should be possible to discharge the absorber sump into the Auxiliary Absorbent tank within 4 hours up to pump trip level in both the technologies i.e. spray tower & Jet Bubbling

Sr.	SPECIFICATION REFERENCE					
						type.
14.	SECTION-VI PART B	SUB-SECTION-I-M1(FGD)	7.08.01	30 of 52	The Contractor shall provide an auxiliary absorbent tank, for the unit, sized to contain the complete slurry of one absorber tank at its maximum level equipped with all necessary pumps, valves, piping and controls to transfer the tank's contents back to the absorber to refill the absorber sump It should be possible to discharge the each absorber into the Auxiliary Absorbent tank within 2 hours.	The Contractor shall provide an auxiliary absorbent tank, for the unit, sized to contain the complete slurry of one absorber tank at its maximum level equipped with all necessary pumps, valves, piping and controls to transfer the tank's contents back to the absorber to refill the absorber sump. It should be possible to discharge each absorber into the Auxiliary Absorbent tank within 4 hours up to the suction line of the intended pump. Further, Bidder to provide the portable pumps of suitable capacity to drain the remaining slurry from the tank in max 2 hour into absorber area sump.
15.	PART-A/ SECTION-VI	SUB-SECTION-VI	5.00.00	PAGE 14 OF 16	-	Following are Incorporated under Clause no. 5.00.00 (AUXILIARY POWER CONSUMPTION (PA) FOR EACH PROJECT), PART-A/ SECTION-VI, SUB-SECTION-VI xxiv.) Power consumption for all the equipment's including auxiliaries with single stream operation of limestone handling, crushing and gypsum handling plant as applicable at its guaranteed flow path capacity in T/Hr shall be considered. Loading factor to be considered as 0.25 for limestone handling and crushing plant equipment and 1 for Gypsum handling plant. For APC following equipment shall be considered in general for material handling system: Truck Tippler with Box feeder/Bulk material receiving unit/ /Surface Feeder, Paddle Feeder/Apron Feeder (as applicable), Vibrating feeders, Belt Conveyors and Belt Feeders, Bucket Elevators, Reversible belt feeder/Plough feeder, Travelling tripper, Any other equipment not included under exclusion. Following equipment shall be under exclusion for purpose of

Sr.	SPECIFICATION REFERENCE					
						APC: Lighting, Hoist, Lime Sampling unit, Sump Pumps, Elevators, DS, DE, SW System and Potable water
16.	VI	PART-A SUB-SECTION-III-A1	8.02.00	7 of 10	The contractor shall provide agitators and sump pumps of required capacity in each of this area along with necessary pipes, isolation / control valves etc for pumping back the water in the sump into the respective system. The Interior surface of the Sumps shall be lined with replaceable chlorobuty/bromobutyl rubber lining of minimum 5 mm thickness or with vinlyester based flake glass lining of minimum 3mm thickness.	The contractor shall provide agitator in the sump to agitate the total slurry in the sump and (2x100%) sump pumps of required capacity & head shall be provided in each of this area along with necessary pipes, isolation / control valves etc. for pumping back the slurry / water from the sump into the respective system. The Interior surface of the Sumps and entire connecting trench to sump from various equipment shall be lined with Polypropylene Homogeneous grade (PP-H) minimum 4mm thick plus 2mm FRV (fiberglass with Vinyl Easter resin) or Acid / Alkali Resistant Tiles. The minimum life of lining or AR tiles shall not be less than 5 years.
17.	VI	PART-B SUB-SECTION-I-M1	9.01.00	31 of 52	Contractor shall provide sumps of adequate capacity in the each absorber area, limestone grinding area and gypsum dewatering area for containing the over flow from the respective systems. Acid resistant tiles or other suitable material of standard thickness as per bidders proven practice shall be provided as liner. Contractor shall make arrangements for pumping the drainage water back to the respective system with vertical sump pumps. Agitators shall also be provided to avoid settling of solids in the sump. Adequate redundancy in line with the standard practice adopted by the bidder shall be provided. This Clause covers the design, manufacture and erection of all vertical sump pumps for the FGD system.	Contractor shall provide sumps of adequate capacity in the each absorber area, limestone grinding area and gypsum dewatering area for containing the over flow from the respective systems. Polypropylene Homogeneous grade (PP-H) minimum 4mm thick plus 2mm FRV (fiberglass with Vinyl Easter resin) or Acid / Alkali Resistant Tiles shall be provided as liner. The minimum life of lining or AR tiles shall not be less than 5 years Contractor shall make arrangements for pumping the drainage water back to the respective system with vertical sump pumps. Agitators shall also be provided to avoid settling of solids in the sump. Adequate redundancy in line with the standard practice adopted by the bidder shall be provided. This Clause covers the design, manufacture and erection of all vertical sump pumps for the FGD system.
18.	VI	PART-B	3.02.05	6 of 52	In addition to the base offer as described above, the bidder may	May be read as deleted.

Sr.	SPECIFICATION REFERENCE					
		SUB-SECTION-I-M1			also submit an alternate offer for a different material / lining of duct from Absorber outlet to stack, if the bidder has previous experience of the same. The bidder should have supplied a similar design of duct in previous installations for similar application. Bidder shall indicate the applicable price implication for such an alternate offer in the relevant Bid Proposal sheet. The Bidder shall also furnish details of the previous installations of such system and bring out all the technical features of the system proposed. Bidder to note that application of lining material in the ducts shall be carried out under the supervision of designer/manufacturer. Bidder to note that application of lining material in the duct shall be carried out under supervision of Designer/Manufacturer.	
19.	VI	PART-A SUB-SECTION-III-A1	22.02.00	9 of 10	Motorized Guillotine type gates with 2x100% seal air fans shall also be provided at suction & discharge of each Booster Fan. The Gates shall be designed for tight shutoff. The design of the gates shall ensure 99.95% leak tightness without seal air. The gates shall be 100% leak tight with seal air fans under the above conditions.	Motorized Guillotine type gates with 2x100% seal air fans shall also be provided at suction & discharge of each Booster Fan.2x100 % seal air fans common for both the guillotine type gates at suction side and 2x100 % seal air fans common for both the guillotine type gates at discharge side of booster fans are also acceptable. The Gates shall be designed for tight shut-off. The design of the gates shall ensure 99.95% leak tightness without seal air. The gates shall be 100% leak tight with seal air fans under the above conditions.
20.	VI	PART-B SUB-SECTION-I-M1	4.04.00	11 of 52	Fan casing material thickness: Abrasion and wear resistant, high BHN steel having minimum 8.0mm thickness or 12mm mild steel with liner of thickness 10mm (min.) Alternatively, 22 mm thickness casing of mild steel is also acceptable.	**Fan casing material thickness:** Abrasion and wear resistant, high BHN steel having minimum 8.0mm thickness. or 12mm mild steel with liner of thickness 10mm (min.) Alternatively, 20 mm thickness casing of mild steel is also acceptable as per bidder's proven practice.
21.	VI	PART-B SUB-SECTION-I-	7.07.06	29 of 52	1x100% Waste water tank shall be provided which shall be sized for 8 hrs storage of waste water with all the units operating at Design point and no out flow from the tank. The Waste water	1x100% Waste water tank shall be provided which shall be sized for 8 hrs storage of waste water with all the units operating at Design point and no out flow from the tank. The

Sr.	SPECIFICATION REFERENCE					
		M1			Tank shall be complete with Agitator, level transmitters etc. The waste water collection tank shall be of Steel construction with Vinyl Ester based flake glass lining of minimum 3 mm thickness. 2x100% horizontal centrifugal pumps shall be provided for pumping the waste water from waste water tank at required pressure to waste water terminal point as indicated in Sub-section IV, Part A, Section VI of the Technical Specification. The material of Casing and impeller shall be rubber lined Cast Iron (IS:210 Gr FG260). Shaft and Shaft Sleeves shall be Stainless Steel-410.	Waste water Tank shall be complete with Agitator, level transmitters etc. The waste water collection tank shall be of Steel construction with Vinyl Ester based flake glass lining of minimum 3 mm thickness. 2x100% horizontal centrifugal pumps shall be provided for pumping the waste water from waste water tank at required pressure to waste water terminal point as indicated in Sub-section IV, Part A, Section VI of the Technical Specification. The material of Casing and impeller shall be rubber lined Cast Iron (IS:210 Gr FG260). Shaft shall be 410 & Shaft Sleeves shall be of Stainless Steel - 316.
22.	SECTION-VI PART-B	SUB-SECTION-I-M7 (LOW PRESSURE PIPING)	1.03.00	1 OF 17	WILLIAM & HAZEN formula shall be used for calculating the friction loss in piping systems with the following "C" value: (i) Carbon steel pipe 100 (ii) Ductile Iron. 140 (iii) Rubber lined steel pipe 120 (iv) Stainless steel pipe 100	WILLIAM & HAZEN formula shall be used for calculating the friction loss in piping systems with the following "C" value: (i) Carbon steel pipe 100 (ii) Ductile Iron. 140 (iii) Rubber lined steel pipe 120 (iv) Stainless steel pipe 100 (v) Carbon Steel pipe internally lined with Polyurethane/Solvent free epoxy/ Glass flake polyester acrylic polymer 120 (vi)PVC/HDPE/GRP/CPVC/PP/pipes 150
23.	VI-Part A	III-A5	2.01.19	5 of 7	Four (4) numbers of electronic type belt scales (min. one no. on each conveyor feeding to crusher house and conveyor feeding to Limestone bunker at FGD plant) for continuous weighing, complete with all mechanical, electrical, civil, structural works and accessories.	Two (2) numbers of electronic type belt scales (min. one no. on each conveyor feeding to crusher house/bulk storage silo) for continuous weighing, complete with all mechanical, electrical, civil, structural works and accessories.
24.	VI-Part E	Tender Drawings	9944-251-POM-A-005	Limestone Flow Diagram	-	

Sr.	SPECIFICATION REFERENCE					
25.	VI-Part A	III-A5	2.01.24	5 of 7	Service water and potable water system for complete limestone handling plant. Water Pump houses & water tanks for service water, cooling water (as applicable).	Service water and potable water system for complete limestone handling plant. Water Pump houses & water tanks for service water, cooling water (as applicable) and potable water system. Bidder may combine this system with similar system of main plant FGD.
26.	VI-Part A	III-A5	3.05.00	6 of 7	Service water and potable water system for complete gypsum handling plant. Water Pump houses & water tanks for service water, cooling water and potable water system. Common pump house for Limestone handling plant gypsum handling plant is also acceptable.	Service water and potable water system for complete gypsum handling plant. Water Pump houses & water tanks for service water, cooling water and potable water system. Common pump house for Limestone handling plant gypsum handling plant is also acceptable. Bidder may combine this system with similar system of main plant FGD.
27.	VI-Part A	III-A5	3.07.00	6 of 7	Complete ventilation system for gypsum storage shed.	Exhaust fan system for gypsum storage shed.
28.	VI	PART-B SUB-SECTION-I-M1	5.06.23	20 of 52	In case of Spray Tower System, Suction screens shall be installed inside the Absorber vessel to protect the Slurry recirculation pumps. In case Bubbling type, suction strainers shall be installed at the suction line side of Gas Cooling Pumps. The Screens shall be made of made of Alloy 59 /C276 or abrasion resistant FRP/Polypropylene (in case Contractor/Collaborator has proven experience). For the agitators a flushing system for start ups shall be provided.	May be read as: In case of Spray Tower System, Suction screens shall be installed inside or outside the Absorber vessel to protect the Slurry recirculation pumps. In case Bubbling type, suction strainers shall be installed at the suction line side of Gas Cooling Pumps. The suction screen shall be of self-cleaning type. The Screens shall be made of Alloy 59 /C276 or abrasion resistant FRP/Polypropylene (in case Contractor / Collaborator has proven experience). For the agitators, a flushing system for startups shall be provided.

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ANNEXURE-B

FGD System Package for DCRTPP,Yamunanagar (2x300 MW)
Bidding Document No: 32/CE/PLG/DCRTPP/FGD-251
Clarification No: 32/CE/PLG/DCRTPP/FGD-251-Clrf-01

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
	Section	Sub section	Clause	Page			
1.	Section-1,Annexure A, Addendum -I		7	Pdf page 17 of 23	The bidder is required to submit following certificate as Attachment-25 under ITB Clause 8.1.2 along with Part-I (Techno Commercial Bid) that: ____	Specific format with name **Attachment 25** is not given in volume VII, may kindly provide the information required to furnish in form of format.	Firm may submit the requisite undertaking in its letter head (as **Attachment 25),** matter has been provided in the **Addendum-I.**
2.	Section-1, Annexure A, Addendum –I		11	Pdf page 18 of 23	For providing all services i.e. loading, --- Performance Guarantee Tests in respect of all the equipment supplied under the 'Second Contract' and all other services as specified in the Contract Documents.	Please confirm the Third contract will be entered for O&M works	Bidder's understanding is correct.
3.	Section-1, Annexure B,		Note: 2	Pdf page 21 of 23	*This format has been prepared considering single Collaborator/Associate. In case of more than one Collaborator/Associate, this para shall be modified accordingly by the Bidder	We understand that the bidder shall furnish undertaking from multiple QFGDMs and If successful, Bidder can submit DJU from any selected QFDGM of bidder choice at the time of contract, may pls confirm	Bidder may furnish undertaking from multiple QFGDMs. However, bidder has to submit DJU from only one QFGDM, at the earliest but not later than fifteen (15) days from the date of opening of the price bid.

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
	Section	Sub section	Clause	Page			
						And also kindly confirm one QFGDM can collaborate with any no. EPC bidders or QFGDM should exclusively participate with in bid with only one EPC bidder	QFGDM should exclusively participate with only one bidder.
4.	SECTION-II		5.2	Page no 3 of 34	Visit to Project Site(s) under Flue Gas Desulphurisation (FGD) System Package by Bidder is mandatory for the Bidder. The Bidder after prior permission from Employer may visit Project Site during Office hours prior to last date of Techno-commercial Bid submission indicated in IFB. Employer's representatives shall be available at Site. The Bidder shall submit with his Envelope-I (Techno-Commercial) Bid, a duly signed confirmation, that they have visited Project Site (indicating Name of Project Site) and have appraised themselves regarding Site conditions etc.	There is no specific format given in the tender. Hence we will furnish gate pass or site inspection report as proof of site visit.	Bidder may submit confirmation/certification on their letter head that they have visited Project Site (indicating Name of Project Site) and have appraised themselves regarding Site conditions etc.
5.	SECTION-II		10.3	Page no 13 of 33	Price schedules	We request HPGCL to provide the price schedules in excel format	Prices schedules in excel format are available on e-portal i.e. https://etenders.hry.nic.in
6.	SECTION-II		10.7	Page no 17 of 33	Price basis Prices quoted by the Bidder shall be on price firm basis. The contract price shall remain firm during the currency of the contract.	As the raw material price, labor price etc are dynamic and the duration of contract is considerably long, hence kindly provide the price variation for contract price instead of firm price basis. Given the state govt. project references from KPCL and TANGEDCO with price variation clauses.	Provisions of Bidding documents shall prevail.
7.	SECTION-III		10	Page no	Work Schedule for FGD package for HPGCL	Shutdown time frame is not	**Please refer amendment**

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
	Section	Sub section	Clause	Page			
				13 of 16		mentioned. HPGCL to provide a minimum of 30 days shutdown time for hooking up the FGD package with main plant.	**no. 1 issued in this regard.**
8.	SECTION-IV		11.2	Page no 14 of 68	Contract Price The Contract Price shall be adjusted in accordance with provisions ofAppendix-2 (Price Adjustment) to the Contract Agreement	We could not able to find the Appendix 2 in this section, kindly provide the reference details of the same. And also kindly provide other Appendices also specified in the bid documents	Appendix 2 is available at page no 62 of Section-VII, Book 3 of 3. Other Appendices are also available in the relevant section(s).
9.	SECTION-IV		25.2.2	Page no 38 of 68	'If for reasons attributable to the Employer, the Performance Guarantee Test of the Facilities or the relevant part thereof cannot be successfully completed within the period of twelve months from the date of Completion of respective facility, the payment towards Successful Completion of Performance Guarantee Test, shall be released to the Contractor against Bank Guarantee. Such Bank Guarantee shall have initial validity of one (1) year. The Bank Guarantee shall be extended for any subsequent period, if required, such that the same remains valid till the Successful Completion of Performance Guarantee Test.	'If for reasons attributable to the Employer, the Guarantee Test of the Facilities or the relevant part thereof cannot be successfully completed within the period of 3 months from the date of Completion of respective facility, the payment towards Successful Completion of Guarantee Test, shall be released to the Contractor.	Provisions of bidding documents shall prevails.
10.	SECTION-VI, Part A,	sub section-II			General layout plan	Pls provide the layout in autocad format	AUTOCAD drawing of General Layout Plans are being shared with all prospective bidders through email. Further, the same may be obtained from tender issuing authority, if not received.

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
	Section	Sub section	Clause	Page			
11.	SECTION-VI, Part A, sub section-III		1.08.01	Page 4 of 6	The Bidder shall indicate the prices for each & every item (except for items not applicable to the Bidder's design) in the 'Schedule of mandatory spares' whether or not he considers it necessary for the Employer to have such spares.	We will submit the lump sum price of mandatory spares system wise and discipline wise. Submission of price for every items is not possible during bidding stage, we will furnish the break up during post award stage.	Provisions of bidding documents shall prevails.
12.	SECTION-VI, Part A, sub section-III		1.12.01	Page 6 of 6	Bidder has to mandatorily undertake a comprehensive Operation and Maintenance (O&M) for FGD system installed by bidder including supply of spares and consumables required for O&M services with an annual availability of more than 95% from the date of Taking Over of the plant by Owner after completion of initial operation up to two (02) years (definition of initial operation as defined in Part-C of the specification). Bidder must comply for O & M for two (02) years with specified payment philosophy. O & M including the following will be in bidder's scope. 1. Supply of all spares from OEM vendors for two (02) years. 2. Operation and Maintenance staff including O&M supervision staff and labour required for two (02) year	i. Two years of O&M is short duration and it is difficult for contractor to depute manpower power for two years, hence it is requested to remove the O&M from contractor scope ii. In case O&M of Two years mandatorily has to be in contractor scope, kindly remove mandatory spares price from contract price as the spares will be supplied by contractor as part of the O&M contract and separate payment terms applicable as part of the O&M contract. iii. Further we understand that we can use the mandatory spares supplied as part of the contract as free issue from client during Two years O&M contract period.	i. Provisions of bidding documents shall prevail. ii. Provisions of bidding documents shall prevail. iii. Provisions of bidding documents are ample clear. Bidder has to supply all spares on their own during the O&M period of 2 years.
13.	SECTION-VI, Part A, sub section-III – A4		1.01.00	Page 1 of 1	Equipment cooling water system	Understand that the cooling tower not required for cooling the auxiliary cooling water. Pls confirm	HPGCL clarifies that specification requirement shall be considered by the bidder.
14.	SECTION-VI, Part A, sub section-III –		1.01.04	Page 2 of 7	**Limestone Storage and Bunker feeding system** Crushed limestone shall be conveyed to	We understand no limestone storage shed and storage on ground required. Pls confirm	Bidder's understanding is correct.

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
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	A5				limestone storage silos (minimum 2 nos. of identical capacity) via Belt Feeder & Bucket Elevator to store crushed lime stone equivalent to the consumption of minimum 7 days for the all units. The maximum capacity of each limestone silo shall not exceed 2000MT.		
15.	SECTION-VI, Part A, sub section-III –B		1.13.00	Page 4 of 6	Construction Power	We understand that the supply of construction power at one point and supply of construction power for during tenure of the contract is free. Pls confirm	Provisions of bidding documents shall prevail.
16.	SECTION-VI, Part A, sub section-VI		3.00.00 note	Page 6 of 15	Liquidated damages- Performance-25% of the contract value.	We request LD for performance of 10% of the Contract Price shall be considered. And overall LD against performance and Delay shall be 15% of the contract price.	Provision of the bidding documents shall prevail**.**
17.	Section-VII, Book 3 of 3 Appendix-6 to Form of Contract Agreement		2.0	2 of 3	Providing drinking and service water for bidder's……..supply of quality water as per standards.	We request HPGCL to provide construction water free of cost.	Provisions of bidding documents shall prevail.
18.	General				Integration of existing DCS with proposed FGD DCS	Request owner to confirm whether same brand of DCS shall be used in FGD to integrate with plant DCS and to maintain homogeneity in configuration. And also suggest whether same brand VMS shall be used or any VMS can be used.	Provisions of bidding documents shall prevail.
19.	VI / PART-B SUB-		12.02.00	34/52	All the pipes handling slurry shall be provided with replaceable rubber lining of proven	As per the bidder experience with the executed NTPC projects, we	**Please refer Amendment-01 issued in**

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
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	SECTION-I-M1				quality. The Contractor can provide slurry pipes of size lower than 300 NB made up of FRP material (silicon carbide coating on slurry exposed surface) if it has previous experience of providing the same. Outer surface of the pipes should be fire retardant.	recommend to use the slurry pipe sizes up to 400NB made up of FRP material (silicon carbide coating on slurry exposed surface). Please confirm	**this regard.**
20.	VI / PART-B SUB-SECTION-I-M1		5.03.03	16/52	Oxidation nozzles / spargers shall have a minimum redundancy of 10% or as per the contractor's proven practice whichever is maximum.	Please note that we are supplying lance type oxidation air system (one (1) lance for each agitator). 10% margin on oxidation air nozzle is not applicable for our design. Hence, please confirm that the margin for oxidation nozzles will be applicable as per bidder design standard.	**Please refer amendment-01 issued in this regard.**
21.	VI / PART-B SUB-SECTION-I-M1		5.06.10	19/52	The raw gas inlet duct of the absorber shall be equipped with a flushing device of the side walls and the ground, which shall operate continuously as well as intermittently.	Continuous operation of inlet flushing is not possible because of water balance in the absorber. Client to also note that only intermittent is considered in water balance as per Contractor's proven standard.	Bidder to comply the specification requirement.

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
	Section	Sub section	Clause	Page			
22.	VI / PART-B SUB-SECTION-I-M1		13.01.00	34/52	Two (2) Process water Storage tanks (each tank catering to the requirements of both the units operating at Design Point) along with two numbers of 2x100 % Booster water pumps, if required, (Each pump catering to the process water requirements of both the units operating at Design Point) along with all necessary piping, valves, control& instrumentation to feed the clarified water shall be provided by the Contractor. Process water Storage level shall be automatically controlled at operating level by controlling the water flow from the makeup water from terminal point. The process water storage tank shall be designed to store 30 minutes of total maximum water required for the entire FGD process (including absorber system and mist eliminator washing system, limestone grinding and slurry preparation system and gypsum dewatering system, etc.) for the units operating at Design point.	We understand that the combined storage capacity of 2Nos. Process water tank is 30 minutes. Each process water tank will be sized for the storage capacity of 15mins of total maximum water required for the entire FGD process (including absorber system and mist eliminator washing system, limestone grinding and slurry preparation system and gypsum dewatering system, etc.) for the unitsoperating at Design point. Please confirm	**Please refer Amendment-01 issued in this regard.**
23.	VI / PART-E		Tender Drawing 9944-251-POM-A-001		PH and Density measurement absorber sump	Density and PH measurement will be situated in recirculation line from gypsum bleed pumps to absorber as per bidder's standard and proven practice. PH and Density measurement in the absorber sump not possible.	Refer note 1 of the drawing i.e. the scheme shall be finalized during detailed engineering based on specification andsystem requirement.
24.	VI / PART-E		Tender Drawing 9944-251-POM-A-001		Normal quench system	It is not necessary from the process point of view. Quenching of the raw gas will be done through spraying system with the recirculation pumps in the Absorber.	Bidder to comply the specification requirement.

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
	Section	Sub section	Clause	Page			
25.	VI / PART-E		Tender Drawing 9944-251-POM-A-001		Recirculation line – FT	Flow measurement not possible and not necessary in this type and size of piping.	Bidder to comply the specification requirement.
26.	VI / PART-E		Tender Drawing 9944-251-POM-A-003		Bypass back to the Primary Hydrocyclone feed Tank	Not required from the Process point of view as the primary hydrocyclone feed pump and primary hydrocyclone are always in operation. In case the vacuum belt filter stops, e.g. density is too low, the underflow of the primary hydrocyclone flows directly to the filtrate tank.	Bidder to comply the specification requirement.
27.	VI / PART-E		Tender Drawing 9944-251-POM-A-002		Density measurement in Limestone Slurry Storage Tank	Density measurement will be situated in recirculation line from limestone slurry dosing pump to each absorber as per bidder's standard and proven practice. Density measurement in the limestone slurry storage tank is not possible.	The scheme shall be finalized during detailed engineering based on specification and system requirement.
28.	VI / PART-E		Tender Drawing 9944-251-POM-A-003		pH measurement in Waste Water Storage Tank	pH measurement will be situated in recirculation line from waste water pump discharge line as per bidder's standard and proven practice. pH measurement in the waste water storage tank is not possible.	The scheme shall be finalized during detailed engineering based on specification and system requirement.
29.	VI / PART-E		Tender Drawing 9944-251-POM-A-002		Filtrate water to Wet Ball Mill & Limestone slurry storage tank.	As per bidder standard/proven experience with the past executed projects, Process/Clarified water will be used in the limestone slurry preparation system(i.e. Wet Ball Mill & Limestone Slurry Storage Tanks). The over all FGD makeup water balance will be maintained by this practice. Please confirm.	Bidder's understanding is correct

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
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30.	VI / PART-E		Tender Drawing 9944-251-POM-A-003		Filtrate water is used for belt & cloth washing of VBF system	As per bidder standard/proven experience with the past executed projects, Process/Clarified water will be used for the belt/cloth washing of VBF system. The water from the vacuum receiver tanks of VBF will be fed into the filtrate tank. The overall FGD makeup water balance will be maintained by this practice. Please confirm.	Bidder's understanding is correct
31.	VI / PART-B SUB-SECTION-I-M1		5.01.00	14/52	(iv) The slurry recirculation pumps shall have motor driven knife gate valve at pump suction and discharge side.	In case of knife gate valves, there may be leakages after few operations due to wearing of components. We recommend using motor driven butterfly valves instead, as this is widely used in FGD plants and is the proven practice of the Contractor. The Contractor has very good experience with butterfly type. Body and other parts, which are in contact with slurry, shall be lined to provide better lifetime. Especially on the discharge side the valve which are installed in the horizontally position will cause problems. Space for installation of knife gate valve is larger because whole disc will come out, when valve opens.	**Please refer Amendment-01 issued in this regard.**
32.	VI / PART-B SUB-SECTION-I-M1		5.06.02	17/52	The scope of modelling shall include flue gas path inside the absorber vessel including inlet and outlet duct. Homogeneity shall be ensured, if the deviation from average is less than +10%.	This requirement is too strict and cannot be met. Homogeneity shall be less than ±30%.	Bidder to comply the specification requirement.
33.	VI / PART-B SUB-SECTION-I-		5.06.18	20/52	(iv) A flushing device of the spray levels with water shall be installed. Flushing shall take place if spray levels are out of operation.	A flushing device is installed at the recirculation pipe. This will also flush the spray bank after shut down. Hence	Bidder to comply the specification requirement.

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
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	M1					separate flushing device is not installed.	
34.	VI / PART-E		Tender Drawing 9944-251-POM-A-001		Pinch Type Control Valve in Gypsum Slurry Pipe Line & Limestone Slurry Pipe Line	For better control & stability, we will offer Pneumatic Operated Ceramic Ball Type Control Valves in Gypsum Slurry & Limestone Slurry pipe lines.	Bidder to comply the specification requirement.
35.	VI / PART-E		Tender Drawing 9944-251-POM-A-001		Flow Measurement in Absorber outlet Clean Gas Ducts	Please note that the Clean Gas Flow Measurement will be done through the CEMS in the Wet Stack. So the separate flow measurement in the clean gas duct is not required. Please confirm.	Bidder to comply the specification requirement.
36.	VI / PART-B SUB-SECTION-I-M1		3.01.00	5/52	300Deg C - Short temp excursion temperature of inlet gas (for approx. fifteen (15) minutes at a time.	Inline to the Cl.No.3.01.00, the Fan components will be designed for 300Deg C - Short temp excursion temperature of inlet gas (for approx. fifteen (15) minutes at a time. Please confirm	Bidder to comply the specification requirement.
37.	VI / PART-B SUB-SECTION-I-M1		4.03.00	10/52	Fan component shall also be designed to withstand the excursions in flue gas temperature up to 300 degree Celsius, which may persist for about 30 minute duration.		
38.	VI / PART-B SUB-SECTION-I-M1		1.03.14	3/52	In case distance from Limestone Grinding system/ Gypsum Dewatering and Absorber is more than 500M, Bidder shall provide the flushing system at intermittent locations for the lime stone slurry pipeline which shall contain tank and pumps. Intermittent location distance of flushing system shall be based on their proven practice.	We shall provide the intermitted flushing line for the limestone/gypsum slurry pipes from the process/clarified water headers. So separate tanks & pumps are not required for flushing of long slurry pipelines. Please confirm.	Bidder to comply the specification requirement.
39.	VI/B I-M1		5.06.06	17/52	Mist Eliminator: Three stage chevron type Mist Eliminators (ME) made of Polysulfone or stainless steel shall be provided at the exit of the absorber.	We recommend ME made of PP (Polypropylene) as per manufacturer's standard and proven practice and which are installed in many FGD plants around the world and	Bidder to comply the specification requirement.

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
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						performing well.	
40.	VI/B I-M1		11.05.00	33/52	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.	Bidder clarifies that the shafts are made in Alloy 926 and the Impellers are made of Duplex material (1.4517)/(1.4517S).	Bidder to comply the specification requirement.
41.	VI/B I-M1		5.06.13	19/52	All metallic fasteners which are provided inside the absorber/absorber wet-dry interface ducting shall be of Alloy 59/ C276.	Noted for metallic fasteners. As per Bidder's standard practice, OEMs may use non-metallic fasteners inside the Absorber (In Mist Eliminator etc.) as per the standard design but compatible to the corrosive environment.	Bidder to comply the specification requirement.
42.	VI/B I-M1		8.06.00	31/52	All the pump wear parts in contact with the slurry shall be provided with replaceable rubber/elastomer liners suitable for the fluid handled. The Bidder can also offer an hi chrome alloy line pump if the Bidder has previous experience of the same for similar applications.	Noted. We also recommend Outer casing - Cast Iron Inner liner :CeramikPolySiC (KSB's patent) , SiCcast (Duecting's patent) as per manufacturer's standard and proven practice and which are installed in many FGD plants around the world and performing well. Client to confirm	Bidder to comply the specification requirement.
43.	VI/B I-M1		5.06.11	19/52	The complete absorber vessel (absorber oxidation tank, absorber tower & absorber outlet duct upto absorber outlet flange) shall be made of clad sheet of C276 / Alloy 59 (minimum 2 mm thickness) by explosion bonding or hot rolling, having minimum 7 mm thick carbon steel as base material.	The Bidder proposes wall papering with Alloy of minimum 2 mm thickness instead of cladding.	Bidder to comply the specification requirement.
44.	VI/B I-M1		3.02.04	6/52	The duct from Absorber outlet to the new wet flue chimney shall be made of Carbon steel of minimum 7mm thickness cladded with 2 mm (minimum) thickness Alloy	The Bidder proposes wall papering with Alloy of minimum 2 mm thickness instead of cladding.	Bidder to comply the specification requirement.

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
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					C276 / Alloy 59 / Titanium Gr-II.		
45.	VI / PART-A SUB-SECTION-III-A1 FGD		7.03.00	6/10	Two (2) clarified water Storage tanks (each tank catering to the clarified water requirement for one vaccum Belt Filter) along with two numbers of 2x100 % clarified Booster water pumps, if required, from terminal point.	As per the technical specification, clarified water is used as the process water for complete FGD system, so separate clarified water tank & pumps only for VBF cake & cloth washing system is not required. The required cake & cloth wash water can be tapped from the process water tanks & pumps. The overall FGD make up water quantity will remain same. Please confirm	Bidder understanding is correct.
46.	VI / PART-A SUB-SECTION-IV TERMINAL POINTS & EXCLUSIONS		1.04.00	1/2	For process water requirement, Contractor shall take Clarified water tap off suitablyfrom the CT make up pump discharge header in Miscellaneous Pump house area. The pressure available at the terminal point is 0.5 kg/m2.		
47.	VI / PART-A SUB-SECTION-III-A1 FGD		3.01.04	3/10	2x100% limestone slurry pumps for the absorber connected to each of the limestoneslurry tank. Each pump catering to slurry requirement of the absorber.	We understand that only 2x100% Limestone Slurry pumps will be provided for common absorber system of 2x300MW unit. Please confirm	Provision of the bidding documents shall prevail**.**
48.	VI / PART-B SUB-SECTION-I-M1		13.02.00	34/52	2x100% Process Water Pumps shall be provided connected to each of the Processwater Storage tanks along with all necessary piping, valves, control &instrumentation.	We understand that only 2x100% Process Water pumps will be provided for common absorber system of 2x300MW unit.Please confirm	Provision of the bidding documents shall prevail**.**
49.						**Optimizing Maximum Auxiliary Power Consumption:** Considering the existing maximum auxiliary power consumption allowances for the Yamuna Nagar (2x300=600 MW) and Hisar (2x600=1200 MW) projects are 6.6Kw and 11.4KW respectively, which currently represent 1.1% and 0.95% of actual power consumption respectively, we believe these allowances are exceptionally restricted	Provision of the bidding documents shall prevail**.**

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						based on our past experiences. We respectfully request a reassessment of these values and propose an extension of the limit to 1.5% of the actual power plant production for the FGD system design. This adjustment will provide a more practical margin for design optimization.	
50.						**Inclusion of Price Escalation Clause:** Recognizing the inherent market volatility affecting materials and equipment, particularly in critical systems such as FGD, we strongly recommend the incorporation of a price escalation clause. This clause is vital for addressing uncertainties and fluctuations in material costs, particularly for equipment and materials procured internationally. Given that the procurement timeline typically spans 3 to 6 months post-contract award, such a clause is essential for prudent financial planning for the project.	Provision of the bidding documents shall prevail**.**
51.						**Alignment of Project Timelines:** It has come to our attention that the proposed project timelines for both the Yamuna Nagar and Hisar projects differ, with 30 months allocated for the former and 27 months for the latter. Considering the involvement of multiple stakeholders and vendors from and outside of India for the procurement of equipment and	Provision of the bidding documents shall prevail**.**

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
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						materials, we must account for the extended lead times associated with such procurement. Based on our prior experience, we find the provided timelines to be insufficient for the seamless execution of the FGD system project. Therefore, we respectfully request your consideration to extend the project timeline to a duration of 36 months. This adjustment will allow for more realistic planning and coordination, ensuring the successful completion of the project.	
52.	SECTION-VI PART A	SUB-SECTION-IV (TERMINAL POINTS & EXCLUSIONS)	1.03.00, 1.04.00, 1.05.00	1 of 2	Use of DM water and Clarified Water for FGD systems Lime neutralization of FGD waste water	Bidder request Owner to provide Analysis of Process Water (clarified Water) and Demineralised water as same missing in technical specification. Bidder request owner to kindly provide Information on the properties of hydrated lime (Ca(OH)2 purity etc.	The same shall be provided after award of contract. The same shall be provided after award of contract.
53.	SECTION-VI PART B	SUB-SECTION-I-M1 (FGD)	1.04.02	4 of 52	The Bidder shall submit with the offer, comprehensive information on how the L/G ratio, mass balance, spray nozzle cone angle, spray nozzle arrangement, limestone consumption etc. of the proposed design has been arrived at.	Bidder would like to inform that technical details as asked will be sheared without disclosing proprietary information, during detailed Engineering.	Bidder to comply the specification requirement.
54.	SECTION-VI PART A PART E	SUB-SECTION-III A1 (FGD) Scheme of Gypsum	5.04.00	5 of 10	The filtrate water from belt filter dewatering and wash water from washing system and the underflow from the secondary hydro-cyclone shall be taken to a common filtrate water tank. 2x100% pump shall be provided to supply wash water (for cake washing as well as belt	Bidder would like to inform that Filtrate water is not suitable for cake washing and belt cloth washing. Clarified water shall be provided for cake washing as per clause no. 7.04.07 mentioned in Technical Specification Section-VI Part	Bidder to refer Note-2 of the drawing no. 9944-251-POM-A-003 i.e. Arrangement for Cake and belt/cloth washing system indicated is typical.

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		Dewatering Drg no. 994-251-POM-A-003 (Rev A)			cloth washing) to the belt filters.	B Sub section I M1 (FGD) 'Bidder shall use process water from process water pump (2x100%) for belt cloth washing, as filtrate may contain solids. Hence, separate pump (2x100%) for Belt cloth washing is not envisaged. Employer is requested to confirm on bidder's above consideration.	Contractor may offer an alternate system as per his proven practice"
55.	SECTION-VI PART-B PART-E	SUB-SECTION-I M1 (FGD) Scheme of Gypsum Dewatering Drg no. 994-251-POM-A-003 (Rev A)	7.04.07	27 of 52	For cake washing only clarified water shall be used. For this purpose, one (1) clarified water storage tank (minimum 1 hr storage) shall be provided along with 2x100 cake washing pumps for each Vacuum Belt Filter		
56.	SECTION-VI PART B PART E	SUB-SECTION-I-M1 (FGD) Scheme of Gypsum Dewatering Drg no. 994-251-POM-A-003 (Rev A)	7.06.02	28 of 52	2x100% horizontal centrifugal pumps shall be provided for wash water requirements of belt filter		

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
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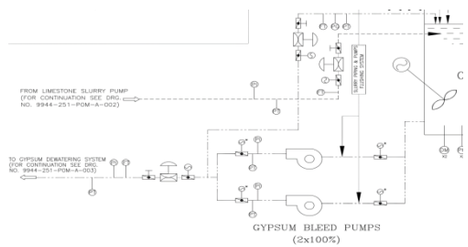
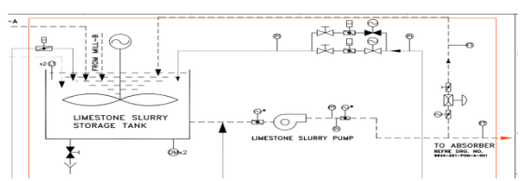
					.		
57.	SECTION-VI PART-APART-E	SUB-SECTION-III A1 (FGD)Scheme of FGD absorber systemDrg no. 994-251-POM-A-001 (Rev A)	3.01.05	3 of 10	Limestone slurry piping to each absorber, along with recirculation lines, all isolation and control valves.   	1) Bidder shall offer Diaphragm actuated Ceramic ball control valve in limestone slurry supply line (going towards absorber), based on proven design. 2) In limestone slurry recirculation line (return line to limestone slurry tank), bidder does not envisage pinch valve requirement. Bidder considered one manual on/off type butterfly valve and one motorized on/off type butterfly valve for isolation purpose as per tender scheme. 3) In Gypsum bleed supply line (going towards dewatering system) & return line (towards absorber), bidder considered one manual on/off type butterfly valve, one motorized on/off type butterfly valve and one pneumatic on/off type butterfly valve. Bidder does not envisage pinch valve requirement.Employer is requested to confirm on bidders above consideration.	1) **Refer the amendment -01 in this regard.** 2) Bidder to comply technical specifications. 3) Bidder to comply technical specifications.
58.	SECTION-VI PART B	SUB-SECTION-I-M1 (FGD)	4.03.00	10 of 50	Fan component shall also be designed to withstand the excursions in flue gas temperature up to 300 degree Celsius, which may persist for about 30 minute duration.	**Bidder would like to clarify that bidder is considering duration of short temp excursion temperature of 300 deg C as 15 mins for all**	Bidder to comply the specification requirement.

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59.	SECTION-VI PART B	SUB-SECTION-I-M1 (FGD)	3.01.00	5 of 52	3. Short temp excursion temperature of inlet gas (for approx. fifteen (15) minutes at a time) (deg. C) 300	**design as per clause no. 3.01.00 of SUB-SECTION-I-M1 (FGD).**	
60.	SECTION-VI PART B	SUB-SECTION-I-M1 (FGD)	1.03.06	2 of 52	The FGD and the ancillary facilities shall be suitable for unlimited operation with all transients and at any load point between the minimum and maximum load point of the Steam Generator. Further, the FGD plant shall be suitable for an unlimited operation at any pollutant concentrations between minimum and maximum without exceeding the emission values of SO2 emission of less than 200 mg/Nm3 (6% O2 dry).	Bidder would like to inform that process parameters including Inlet SO2 concentration as stipulated under 'Guarantee point and Design point' in TECHNICAL SPECIFICATION SECTION – VI, PART-A, SUB-SECTION-V SALIENT DESIGN DATA , Clause 1.00.00, Pt 7, shall be the basis of emission values agreed for the bid excluding abnormal operation condition of upstream equipment.	Provision of the bidding documents shall prevail.
61.	SECTION – VI, PART-A	SUB-SECTION-V SALIENT DESIGN DATA	1.00.00		SO_2 Removal Efficiency: 94.04 %		
62.	SECTION-VI PART B	SUB-SECTION-I-M1 (FGD)	5.01.00 5.04.00 6.07.01		Margin on head for various pumps (Slurry recirculation pumps, Gypsum bleed pump, Lime Stone Slurry Pumps)	Bidder understands that Margin on head shall be on frictional head only.	**Clause No. 5.01.00**: refer clause no. 5.01.00 (A) iii regarding Slurry recirculation pumps. **Clause No. 5.04.00(Gypsum Bleed Pump)**: Margin in head is on total pump head. **Clause No. 6.07.01**: (**Limestone Slurry Pumps & Piping**): Margin in head is on total pump head

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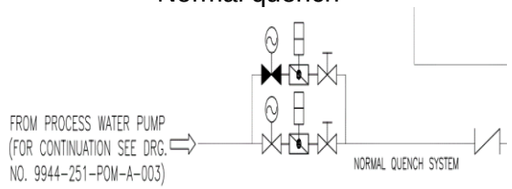
63.	SECTION-VI PART B	SUB-SECTION-I-M1 (FGD)	5.03.02	15 of 52	The compressor/blower shall be sized to supply at least 2.5 times the stoichiometric air requirement for spray tower process	Bidder would like to inform that 2.5 times the stoichiometric air requirement will lead to oversize for the oxidation blower, and under actual operating conditions these operate at much lower capacity, away from their best efficiency point. GE propose to keep 10% margin above design case requirement, as good engineering practice. Employer is requested to confirm on bidder's consideration.	Bidder to comply the specification requirement.
64.	SECTION-VI PART E	Scheme of FGD absorber system Drg no. 994-251-POM-A-001 (Rev A)			Normal quench 	Bidder would like to inform that Normal quench system is not envisaged for the system, and has not been considered. Bidder has only consider emergency quench system. Employer is requested to confirm on bidder's consideration.	Bidder to comply the specification requirement.
65.	SECTION-VI PART E	Scheme of FGD absorber system Drg no. 994-251-POM-A-001 (Rev A)			Emergency quench system	Bidder would like to inform that no control valve is envisaged in the supply line. Only motorised valve and manual valve is considered. Employer is requested to confirm on bidder's consideration.	Bidder to comply the specification requirement.
66.	SECTION-VI PART B	SUB-SECTION-I-M1(FGD)	10.01.00	32 of 52	Coarse-screen(s) at suction-side of slurry recirculation pumps shall be provided	Bidder shall provide Suction screens only inside the Absorber vessel to protect the Slurry recirculation pumps as per specification clause no. 5.06.23 of TECHNICAL SPECIFICATION SECTION-VI PART B SUB-SECTION-I-M1 (FGD), Pg 20 of 52.	Please refer amendment-01 in this regard..

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
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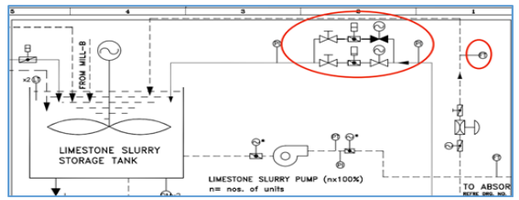
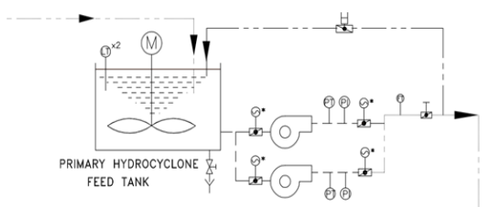
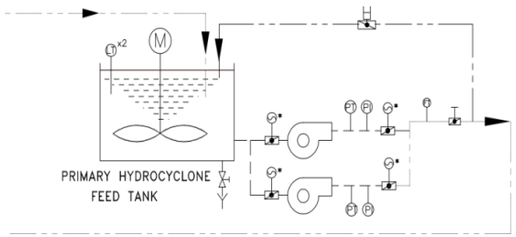
67.	SECTION-VI PART E	Scheme of FGD absorber system Drg no. 994-251-POM-A-001 (Rev A)			Schemes shows FT in slurry recirculation pump common discharge line.	Bidder would like to inform that slurry recirculation pump discharge line size is quite large and FT do not give reliable results. Pressure measurement at same line shall be provided instead of flow measurement. Employer is requested to confirm on bidder's consideration.	Bidder to comply the specification requirement.
68.	SECTION-VI PART E	Scheme of FGD absorber system Drg no. 994-251-POM-A-001 (Rev A)			Schemes shows one DPT for each ME stages.	Bidder would like to inform that DP instrumentation shall be as per OEM proven practice, fulfilling the operational requirements. Numbers may vary from what is shown in the scheme.	Bidder may provide DP instrumentation as per OEM proven practice, fulfilling the operational requirements.
69.	SECTION-VI PART E	Scheme of FGD milling system Drg no. 994-251-POM-A-002 (Rev A)			Scheme shows Filtrate water going to Ball Mill and Limestone Slurry Tank	Bidder would like to inform that using Filtrate water for Slurry preparation is not a good engineering practice, and hence this has not been considered. Only process water is used for slurry preparation. Employer is requested to confirm on bidder's consideration. .	Process/Clarified water may be used in limestone slurry preparation system (i.e. Wet Ball Mill & Limestone Slurry Storage tanks) . Keeping in view the overall FGD makeup water balance as per bidder's standard/proven experience with the past executed projects.
70.	SECTION-VI PART E	Scheme of FGD milling system Drg no. 994-251-POM-A-002 (Rev A)			Scheme shows (1W+1S) motorisedvalves/manual valve/knife gate valve array in process water line to Lime Slurry Storage tank.	Bidder would like to inform that since the intent of Process water supply to limestone slurry tank is only for tank cleaning when FGD plant is not under operation, a single manual isolation valve is adequate. Bidder proposes to delete FT in slurry recirculation line to limestone slurry storage tank as we already have two	Provision of the bidding documents shall prevail.

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
	Section	Sub section	Clause	Page			
						FTs, one in pump common discharge line and other in the feed line to absorber. Difference of the two FTs will provide the flow information in the slurry recirculation line. Employer is requested to confirm on bidder's consideration.	
71.	SECTION-VI PART A	SUB-SECTION-III A1 (FGD)	4.01.04	4 of 10	2x100% electric driven, single stage, integrally geared, single or dual vane centrifugal type / positive displacement (Helical lobe) type with VFD drive, oxidation blowers complete with integral gearbox, lube oil system, instrumentation and accessories.	Bidder understands that below are the two options for the type of Oxidation blowers: 1. Single or dual vane centrifugal type blower with fixed speed motor 2. Positive displacement (Helical lobe) type blower with VFD drive Employer is requested to confirm on bidder's understanding.	**Please refer Amendment no.-01 in this regard.**
72.	SECTION-VI PART A	SUB-SECTION-III A1 (FGD)	5.05.00	5 of 10	The gypsum slurry from the Absorber shall be fed to a common Primary hydro cyclone feed tank. 	Bidder would like to clarify that it is single absorber, the gypsum slurry shall feed directly to the primary hydrocyclone. Normally a PHC feed tank is required when multiple absorber have common dewatering system. Hence for this project with single absorber, the PHC feed tank and associated recirculation pumps, pipes and valves shall be omitted. Owner is requested to confirm on bidder's consideration.	Bidder to comply the specification requirement.
73.	SECTION-VI PART E	Scheme of FGD absorber			Inlet duct scheme for two (2) Booster Fans in parallel for each unit.	Bidder would like to inform that with two(2) parallel booster fan system, each connected with each of 2x300	Bidder to comply the specification requirement.

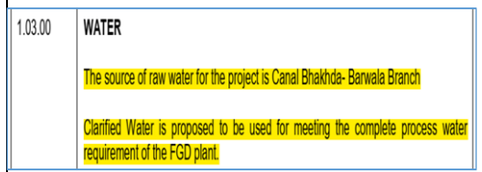
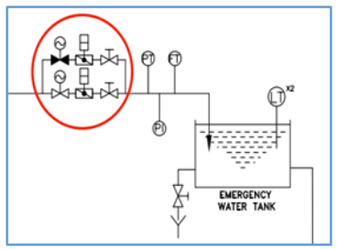
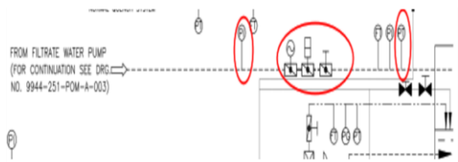
Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
	Section	Sub section	Clause	Page			
		system Drg no. 994-251-POM-A-001 (Rev A)				MW unit, interconnection at inlet is not considered between booster fan suction for criss-cross operation. Bidder envisages that tapping point location and interconnection duct arrangement will give rise to dead zone, and cause condensation of acid and subsequent corrosion issue. Bidder request owner to kindly review this requirement carefully from O&M point of view, and eliminate the interconnection at inlet between two fans.	
74.	SECTION-VI PART B	SUB-SECTION-I-M1 (FGD)	4.01.02 (iv)	9 of 52	Bidder shall consider the margin over pressure requirement as 44% over the calculated head value excluding the static head.	Owner is requested to reconsider the 44% margin on pressure for fan sizing as absorber pressure drop is not directly proportional to square of velocity. As a result, fan model will be bigger than requirement resulting in lower efficiency in Guarantee point condition (typically TMCR).	Bidder to comply the specification requirement.
75.	SECTION-VI PART B	SUB-SECTION-I-M1 (FGD)	4.02.01	10 of 52	Both fans shall operate with highest possible efficiency which shall be nearly equal at the Guarantee point flow and test block points.	Bidder would like to inform that as per specification, fan model will be selected considering 44% margin over calculated pressure and 20% margin over fan sizing flow. In this scenario, it is not possible to get highest efficiency both for Guarantee point condition (typically TMCR) and Test Block condition considering other parameters as per specification.	Bidder to comply the specification requirement.
76.	SECTION-VI PART A	SUB SECTION: III A-4 EQUIPMENT COOLING			Equipment Cooling Water System	Bidder propose the following for ECW system: (d) 2x 100% (1W+1S) capacity PHE (e) 2 x 100% (1W+1S) capacity FGD Aux (Secondary) cooling water pumps	Bidder to comply the specification requirement.

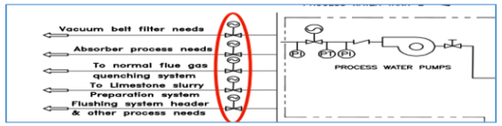
Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
	Section	Sub section	Clause	Page			
		WATER SYSTEM			(c) 2x100% capacity self-cleaning strainers on the secondary side. (d) 3 x 50% (2 working + 1 standby) capacity of plate type heat exchangers. (e) 4 x 50% (2 Working + 2 standby) capacity FGD Auxiliary (Secondary) Cooling water pumps, along with drives. (f) 3 x 50% (2 Working + 1 standby) capacity FGD DM (Primary) cooling water pumps along with drives.	with drives (f) 2x100% (1W+1S) capacity FGD DM (Primary) cooling water pumps with drives	
77.	SECTION-VI PART B	SUB-SECTION-I-M1 (FGD)	5.06.06	18 of 52	Adequate number of viewing ports with flushing devices connected to automatically operating washing system shall be delivered at following locations: (i) upstream of 1st stage (ii) between 1st and 2nd stage (iii) downstream of 2nd stage. (iv) downstream of 3rd stage	Bidder would like to inform that viewing ports are not envisaged as per bidder's standard absorber design and hence same is not considered by bidder. Further in WFGD projects, absorber is a tightly sealed vessel where limestone slurry is being sprayed from top and stored at the bottom. In this situation viewing ports are not provided as nothing can be seen from outside as there's complete darkness prevails inside the vessel. Bidder has supplied several WFGD absorber vessels worldwide and has never ever supplied any viewing port on absorber vessel. However there are access doors mounted on absorber vessel for access and maintenance, as and whenever required.	**Please refer Amendment No.-01 in this regard.**
78.	SECTION-VI PART B	SUB-SECTION-I-M1(FGD)	5.06.07	18 of 52	The absorber oxidation tank shall be provided with an over flow line (for spray tower process) complete with sealing pot, over flow and drain line.	Bidder would like to inform that seal loop shall be provided as per Bidder's proven practice. Bidder does not envisage seal pot design for Absorber overflow line as it leads frequent choking and Bidder shall provide overflow line arrangement per Bidder's	Bidder to comply the specification requirement.

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
	Section	Sub section	Clause	Page			
						proven practice.	
79.	SECTION-VI PART B	SUB-SECTION-I-M1(FGD)	5.06.10	19 of 52	The raw gas inlet duct of the absorber shall be equipped with a flushing device of the side walls and the ground, which shall operate continuously as well as intermittently.	Bidder WFGD inlet design is having a sloped inlet flue gas duct and provides a sharp interface between the dry and wet zones. This along with a "rain hood" and side deflector plates which are used on the inside of the absorber around the inlet duct opening negates potential for deposits in the inlet duct. Hence wet dry interface washing is not required.	Bidder to comply the specification requirement.
80.	SECTION-VI PART B	SUB-SECTION-I-M1(FGD)	13.03.07	35 of 52	All the Process water tanks (Process water Storage tanks, Clarified water tank, Emergency water storage tanks etc.) shall be….	Bidder would like to inform that since Process water is itself clarified water, the clarified water for FGD shall be taken from process water tank and process water pumps and hence no additional clarified water storage tank and pumps are envisaged.	Bidder understanding is correct. However, overall FGD water balance and requirement may be maintained.
81.	SECTION-VI PART B	SUB-SECTION-I-M1(FGD)	5.06.24 7.08.01	20 of 52 30 of 52	It should be possible to discharge the absorber into the Auxiliary Absorbent tank within 2 hours.	Bidder proposes to consider Absorber sump draining in to Aux Tank duration to be 8 hours as draining in 2 hours requires oversizing of Gypsum bleed pumps by multifold.	**Please refer Amendment No.-01 in this regard.**
82.	PART-A/ SECTION-VI	SUB-SECTION-III-A1	PAGE 6 OF 10	6.01.00	The Contractor shall provide a common auxiliary absorbent tank, common for all the units, of sufficient capacity for storage of absorber slurry of one unit.	Bidder will provide a common auxiliary absorbent tank, common for all the units, of sufficient capacity for storage of absorber slurry between normal slurry level and minimum slurry level of one unit.	Bidder to comply the specification requirement.
83.	PART-A/ SECTION-VI	SUB-SECTION-VI	PAGE 9 OF 16	4.02.00	Guarantees Under Category-II xi) Mist outlet Droplet content The Mist Eliminator outlet droplet content shall be guaranteed to be <20 mg/Nm3 at absorber outlet measured over a period of 24 hrs continuous operation.	Bidder would like to inform that the droplet carryover testing has a comment "Measured for a period of 24 hours continuous operation". Please note that using the VDI approach, we likely would take	Bidder to comply the specification requirement.

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
	Section	Sub section	Clause	Page			
					Mist outlet-droplet content shall be measured as per applicable clauses in VDI Norm 3679 and the Contractor shall carry out the tests as per the test procedure approved by the Employer.	separate measurements 3 or 4 times in a day, and have the result be the average of at least 3 valid tests. Also the guarantee excludes droplets of 15 microns or smaller which is inline with the specifications from ME vendors such as RPT and Munters and others.	
84.	PART-A/ SECTION-VI	SUB-SECTION-VI	PAGE 14 OF 15	5.00.00	Aux Power Consumption: xxiii) Total power consumption at motor input terminal at rated duty of Air compressor, Air drying plant (Heater and blower, as applicable) divided by total nos. of units of the project. Diversity/ Duty factor for Limestone Handling System and Gypsum Handling System.	Bidder request Owner to provide the 'diversity' or 'duty' factor for 1) Compressed air system as the compressor will undergo loading & unloading quite frequently based on the intermittent requirements within the FGD plant. 2) Limestone Handling System and Gypsum Handling System, as these system will be operating intermittently. In absense of suitable data, bidder will select suitable load factor based on his experience.	**1.)** Duty point shall be 1.0. Bidder to comply the specification requirement. **2.) Refer the amendment-01 issued in this regard.**
85.	PART-B/ SECTION-VI	SUB-SECTION-I-M1	PAGE 16 OF 52	5.04.00	Gypsum Bleed Pumps : Margin on Head 20%	Bidder understand that the margin on head is for 'frictional head' only. Accordingly, 20% margin over friction head shall be considered for pump sizing as per industry's standard practice.	**Clause No. 5.04.00(Gypsum bleed pump)**: Margin in head is on total Pump Head.
86.	PART-B/ SECTION-VI	SUB-SECTION-I-M1	PAGE 20 OF 52	5.06.18	(iv) A flushing device of the spray levels with water shall be installed. Flushing shall take place if spray levels are out of operation.	Bidder would like to inform that the spray levels (except the top one) are designed with adequate number of self-draining nozzles to drain any slurry accumulation when not in operation. Further, a flushing device is installed at the slurry recirculation pipe, which will also flush the spray bank after	Bidder to comply the specification requirement.

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
	Section	Sub section	Clause	Page			
						shutdown.	
87.	PART-B/ SECTION-VI	SUB-SECTION-I-M1	PAGE 21 OF 52	5.06.25	At the head of the absorber two manholes shall be provided to reduce the draught of the stack during outage.	Bidder would like to inform that Absorber is deigned with a suitable 'access door' at the top section for various spray levels, mist eliminator level. Therefore, additional manholes are not envisaged per bidders proven practices.	Noted.
88.	PART-B/ SECTION-VI	SUB-SECTION-I-M1	PAGE 24 OF 52	6.07.01	Limestone Slurry Pumps : Margin on Head 15% (minimum)	Bidder understand that the margin on head is for 'frictional head' only. Accordingly, 15% margin over friction head shall be considered for pump sizing as per industry's standard practice.	**Clause No. 6.07.01(Limestone Slurry Pumps & Piping)**: Margin in head is on total Pump Head.
89.	PART-B/ SECTION-VI	SUB-SECTION-I-M1	PAGE 26 OF 52	7.04.01	Vacuum Belt Filters: d. Chloride content < 100 ppm	Bidder would like to inform that the chloride content in product gypsum shall be ≤ 100 ppm (dry).	Bidder to comply the specification requirement.
90.	PART-B/ SECTION-VI	SUB-SECTION-I-M1	PAGE 27 OF 52 & 35 of 52	7.04.07 & 13.03.05	For cake washing only clarified water shall be used. For this purpose, one (1) clarified water storage tank (minimum 1 hr storage) shall be provided along with 2x100 cake washing pumps for each Vacuum Belt Filter. 2x100% clarified water Pumps connected to each of the clarified water Storage tanks for each dewatering stream.	Bidder understands that the clarified water storage tank and pumps mentioned here are to be read as 'cake wash tank' and 'cake wash pumps'.	Bidder to refer Note-2 of the drawing no. 9944-251-POM-A-003 i.e. "Arrangement for cake and belt/cloth washing system indicated is typical. Contractor may offer an alternate system as per his proven practice".
91.	PART-B/ SECTION-VI	SUB-SECTION-I-M5	PAGE 1 OF 14	1.02.00 1.03.00	The Equipment cooling water system shall be common for all the **three** units. **CW blowdown** water tapped from CW pump discharge header would be used in the secondary circuit for cooling the primary circuit DM water. Alternatively, clarified water from existing clarified water tank may be taken as secondary cooling water in case enough water	Bidder understand 'three units' is a typo. Also, Clarified water shall be used as process water instead of CW blowdown as per Part-A Cl.1.03.00. Please confirm.	**1.02.00: Bidder's understanding is correct.** **1.03.00: Provisions of bidding documents are amply clear.**

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
	Section	Sub section	Clause	Page			
					is not available in CW blowdown. Secondary Circuit - Condenser cooling water.		
92.	PART-E/ SECTION-VI	9944-251-POM-A-001	PAGE 5 OF 69	Sheet 1 of 1:	Emergency Tank water feed line: 	Bidder wish to inform that such an elaborate valve station is not required for feeding water to emergency quench tank. Therefore, bidder proposes to change it to a simple single pneumatic type feed valve.	**Bidder to comply technical specifications.**
93.	PART-E/ SECTION-VI	9944-251-POM-A-001	PAGE 5 OF 69	Sheet 1 of 1:	Filtrate return to Absorber: 	Bidder would like to inform that the PT, PI and valve station are found to be redundant. Same is shown in dwg no. A-003 also. Please rectify the dwgs.	**Bidder to comply technical specifications.**
94.	PART-E/ SECTION-VI	9944-251-POM-A-003	PAGE 7 OF 69	-	Process water network isolation valves:	Bidder proposes to replace the motorized valves with pneumatic isolation valves as per proven practices in all other projects.	Bidder to comply technical specifications.

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
	Section	Sub section	Clause	Page			
							
95.	VI	PART-A SUB-SECTION-III-A1	8.02.00	7 of 10	The Interior surface of the Sumps shall be lined with replaceable chlorobuty/bromobutyl rubber lining of minimum 5 mm thickness or with vinyl ester based flake glass lining of minimum 3mm thickness.	Bidder envisages Acid Resistant Tiles in the Interior surface of the Sumps as per bidder's proven practice followed in WFGD projects.	**Please refer Amendment No-01 in this regard.**
96.	VI	PART-B SUB-SECTION-I-M1	9.01.00	31 of 52	Acid resistant tiles or other suitable material of standard thickness as per bidders proven practice shall be provided as liner.		
97.	VI	PART-B SUB-SECTION-I-M1	3.02.04	6 of 52	The duct from Absorber outlet to the new wet flue chimney shall be made of Carbon steel of minimum 7mm thickness cladded with 2 mm (minimum) thickness Alloy C276 / Alloy 59 / Titanium Gr-II.	Bidder envisages 2 mm thick flake glass lining on the absorber outlet duct as per bidder's proven practice followed in WFGD projects.	Bidder to comply specification requirement.
98.	VI	PART-B SUB-SECTION-I-M1	3.02.05	6 of 52	In addition to the base offer as described above, the bidder may also submit an alternate offer for a different material / lining of duct from Absorber outlet to stack, if the bidder has previous experience of the same. The bidder should have supplied a similar design of duct in previous installations for similar application.		**Please refer Amendment No-01 in this regard.**
99.	VI	PART-B SUB-SECTION-I-M1	3.03.11	8 of 52	All gates shall be provided with 2x100% pressurization fans to achieve 100% sealing efficiency.	Bidder envisages one common seal air system (consisting with 2x100% seal air fans) for two booster fan inlet dampers and one common seal air system (consisting with 2x100% seal air fans) for two booster fan outlet dampers as per bidder's proven	Refer note13 of drawing no. 9944-251-POM-A-001, PART-E (Tender Drawings), SECTION-VI
100.	VI	PART-B SUB-SECTION-I-	3.03.08	7 of 52	The motor operated Guillotine gates shall also be provided with a 2X100% complete seal air system.		

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
	Section	Sub section	Clause	Page			
		M1				practice followed in WFGD projects.	
101.	VI	PART-A SUB-SECTION-III-A1	22.02.00	9 of 10	Motorized Guillotine type gates with 2x100% seal air fans shall also be provided at suction & discharge of each Booster Fan.	Individual seal air system (consisting with 2x100% seal air fans) shall be provided for bypass damper.	**Please refer Amendment No.-01 in this regard.**
102.	VI	PART-B SUB-SECTION-I-M1	4.04.00	11 of 52	Fan casing material thickness: Abrasion and wear resistant, high BHN steel having minimum 8.0mm thickness or 12mm mild steel with liner of thickness 10mm (min.) Alternatively, 22 mm thickness casing of mild steel is also acceptable.	Bidder envisages 20 mm thickness of booster fan casing made of mild steel material as per bidder's proven practice followed in WFGD projects.	**Please refer the amendment-01 in this regard.**
103.	VI	PART-B SUB-SECTION-I-M1	4.10.00	13 of 52	Drain connections shall be provided at bottom most point of the fan housing to the nearest trench	Bidder envisages fan drain connections at inlet box only which is the bottom most point of the offered booster fans. This is as per bidder's proven practice followed in WFGD projects.	Bidder to comply specification requirement.
104.	VI	PART-B SUB-SECTION-I-M1	5.06.06	17 of 52	Three stage chevron type Mist Eliminators (ME) made of polysulfone or stainless steel shall be provided at the exit of the absorber.	Bidder envisages Three stage ME made of Polypropylene (PP) material as per bidder's proven practice followed in WFGD projects.	Bidder to comply specification requirement..
105.	VI	PART-B SUB-SECTION-I-M1	5.06.11	19 of 52	The complete absorber vessel (absorber oxidation tank, absorber tower & absorber outlet duct upto absorber outlet flange) shall be made of clad sheet of C276 / Alloy 59 (minimum 2 mm thickness) by explosion bonding or hot rolling, having minimum 7 mm thick carbon steel as base material.	Bidder envisages minimum 3 mm thick Glass Flake lining on the internal surface on the absorber shell including the internal support members (viz. spray header support beams, mist eliminator support beams, wall support rings, performance enhancement plates etc. including all flanges of access doors, inlet duct, nozzles etc.). This is as per bidder's proven practice followed in WFGD projects.	Bidder to comply specification requirement.
106.	VI	PART-B SUB-SECTION-I-M1	5.06.13	19 of 52	All internal members shall be lined with minimum 2 mm Alloy 59/ C276.		
107.	VI	PART-B SUB-SECTION-I-	5.06.15	19 of 52	The other bridges (supports) shall be lined with minimum 2 mm Alloy 59/ C276.		

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
	Section	Sub section	Clause	Page			
		M1					
108.	VI	PART-B SUB-SECTION-I-M1	6.06.04	24 of 52	The slurry preparation tank shall be CS construction with replaceable chlorobutyl/bromobutyl rubber lining of minimum 5 mm thickness.	Bidder envisages 3 mm thick Glass Flake lining on the internal surface of all the slurry tanks as per bidder's proven practice followed in WFGD projects.	Bidder to comply specification requirement..
109.	VI	PART-B SUB-SECTION-I-M1	7.08.04	30 of 52	The Auxiliary Absorbent tank shall be made of minimum 7 mm thick carbon steel with minimum 4 mm thick rubber lining of best quality bromine butyl rubber.		Bidder to comply specification requirement.
110.	VI	PART-B SUB-SECTION-I-M1	10.01.00	32 of 52	Wastewater tank, Filtrate tank, Secondary hydro cyclone feed tank: Vinyl Ester based flake glass lining of minimum 3 mm thickness Slurry tanks: Replaceable Chlorobutyl/ Bromobutyl rubber lining of minimum 4 mm thickness		Slurry tanks: Replaceable Chlorobutyl/ Bromobutyl rubber lining of minimum 5 mm thickness.
111.	VI	PART-A SUB-SECTION-III-A1	7.08.00	7 of 10	All the storage tanks shall be lined with replaceable chlorobutyl/bromobutyl rubber lining of minimum 4 mm thickness or with vinyl ester based flake glass lining of minimum 3 mm thickness from inside.		Bidder to comply specification requirement.
112.	VI	PART-B SUB-SECTION-I-M1	10.01.00	32 of 52	Coarse-screen(s) at suction-side of slurry recirculation pumps shall be provided.	Bidder envisages suction strainers (PP) inside the absorber to protect the slurry recirculation pumps only.	**Please refer Amendment No.-01 in this regard.**
113.	VI	PART-B SUB-SECTION-I-M1	5.01.00 iv	14 of 52	The slurry recirculation pumps shall have motor driven knife gate valve at pump suction and discharge side.	Bidder envisages motorized butterfly valves (Class VI, Zero leakage valve) at slurry recirculation pumps suction and discharge as per bidder's proven practice followed in WFGD projects.	**Please refer Amendment No.-01 in this regard.**
114.	VI	PART-B SUB-SECTION-I-M1	7.07.06	29 of 52	The material of Casing and impeller shall be rubber lined Cast Iron (IS:210 Gr FG260). Shaft and Shaft Sleeves shall be Stainless Steel-410	Bidder envisages solid Hi-Chrome steel for waste water pump impeller and casing where shaft shall be offered with Carbon steel (EN8) material as shaft will not come in	**Please refer Amendment No.-01 in this regard.**

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
	Section	Sub section	Clause	Page			
						contact with fluid medium. This is as per bidder's proven practice followed in WFGD projects.	
115.	VI	PART-B SUB-SECTION-I-M1	7.08.06	30 of 52	Suction screens shall be installed to protect the pump.	Suction screens shall not be provided at slurry pump suction as it will lead to clogging and affect pump performances. Bidder has no experiences with suction screens provided at slurry pump suction in WFGD projects, which are under operation for long time.	Bidder to comply specification requirement.
116.	VI	PART-B SUB-SECTION-I-M1	8.02.00	30 of 52	The design, manufacture, installation and testing of the pumps shall follow the latest applicable Indian / International (ASME / EN / Japanese) Standards.	Bidder envisages all slurry pumps as per HI standard as per bidder's proven practice followed in WFGD projects.	Bidder to comply the specification requirement.
117.	VI	PART-B SUB-SECTION-I-M1	9.02.00	31 of 52	The design, manufacture, installation and testing of the pumps shall follow the latest applicable Indian / International (ASME / EN / Japanese) Standards.		
118.	VI	PART-B SUB-SECTION-I-M1	8.04.00	30 of 52	All the slurry pumps shall be provided with motorized suction and discharge valves.	Bidder envisages motor operated valves at Absorber slurry Recirculation pump suction and discharge line only. In all other areas, pneumatically operated valves are provided by bidder, instead of motor operated valves. This is as per bidder's proven practice followed in ongoing WFGD projects.	Bidder to comply the specification requirement.
119.	VI	PART-B SUB-SECTION-I-M1	12.03.00	34 of 52	Motorized actuators shall be provided for valves requiring frequent operation as indicated in the relevant scheme.		
120.	VI	PART-B SUB-SECTION-I-M1	8.06.00	31 of 52	All the pump wear parts in contact with the slurry shall be provided with replaceable rubber/elastomer liners suitable for the fluid handled. The Bidder can also offer an hi-chrome alloy line pump if the Bidder has previous experience of the same for similar	Bidder envisages solid Hi-Chrome steel for Slurry pump casing and impeller. Also absorber slurry recirculation pumps shall be offered with SiC lined casing and Hi-Chrome alloy steel impeller as per bidder's	Bidder to comply the specification requirement.

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
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					applications. The material used by the contractor shall be proven in previous installations.	proven practice followed in WFGD projects. This is as per approved OEMs proven offering followed in ongoing WFGD projects suitable for limestone/gypsum slurry application.	
121.	VI	PART-B SUB-SECTION-I-M1	8.07.00	31 of 52	For absorber recirculation service a Silicon carbide/hi-chrome impeller and SiC lining for casing can also be accepted if the manufacturer has supplied a similar pump for a previous installation for similar service.		Bidder to comply the specification requirement
122.	VI	PART-B SUB-SECTION-I-M1	11.05.00	33 of 52	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 & shaft can be rubber lined.	Bidder envisages Super Duplex SS (better than Alloy 926) impeller and Alloy 926 shaft for side entry agitators being used in absorber reaction tank and auxiliary storage tank. Bidder envisages Alloy 926 impeller and Rubber lined carbon steel (CSRL) shaft for top entry agitators being used in all other slurry tanks. This is as per bidder's proven practice followed in ongoing WFGD projects.	Bidder to comply the specification requirement
123.	VI	PART-B SUB-SECTION-I-M2	Annexure-I 5 b	26 of 29	Pump casing shall be provided with a vent connection… Casing drain as required shall be provided.	Casing vent and drain connections are not provided for slurry pumps as per OEMs proven design as such connections can damage pump construction in limestone/gypsum slurry applications because of localized vortex formation leading to heavy wear and tear. Hence this clause is not applicable for bidder's offered slurry pumps.	Bidder to comply the specification requirement
124.	VI	PART-B SUB-SECTION-I-M2	Annexure-I 5 d	26 of 29	Wearing rings shall be provided in pump casing and/or impeller as per manufacturer's standard practice.	Wearing rings are not applicable for bidder's offered slurry pumps. Hence this clause is not applicable for bidder's offered slurry pumps.	Bidder to comply the specification requirement
125.	VI	PART-B SUB-	Annexure-I 5 l	28 of 29	A common base plate mounting both for the pump and motor shall be furnished.	Bidder envisages separate base plate for absorber slurry recirculation pump	Bidder to comply the specification requirement.

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		SECTION-I-M2				and separate base plate for gearbox and motors as per approved OEM's standard offering. This is as per bidder's proven practice followed in WFGD projects.	
126.	VI	PART-B SUB-SECTION-I-M2	Annexure-I 3	24 of 29	CODES AND STANDARDS List of Applicable Standards	Bidder envisages Absorber Slurry Recirculation Pumps as per customer specification requirement based on International and Indian standards, Pump Design standard is as per approved OEMs design based on DIN and EU codes Pump Testing standard is as per ISO 9906 Gr. 1E Pump Material codes are based on DIN, EN, ASTM & IS This is as per bidder's proven practice followed in WFGD projects in line with approved OEMs proven design practice.	Bidder to comply the specification requirement
127.	VI	PART-B SUB-SECTION-I-M2	Annexure-I 4 a	24 of 29	The operating range of the pump shall be 40% to 120% of the duty point unless otherwise mentioned elsewhere.	Bidder envisages the slurry pumps flow operating range as per HI standard, which defines the flow range with reference to pump BEP (best efficiency point), i.e. operating range of 40%-120% of BEP flow, and same shall be decided during detail engineering stage after selection of the pump model once pump characteristics H-Q curve is being finalized by OEMs after award of contract. This is as per bidder's proven practice followed in WFGD projects in line with approved OEMs proven design practice.	Bidder to comply the specification requirement
128.	VI	PART-B	Annexure-	24 of 29	The total head capacity curve shall be	Slurry pumps shall have low shut-off	Bidder to comply the

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		SUB-SECTION-I-M2	I 4 b		continuously rising from the operating point towards shut-off without any zone of instability and with a minimum shut-off head of about 15% more than the design head.	margins due to wider impeller to withstand abrasion. Hence, Slurry pumps shut-off head margin shall be considered accordingly as per pump H-Q characteristics curve which will be decided during detail engineering stage after selection of the pump model once pump H-Q characteristics curve is being finalized by OEMs after award of contract as per HI standard. This is as per bidder's proven practice followed in WFGD projects in line with approved OEMs proven design practice.	specification requirement
129.	VI	PART-B SUB-SECTION-I-M2	Annexure-I 4 c	25 of 29	Pumps of a particular category shall be identical and shall be suitable for parallel operation with equal load division.	Bidder doesn't recommend parallel operation in slurry pumps and same is not recommended by pump OEMs also. Hence, this clause is not applicable for bidder's offered slurry pumps. This is as per bidder's proven practice followed in WFGD projects.	Bidder to comply the specification requirement
130.	VI	PART-B SUB-SECTION-I-M2	Annexure-I 4 d	25 of 29	Pumps shall run smoothly without undue noise and vibration. Peak to peak vibration limits shall be restricted to the following values during operation: Speed / Antifriction Bearing / Sleeve Bearing 1500 rpm and below / 75.0 micron / 75.0 micron 3000 rpm / 50.0 micron / 65.0 micron	During shop performance testing, noise and vibration shall be measured for reference purpose whereas all such stipulated values shall be guaranteed at site. This is as per bidder's proven practice followed in WFGD projects. Vibration limit shall be restricted within a RMS value of 4.5 mm/s as per ISO 10816 for bidder's offered slurry pumps. This is as per bidder's proven practice followed in WFGD projects in line with approved OEMs proven design practice.	Bidder to comply the specification requirement
131.	VI	PART-B	Annexure-	25 of 29	The pumps shall be capable of starting with	Bidder doesn't recommend to operate	Bidder to comply the

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		SUB-SECTION-I-M2	I 4 e		discharge valve fully open and close condition.	slurry pumps at shut-off condition and same is not recommended by pump OEMs also. Hence, this clause is not applicable for bidder's offered slurry pumps. This is as per bidder's proven practice followed in WFGD projects.	specification requirement
132.	VI	PART-B SUB-SECTION-I-M2	Annexure-I 4 g	25 of 29	Pumps shall be so designed that pump impellers and other accessories of the pumps are not damaged due to flow reversal.	Bidder doesn't recommend reverse rotation in slurry pumps since pump impeller is being screwed to the shaft and such reverse rotation will cause overhauling of impeller from the shaft, and hence same is not recommended by pump OEMs also. Hence, this clause is not applicable for bidder's offered slurry pumps. This is as per bidder's proven practice followed in WFGD projects.	Bidder to comply the specification requirement
133.	VI	PART-B SUB-SECTION-I-M2	Annexure-I 5 c	26 of 29	The impeller shall be secured to the shaft, and shall be retained against circumferential movement by keying, pinning or lock rings.	Bidder envisages slurry pumps with pump impeller is being screwed to the shaft. This is as per bidder's proven practice followed in WFGD projects in line with approved OEMs proven design practice.	Bidder to comply the specification requirement
134.	9944-251-POC-F-002 - General layout plan					1. Bidder request to owner to furnish the below existing drawing details to avoid the interface with FGD facility. a) ID fan to stack duct arrangement elevation and plan view with foundation for both units. b) Existing Chimney foundation c) Existing pipe rack details from boiler to ash silo d) Existing building near Ash silo area e) Existing Workshop building elevation and foundation details near FGD area	This shall be provided after award of work.

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135.	General quires					Bidder request customer to provide updated overall plot plan in AutoCAD file	AUTOCAD drawing of General Layout Plan is shared with all prospective bidders through email by HPGCL. Further, the same may be obtained from tender issuing authority, if not received.
136.		SUB-SECTION-IV TERMINAL POINTS & EXCLUSIONS	1.03.00 to 1.08.00	PAGE 1 OF 2	1) Normal and Emergency make up to ECW tank 2) Process Water 3) Gypsum Wash Water (Clarified Water) 4) Potable water 5) Waste Water	Bidder requests Owner to kindly furnish / confirm the following:- 1) DM water: Please indicate the Terminal point location with co-ordinates in the Plot Plan with pressure and temperature 2) FGD process water: Please indicate the Terminal point location with co-ordinates in the Plot Plan with flow and temperature 3) Clarified water Supply: Please indicate the Terminal point location with co-ordinates in the Plot Plan with pressure and temperature 4) Potable water: Please indicate the Terminal point location with co-ordinates in the Plot Plan with flow, pressure and temperature 5) Waste water: Please indicate the Terminal point location with co-ordinates in the Plot Plan.	This shall be provided after award of work.

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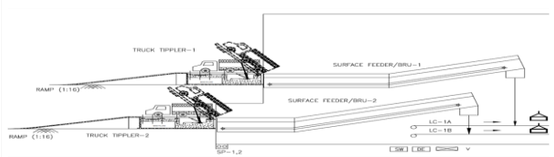
137.		SUB-SECTION-IV TERMINAL POINTS & EXCLUSIONS	1.11.00	PAGE 2 OF 2	FIRE DETECTION AND PROTECTION SYSTEM	Fire hydrant system: Please indicate the Terminal point location with co-ordinates in the Plot Plan with flow and temperature.	Bidder may collect the information from project authorities during site visit.
138.	General quires					Bidder request customer to provide updated overall plot plan in AutoCAD file	AUTOCAD drawing of General Layout Plan is shared with all prospective bidders through email by HPGCL.
139.	9944-251-POM-A-005- FGD PACKAGE LIME STONE FLOW DIAGRAM					Bidder envisages ramp slop 1:12 as per bidder's practice followed in all WFGD projects.	Bidder to comply the specification requirement
140.						Requesting to provide Overall plot plan Autocad drawing	AUTOCAD drawing of General Layout Plan is shared with all prospective bidders through email by HPGCL.
141.						Requesting to provide pipe/cable trestle layout in chimney area	Bidder may collect the information from project authorities during site visit.
142.						Requesting to provide civil building	Bidder may collect the

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						(elevation & plan) and foundation details layouts infront of chimney	information from project authorities during site visit.
143.						Requesting to provide existing chimney raft layout	Bidder may collect the information from project authorities during site visit.
144.						Requesting to mark terminal point in Overall plot plan	Bidder may collect the information from project authorities during site visit.
145.						Requesting customer to use existing pipe/cable trestle where ever possible for FGD piping/ cables	Bidder to comply the specification requirement.
146.	SECTION – VI, PART-A	SUB-SECTION-III SCOPE OF SUPPLY & SERVICES	1.11.00	PAGE 5 OF 6	Existing Pipe /cable trestles, conveyors etc. passing through the proposed FGD area shall be retained, and FGD layout shall be prepared accordingly.	Bidder understands that any existing trestle or over existing civil pedastals can be used to support pipe from FGD area to customer TP location as applicable. Provided pipe details shall be shared with customer during execution for checking load bearing capability.	Bidder to comply the specification requirement.
147.	SECTION – VI, PART-A	SUB-SECTION-IV TERMINAL POINTS & EXCLUSIONS	1.00.00	PAGE 1 OF 2	Terminal Point: Normal make up to ECW tank Contractor shall take a tap off suitably from the existing DM normal make up header (DM water transfer pump discharge) located south of ESP for meeting the makeup water requirement (maximum quantity 2m3/hr) of ECW system. Pressure available in DM normal make up header is 3 kg/cm2. 1.04.00 Process Water For process water requirement, Contractor shall take a tap off suitably from the existing outlet header of Clarified water tank in	Bidder requests owner to kindly provide the location and coordinate for each Terminal point. Bidder requests owner to kindly provide pipe material of construction, pipe size and pipe schedule for existing header line from where pipe tapping connection to be made wherever applicable. Bidder understands all headers as mentioned in terminal point tapping are placed above ground. Bidder requests customer to indicate if	Please refer Clause No. 1.05.00, Terminal points & Exclusions for Terminal point of Clarified water. Bidder to obtain more information from site during detail Engineering

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					Miscellaneous Pump house area. 1.05.00 Gypsum Wash Water (Clarified Water) For Gypsum washing, Contractor shall take a tap off suitably from the existing outlet header of Clarified water tank in Miscellaneous Pump house area for meeting the water requirement of 0.015 m3/hr/MW for Gypsum washing. 1.07.00 Potable water Contractor shall take a tap off suitably from the existing potable water supply header (potable water pump discharge) nearest to FGD area for meeting the potable water requirement. 1.08.00 Waste Water FGD waste water and LHP/GHP waste water shall be sent to ash slurry sump. Lime neutralization of FGD waste water shall be done before sending it to ash slurry sump. Bidder shall indicate the anticipated range of chloride content in the waste water at terminal point.	any of the header is placed below ground and need to consider terminal point tapping below ground. Bidder requests customer to provide data for pressure & flow at TP, where ever applicable.	
148.	SECTION-VI	PART-B SUB-SECTION-I-M1 (FGD)	6.07.03	PAGE 25 OF 52	The limestone slurry pipes shall be sized to minimize erosion and avoid settling of the limestone at part load operation. The slurry pipes shall be lined with replaceable wear resistant natural rubber lining of minimum 6 mm thickness. Additional thickness	Bidder envisage use of replaceable rubber lining of 6mm thickness inside carbon steel pipes and additional 2mm lining thickness inside bends handling slurry lines above DN400 size in FGD system for all slurry lines.	Bidder to comply the specification requirement.

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					of 2 mm in rubber lining shall be provided at bends.	Bidder requests to allow the all slurry pipes for pipe size DN400 and below considering FRP with inside Sic lining to slurry exposed surfaces as alternative material.	
149.	SECTION-VI	PART-B SUB-SECTION-I-M1 (FGD)	12.02.00	PAGE 34 OF 52	All the pipes handling slurry shall be provided with replaceable rubber lining of proven quality. The Contractor can provide slurry pipes of size lower than 300 NB made up of FRP material (silicon carbide coating on slurry exposed surface) if it has previous experience of providing the same. Outer surface of the pipes should be fire retardant.		**Refer the amendment-01 issued in this regard.**
150.	SECTION-VI	PART-B SUB-SECTION-I-M1	14.16.00	PAGE 37 OF 52	Minimum Headroom (free height) under all floors, ducts, walkways and stairs shall be 2.50 M.	Bidder requests to consider minimum headroom clearence of 2.2 M in cable & pipe rack walkway.	Bidder to comply the specification requirement.
151.	SECTION-VI	PART-B SUB-SECTION-I-M1	14.17.00	PAGE 37 OF 52	Inter-connecting pipes/cables between various facilities of FGD plant shall be routed on the steel trestles to be provided by the Contractor. The clear head room for the same shall be minimum 8 M.	Bidder requests owner to keep minimum 6M clear head room for Inter connecting pipes / cables between various facilities of FGD plant inside FGD area, however in case of road crossing clear head room of 8 M will be provided	Bidder to comply the specification requirement.
152.	SECTION-VI PART-B	SUB-SECTION-I-M7 (LOW PRESSURE PIPING)	1.05.00	PAGE 2 OF 16	Based on the inside dia. so established, thickness calculation shall be made as per ANSI B 31.1 OD and thickness of pipes shall than be selected as per ANSI B 36.10/IS-1239 Heavy grade/IS-3589/ASTM-A-53/API-5L/ANSI B 36.19 as the case may be.	Bidder understands that for pipe size above DN150 minimum pipe wall thickness selected based on pressure thickness calculation and matching standard thickness available in IS 3589 as applicable for all pipes including slurry conveying system. Bidder requests Owner to use thickness available in IS3589 as mentioned below: a) ForDN200 & DN250 minimum 4.5 mm b) ForDN200 & DN250 minimum 5 mm c)For DN300 & DN350 minimum 5.6	Bidder to comply the specification requirement.

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						mm. d)For DN400 to DN600 thickness minimum 6.3 mm. e)For DN700 & DN800 minimum 7.1 mm. f)For DN900 & DN1200 minimum 10 mm. g) For DN1400 pipe is fabricated from 10mm THK plate material. Provided these minimum thickness are sufficient to withstand pressure requirement verified as per thickness calculation.	
153.	SECTION-VI, PART-B	SUB-SECTION-I-M6 LIMESTONE & GYPSUM HANDLING SYSTEM	3.3.5	Page 20 of 41	ERW carbon steel pipes to API-5LGr. B/IS:3589 with minimum thickness 6.35 mm		Bidder to comply the specification requirement.
154.	SECTION-VI PART-B	SUB-SECTION-I-M7 (LOW PRESSURE PIPING)	1.03.00	PAGE 1 OF 16	WILLIAM & HAZEN formula shall be used for calculating the friction loss in piping systems with the following "C" value: (i) Carbon steel pipe 100 (ii) Ductile Iron. 140 (iii) Rubber lined steel pipe 120 (iv) Stainless steel pipe 100	Bidder requests Owner to provide "C" value for v) FRP pipe material (silicon carbide coating on slurry exposed surface)	**Refer the amendment-01 issued in this regard.**
155.	SECTION-VI PART-B	SUB-SECTION-I-M7 (LOW PRESSURE PIPING)	1.06.00	PAGE 2 OF 16	Corrosion allowance of 1.6 mm will be added to the calculated thickness being considered (except stainless steel piping).	Bidder understands for rubber lined pipe in slurry lines it is not required to consider any corrosion allowance as the metal pipe surface does not come in contact with slurry.	Provision of the bidding documents shall prevail.
156.	SECTION-VI PART-B	SUB-SECTION-I-M7 (LOW PRESSURE	2.02.09	PAGE 3 OF 16	Inspection holes shall be provided at suitable locations for pipes 800 Nb and above as required for periodic observations and inspection purposes.	As per bidders proven practice no inspection hole envisaged for pipes 800NB and above used in FGD system.	Provision of the bidding documents shall prevail

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		PIPING)					
157.	VI-Part B	V-QM2	--	1 of 18	Indicative Sub Vendor List	Bidder would like to inform that as the sub vendor list for Hammer Crusher, Bulk Receiving Unit, Truck Tippler etc is not furnished, Bidder is going ahead with proven suppliers considered in previously executed projects.	Bidder to comply the specification requirement.
158.	VI-Part A	III-A5	2.01.19	5 of 7	Four (4) numbers of electronic type belt scales (min. one no. on each conveyor feeding to crusher house and conveyor feeding to Limestone bunker at FGD plant) for continuous weighing, complete with all mechanical, electrical, civil, structural works and accessories.	Bidder requests Owner to clarify the quantity & location of belt scales required and these clauses are contradictory.	**Refer the amendment-01 issued in this regard.**
159.	VI-Part E	Tender Drawings	9944-250-POM-A-005	Limestone Flow Diagram	Two (2) numbers belt scales shown for LC-1A/1B and in BOM table.		
160.	VI-Part A	III-A5	2.01.24	5 of 7	Service water and potable water system for complete limestone handling plant. Water Pump houses & water tanks for service water, cooling water (as applicable).	Bidder would like to inform that separate pump house & tank dedicated to Limestone Handling Area is not required. Bidder requests Owner to allow taking tapping from main FGD service and potable water line.	**Refer the amendment-01 issued in this regard.**
161.	VI-Part A	III-A5	3.04.00	6 of 7	Complete dust extraction system for control of fugitive dust in gypsum storage shed.	Bidder would like to inform that Dust extraction system for complete gypsum shed is not feasible. Bidder requests Owner to remove provision of Dust Extraction system from Gypsum Shed.	**Refer the amendment-01 issued in this regard.**
162.	VI-Part A	III-A5	3.05.00	6 of 7	Service water and potable water system for complete gypsum handling plant. Water Pump houses & water tanks for service water, cooling water and potable water system. Common pump house for Limestone	Bidder would like to inform that Separate pump house & tank dedicated to Limestone/ Gypsum Handling Area is not required. Bidder requests Owner to allow taking tapping	**Refer the amendment-01 issued in this regard.**

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					handling plant gypsum handling plant is also acceptable.	from main FGD service and potable water line.	
163.	VI-Part A	III-A5	3.07.00	6 of 7	Complete ventilation system for gypsum storage shed.	Bidder would like to inform that Axial exhaust fans shall be provided for gypsum storage floor only. Owner to confirm.	**Refer the amendment-01 issued in this regard.**
164.	A	IV	1.13.00	2 OF 2	Terminal points of Contractor's electrical scope, applicable for all systems/ subsystems described in relevant clauses for SCOPE is given below: i) Employer's HT switchgear	Bidder requests to the Customer please provide Existing 6.6kV switchgear detail(Locations, Make, etc.)	Bidder may collect the information from project authorities during site visit.
165.	A	III-C	15.00.00	18 OF 18	Cable trench to be provided for FGD CR & Remote I/O Room. In case CR/ RIO Room is located above ground floor, cable vault shall be provided. False floor to route cables is not permitted.	Bidder wishes to clarify that Bidder will consider false flooring For Control room and RIO rooms instead of Cable vault.	Bidder to comply the specification requirement.
166.	B	II-E2	10.01.05	7 OF 10	The following type tests shall be conducted on each type and rating of HT motor	Bidder wishes to clarify that Bidder will submit only Type test reports for the HT Motors. No type test will be conducted. However if any type test reports(not older than 10 years from the date of submission of QAP) not available then bidder will conduct the same. Routine test shall be as per approved QAP (based on OEM standard and latest IS/IEC).	Bidder to comply the specification requirement.
167.	B	II-E-6	2.01.10	3 OF 23	Sizing criteria, derating factors for the cables shall be met as per respective chapters. However for the power cables, the minimum conductor size shall be 6 sq.mm. foraluminium conductor and 2.5 sq.mm. for copper conductor cable.	Bidder understand that power cable from UPS-ACDB/CHARGER-DCDB/NON-UPS ACDB to field power distribution board shall be sized 3CX2.5sq.mm(copper conductor) and from power distribution board to field instruments shall be sized 3CX1.5	Bidder to comply the specification requirement.

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						sq.mm (Cu conductor). Instruments power cable shall be sized 3Cx1.5 sqmm (Cu conductor) as minimum. Employer to confirm on Bidder's understanding.	
168.	B	II-E1	1.01.00	1 OF 8	For equipment in air conditioned areas, design ambient temperature shall be **35 deg.C**, if 2x100% air conditioning system is provided unless specified specifically in relevant sub sections.	Both clauses are contradictory to each other. Bidder shall consider **40 deg C** design temp for VFD Panels(above 100 kW) located in air condition room, as per manufacturer design standard practice	Provisions of bidding documents are amply clear. Bidder to comply the specifications
169.	B	II-E7	3.01.00	3 OF 15	For the purpose of design of equipment/systems, an ambient temperature of **50 deg**.Centigrade and also relative humidity of 95% at 40 deg. Celsius shall be considered.		
170.	B	II-E7	11.04.00	7 OF 17	The VFD shall include air-flow pressure switches and temperature detectors to monitor proper operation of the air cooling system. If the fan fails, the system must generate the alarm/trip for the fan failure.	Bidder wish to clarify that this clause is not applicable for LT VFD. Bidder also wish to clarify that fan failure detection will be achieved by temp. dectectors only for MV VFD.	Bidder to comply with technical specification requirements. Details shall be finalized during detailed engineering as per the actual VFD rating and scheme envisaged.
171.	B	II-E7	23.01.00	11 OF 15	The system offered shall incorporate adequate protection features as per IEC 61800-4: 2002 Table-8, properly coordinated for the drive control and for motor including following: i) Converter transformer: short circuit, over current, earth fault & winding temperature high protection. ii) Incoming and outgoing line surge protection. iii) Under / over voltage protection iv) Phase loss, phase reversal, overload, negative phase sequence, locked rotor protection. v) Instantaneous Over current & Earth fault	Bidder wish to clarify that point no. I, II, Viii, X, Xi & Xii are not applicable for LT VFD. Employer to confirm.	Bidder to comply with technical specification requirements. Protection features shall be finalized during detailed engineering as per the actual VFD scheme envisaged.

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
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					protection vi) Converter/Inverter module failure indication. vii) Over frequency/speed protection. viii) Ventilation failure indication & alarm. ix) Over temperature of VFD x) Bearing temperature protection. xi) System earth fault protection. xii) Speed reference loss protection.		
172.	B	II-E7	24.01.00	12 OF 15	Following controls shall be provided as a part of the Operator Control Panel or through separate switches on the front panel door. i) Start / stop (in local/remote mode) ii) Speed control (Raise / lower) iii) Acknowledge/Accept/ Test Push Button for annunciation iv) Auto / Manual / Test Mode select v) Emergency stop vi) Trip-Remote Breaker	Bidder wish to clarify that point no. III, IV & VI are not applicable for LT VFD. Employer to confirm.	Bidder to comply with technical specification requirements. Control features shall be finalize during detailed engineering as per the actual VFD scheme envisaged.
173.	B	II-E7	28.03.00	14 OF 15	LIST OF TYPE TESTS TO BE CONDUCTED	Bidder wishes to clarify that Bidder will submit only Type test reports for the VFD. No type test will be conducted. However if any type test reports(not older than 10 years from the date of submission of QAP) not available then bidder will conduct the same. Routine test shall be as per approved QAP (based on OEM standard and latest IS/IEC).	Bidder to comply the specification requirement.
174.	B	II-E9	4.08.00	10 OF 59	The enclosure for outdoor panels shall be constructed of stainless steel sheets in order to have protection against corrosion. The Degree of protection for outdoor panels shall be IP: 55.	Bidder shall consider suitable mild steel / cold-rolled sheet steel instead of stainless steel sheets with IP 55W.	Bidder to comply the specification requirement.

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
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175.	B	II-E9	31.00.00	32 OF 59	Each AC Lighting Distribution Board (LDB) shall be fed from 415V / 415V, 50kVA(minimum) isolating transformer & Each Welding Distribution Board (LDB) shall be fed from 415V / 415V, 100kVA	Bidder wishes to clarify that the Transformer rating shall be as per actual load requirement.	Bidder to comply the specification requirement.
176.	B	II-E12	1.00.00 a)	1 OF 29	1600 KVA (MIN.) or As per the system requirement whichever is higher.	Bidder wishes to clarify that Bidder will consider rating of the FGD transformer (6.6/0.433 kV) as per actual load requirement.	Bidder to comply the specification requirement.
177.	B	II-E12	1.01.00 vi)	1 OF 29	Cooling : ONAN (6.6/0.433) kV	Bidder wishes to clarify that Bidder will consider Dry type LT(6.6/0.433 kV) distribution transformer.	Bidder to comply the specification requirement.
178.		SLD rev-03	9	1 OF 1	9. 6.6/0.433KV SERVICE TRF SHALL BE OUTDOOR OIL FILLED. "		Bidder to comply the specification requirement.
179.	VI A	III-C	1.02.00	1 OF 18	In this package field bus based controls and conventional controls (hardwired 420mA/DI/DO) both are envisaged.	Bidder understanding is that 1. Fieldbus (FF/Profibus) based field instrument and electrical motorized actuator shall be connected to DCS control system with fieldbus protocol. 2. Solenoid Operated Valve, Online Analyzers, CEMS, VMS and SWGR shall be connected to DCS control system with hardwired (4-20mA /DI /DO). Employer to confirm on Bidders understanding. 3. Bidder understand that all skid mounted instruments supplied by mechanical package supplier (like Booster Fan, Ball Mill, Vacuum Belt Filter, Recycle Pump and Oxidation Blower etc. shall be hardwired (4-20mA/DI/DO).	1), 2) Bidders understanding is correct. As per specification all field transmitters (PT/DPT/TT) and motorized actuators shall be fieldbus (FF/Profibus) based and specification requirements are to be complied. 3) As per the referred clause3.01.01 b), for skid mounted instruments "Specification /type of instruments shall beas per standard and proven

Sr.no	Specification Reference				Specification requirement	Bidder's query	HPGCL reply
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						Employer to confirm on Bidders understanding.	practice of equipment supplier". Bidder to comply with the specification requirement.
180.	VI A	III-C	3.01.01 b)	9 OF 18	All Instruments which are Integral to equipment like pumps, motors etc. / skid mounted instruments and are not indicated in enclosed drawings (as applicable) included in relevant sub-sections		
181.	VI A	III-C	1.02.01	2 OF 18	Fieldbus based control system for fieldbus based actuators and fieldbus based instruments (PT/DPT/TT) shall be provided for all applications. In case non fieldbus based actuator or transmitters are required for few applications then the same shall be discussed and finalized during detailed engineering.	Bidder understand that all field transmitters (PT/DPT/TT) and motorized actuators except Booster fan blade pitch actuator and instrumentation shall be field bus (FF/Profibus-PA) based instruments. In addition CEMS, Analyzer, Solenoid Operated Valves, others transmitter, SWGR and VMS shall be hardwired (4-20mA) based equipments. Employer to confirm on Bidders understanding.	Bidders understanding is correct. As per specification all field transmitters (PT/DPT/TT) and motorized actuators shall be field bus (FF/Profibus) based and specification requirements are to be complied.
182.	VI A	III-C	8.00.00	15 OF 18	The type tests to be conducted for C&I systems &equipments shall be as detailed out in Sub-Section-IIIC-06 Type Test Requirements, Part-B, Section-VI of Technical Specification.	Bidder wishes to clarify that Bidder will submit only Type test reports for the C&I Systems and Equipments. No type test will be conducted. However if any type test reports(not older than 10 years from the date of submission of QAP) not available then bidder will conduct the same. Routine test shall be as per approved QAP (based on OEM standard and latest IS/IEC).	Bidder to comply specification requirement.
183.	VI B	III-C1	4.00.00	4 of 4	For PCs, OWS, EWS, Servers, Printers and other peripherals, maximum temperature limit shall be 35 Deg.C. For **mini**-UPS, the same shall be 40 Deg.C.	Bidder does not envisage supply of Mini UPS under the scope of supply for this tender. 230 V DC Main UPS shall be located in the FGD electrical building and the	Bidder to comply specification requirement.

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						same shall be used for distributing UPS Power to OES, EWS, Servers etc. Employer to confirm on Bidders understanding.	
184.	VI B	III-C2	1.04.00	01 OF 40	The necessary root valves, impulse piping, drain cocks, gauge-zeroing cocks, valve manifolds and all the other accessories required for mounting/erection of these local instruments shall be furnished	As per NTPC & Bidder practice ,Y piece shall be provided for all instruments installed in dirty Air and flue gas duct. Please confirm	Bidder to comply specification requirement.
185.	VI B	III-C2	1.05.00 & 1.06.00	1 OF 40	All instruments envisaged for sea water applications, shall be provided with wetted parts made of Monel/ Hastelloy C or any other material (if provenness experience of the proposed material for such applications is established by contractor). For Chlorine application: Instruments shall be provided with wetted parts (e.g. diaphragm seal, etc.) made of Hastelloy C. Also, filled liquid shall be Fluorolube oil/ Inert Hydrocarbon / CTFE etc., for these applications. For applications of FECL3 solution: Instruments shall be provided with wetted parts (e.g. diaphragm seal, etc.) made of Tantalum. 1.06.00 For coastal areas, all instruments shall be provided with durable epoxy coating for housings and all exposed surfaces of the instruments.	Bidder understands that this clause is not applicable for this project. Employer to confirm on Bidders understanding.	Bidder to comply specification requirement.
186.	VI B	III-C2	12.00.00	36 of 40	The vibration monitoring cabinet shall be fed from redundant 24V DC feeders with auto changeover scheme.	Bidder understand that "change over circuitry" shall be applicable for Main UPS only. Non-UPS power shall be evenly distributed from three phase supply bus bar. 24V DC Charger shall have redundant panel. Hence, we do	Bidder to comply specification requirement.

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						not envisage changer over scheme for 24 VDC feeders.	
187.	VI B	III-C3	2.01.02	01 OF 4	Instrument air and Service air supply shall be provided for continuous and intermittent purging respectively for all transmitters of mill, dirty air and flue gas applications.	Based on NTPC & Bidder practice, Intermittent purging shall be provide for Air & Flue gas transmitter and Intermittent, Continuous purging shall be provided for Mills transmitters.	Bidder to comply specification requirement.
188.	VI B	III-C8	2.11.00	3 OF 4	All actuators shall be certified for SIL 2 or better	Bidder understand, SIL 2 exemption shall be considered for higher torque electrical actuators, However based on bidder experience FGD system shall not required SIL-2 certification and request to provide all electric actuators without SIL-2. Employer to confirm on Bidders understanding.	All actuators shall be certified for SIL 2 or better in line with specification. Bidder to comply the specification requirement.
189.	VI B	III-C5	7.01.00	17 OF 23	The Data Communication System shall include a redundant System Bus for major subsystems with hot back-up. Other applicable bus systems like cubicle bus, local bus, I/O bus etc shall be redundant except for backplane buses which can be non-redundant. The system shall have the following minimum features:	Bidder confirmed that this is applicable for DDCMIS, however Bidder understand that VFDs, Package PLCs, Compressor PLCs will be connected with DDCMIS in non redundant mode.	Bidder to comply the specification requirement.
190.	VI	D	27.02.00	11 of 53	Water :Contractor shall make all arrangements himself for the supply of construction water as well as potable water for labour and other personnel at the worksite/colony.	Bidder requests owner to kindly provide construction water free of cost, near to FGD area. Bidder also requests owner to provide water required for pre commissioning, commissioning, hydro test, fill test on free of cost basis.	Refer Technical specification in this regard. The provisions of bidding documents shall prevail.
191.	III	BDS	10.1	14 of 16	B.5 Manufacturing & Supply of gate, support structure, actuators etc. required for FGD inlet duct connection with ID-Chimney duct- Finish by 07 Month from NTP	Bidder requests owner to kindly allow to supply Bypass dampers by NTP+12 month due to engineering and Manufacturing cycle time of theses	Bidder to comply the specification requirement.

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						dampers.	
192.						Bidder also requests to provide two shutdown after 12 months from NTP for installation of By-Pass damper in each unit , First shutdown of 21 days for installation of by pass damper in existing duct from ID fan to existing chimney and second shutdown of 10 days for hook up with FGD system	**Refer the amendment-01 issued in this regard.**
193.	VI	PART-A SUB-SECTION-III-A1	4.01.04	4 of 10	2x100% electric driven, single stage, integrally geared, single or dual vane centrifugal type / positive displacement (Helical lobe) type with VFD drive, oxidation blowers	Bidder envisages either "Centrifugal type blower with IGV (without VFD)" OR "Positively displacement type Rotary Lobe (Twin lobe or Tri-lobe) blower with VFD" for WFGD Oxidation blowers as per bidder's proven practice followed in WFGD projects.	**Refer the amendment-01 issued in this regard.**
194.	VIII				Amendments & Clarifications, Part-I	i) Bidder understands that provided amendment & Clarification Part-I and Part II supercede the Main tender documents. Bidder requests owner to kindly confirm the same. ii) Bidder requests owner to kindly confirm the order of precedence for the resolution of similar points if any, which are appearing in both Part -I and Part II	i.) Bidder's understanding is correct. ii.) Part-II supersedes Part-I for the resolution of similar points if any.
195.	IX				Amendments & Clarifications, Part-II		

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196.	PART-B/ SECTION-VI	SUB-SECTION-I-M1	PAGE 40 OF 52 & 41 of 52	16.01.04 16.01.07	Duct Slope: All ducts shall have a sufficient slope with respect to horizontal so that any chance of accumulation of ash particles or water in the duct can be avoided…. Specific Reqt: (J) Bidder to ensure proper draining facilities for the complete system including proper drainage of acidic fluids from the ducts so as to avoid any accumulation of acidic fluids.	Bidder would like to clarify that absorber outlet duct is sloped adequately to drain all the condensate back into the absorber. However, sloping is not envisaged for Absorber inlet duct, Bidder consider slope only in wet dry interface duct at absorber inlet. Bidder requests owner to kindly confirm the same.	Bidder to comply the specification requirement.
197.	SECTION – VI, PART-A	SUB-SECTION-IV	PAGE 1 of 2	1.04.00	For process water requirement, Contractor shall take Clarified water tap off suitably from the CT make up pump discharge header in Miscellaneous Pump house area.	Bidder understands that clarified water will only be used as FGD process water. Cake wash water can be pumped from process water tank through process water pump, and stored in cake wash water tanks. So clarified booster water pump is not required. Kindly confirm.	Bidder to refer Note-2 of the drawing no. 9944-251-POM-A-003 i.e. "Arrangement for cake and belt/cloth washing system indicated is typical. Contractor may offer an alternate system as per his proven practice".
198.	SECTION – VI, PART-A	SUB-SECTION-III-A1 FGD	PAGE 6 of 10	7.03.00	Two (2) clarified water Storage tanks (each tank catering to the clarified water requirement for one vaccum Belt Filter) along with two numbers of 2x100 % clarified Booster water pumps, if required, from terminal point.		
199.	SECTION-VI, PART-B	SUB-SECTION-I-M1(FGD)	PAGE 35 OF 52	13.03.04	Two (2) clarified water Storage tanks along with two numbers of 2x100 % clarified Booster water pumps from terminal point shall be provided by the contractor. The two tanks shall be interconnected with an isolation valve.		
200.	SECTION-VI, PART-B	SUB-SECTION-I-M1(FGD)	PAGE 30 of 52	8.04.00	All the slurry pumps shall be provided with Motorized suction and discharge valves.	As per tender specification and indicative PID, bidder understands that for slurry pumps, suction and discharge valves marked with * in PID, we can offer motorized/pneumatic valves. Please confirm this point.	Bidder's understanding is correct.
201.	SECTION-VI, PART-E	9944-251-POM-A-001 Scheme of FGD ABSORBER SYSTEM			NOTES: SN.15. *AS PER THE BIDDER'S PROVEN PRACTICE, PNEUMATIC CAN BE PROVIDED.		
202.	SECTION – VI, PART-A	SUB-SECTION-III-A5	PAGE 6 OF 7	3.03.00	Minimum four (4) Nos. sump pumps in gypsum storage shed complete with motors, local control panel, level switches, individual discharge piping with fittings and valves	2x100% sump pumps for gypsum storage area is general practice. Kinldy accept the same.	Provision of the bidding documents shall prevail**.**
203.	SECTIO	SUB-SECTION-I-	PAGE 27	7.05.05	The vacuum receiver and pump internals shall be	Receiver will be lined. However the pump	Provision of the bidding

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	N-VI, PART-B	M1	OF 52		suitably lined to protect against the corrosive environment.	lining is not required for water ring vacuum pump. As per our proven experience for hundreds of FGD projects, The lining reduces volume, causing the pump takes more power to displace the same amount of air. The lining requires stable temperature, otherwise, it will expand and deform, locking the impeller, and disabling the entire pump. The lining is relatively soft, so it is likely to be scratched, damaged, and pealed off. If that happens, the maintenance is very difficult since the pump has to be disassembled in order to redo the lining. For FGD projects, carbon steel and cast iron is widely used as vacuum pump material.	documents shall prevail.
204.	SECTION-VI, PART-B	SUB-SECTION-I-M1 (FGD)	PAGE 27 OF 52	7.04.07	For cake washing only clarified water shall be used. For this purpose, one (1) clarified water storage tank (minimum 1 hr storage) shall be provided along with 2x100 cake washing pumps for each Vacuum Belt Filter . One stage of cloth washing arrangement shall also be provided along with 2x100 cloth washing pumps for each Vacuum Belt Filter.	Because clarified water is the only process water source, we can use common water tank for cake and cloth washing water storage. So for each vacuum belt filter, one cake and cloth wash water tank along with 2X100% cake wash water pumps and 2x100% cloth wash water pumps are envisaged. Please accept.	Bidder to refer Note-2 of the drawing no. 9944-251-POM-A-003 i.e. "Arrangement for cake and belt / cloth washing system indicated is typical. Contractor may offer an alternate system as per his proven practice".
205.	SECTION-VI, PART-C	N/A	PAGE 42 OF 83	30.00.00	The equivalent 'A' weighted sound pressure level measured at a height of 1.5 m ... shall notexceed 85 dBA . However, for Ball Mills the noise levels as per following shall also be acceptable:a) Ball Mill < 90 d BA	Noise level of crusher shall be mentioned. As per crusher vendor, the noise level can be guaranteed to 85 db @ no load condition. For full load condition, the noise level is generally < 102dBA.	HPGCL clarified that specification requirement shall be considered by the bidder.
206.	SECTION-VI, PART-B	SUB-SECTION-I-M1 (FGD)	PAGE 8 OF 52	3.03.11	a) All gates shall be provided with 2x100% pressurization fans to achieve 100% sealing efficiency.	As per bidder's understanding and proven practice, a common 2X100% SEAL AIR SYSTEM can be provided for two dampers. Owner to confirm this point.	The bidder may provide the Seal Air System as per tender documents/drawing(s).
207.	SECTION-VI, PART-E	9944-251-POM-A-001 Scheme of FGD ABSORBER SYSTEM			NOTES: SN.13. **, ## THE BIDDER AS PER ITS PROVEN PRACTICE CAN ALSO PROVIDE A COMMON 2X100% SEAL AIR SYSTEM TO MEET THE SEALING REQUIREMENTS.		