

	AMENDMENT ON TECHNICAL SPECIFICATION FOR PRE TREATMENT PLANT		SPECIFICATION NO.: PE-TS-410-158-A001	
			AMENDMENT NO # 3	
	1X800 MW TSGENCO KOTHAGUEDEM TPS STAGE –VII, PALONCHA			
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The following modifications with respect to Technical Specification for **PRE TREATMENT PLANT**, BHEL's Technical specification no PE-TS-410-158-A001 shall apply. Bidder to note that existing clauses/page numbers as appearing in the specification stands deleted and clauses/page numbers as mentioned in "Modified to" column shall be applicable and complied by the bidder.

MODIFIED CLAUSES/PAGE NUMBERS.

Sl no.	Vol. No.	Section	Clause no	Page no	Existing	Modified to
1.	IIB	A	1.1	2 of 869	The indent of this specification is to cover design of all equipment and civil design, structural & construction work at site for all equipment (except Chemical House and centrifuge building), engineering, manufacturing, assembly, inspection, shop testing, supply, packing and delivery at site, loading, unloading, storage, erection and commissioning, start-up, mandatory & commissioning spares, site testing and demonstration test and handling over to the customer of PRETREATMENT PLANT for 1X800 MW TSGENCO KOTHAGUEDEM TPS STAGE –VII, PALONCHA. The scope of supply shall fully cover the requirement of the Design Criteria and Technical specification of this specification. The bidder's scope shall also include any other services, etc. if called for in the succeeding sections of the specification.	The intent of this specification is to cover design of all equipment and civil design, structural & construction work at site for all equipment (except Chemical House and centrifuge building), engineering, manufacturing, assembly, inspection, shop testing, supply, packing and delivery at site, loading, unloading, storage, erection and commissioning, start-up, mandatory & commissioning spares, site testing and Performance Guarantee test and handling over to the customer of PRETREATMENT PLANT for 1X800 MW TSGENCO KOTHAGUEDEM TPS STAGE –VII, PALONCHA. The scope of supply shall fully cover the requirement of the Design Criteria and Technical specification of this specification. The bidder's scope shall also include any other services, etc. if called for in the succeeding sections of the specification.
2.	IIB	C1	3.27	12 of 869	One (1) number sludge Thickener as indicated in P & ID enclosed for effluent treatment plant .	One (1) number sludge Thickener as indicated in P & ID enclosed for Pre treatment plant .
3.	IIB	C1	3.28	12 of 869	One (1) numbers Thickener Sludge Pit as indicated in P & ID enclosed for effluent treatment plant .	One (1) numbers Thickener Sludge Pit as indicated in P & ID enclosed for Pre treatment plant .
4.	IIB	C1	3.29	12 of 869	Two (2) numbers (1Working + 1Standby) Air Blowers for air agitation system of the thickener sludge pit with piping, valves, instrumentation etc as indicated in P & ID enclosed for effluent treatment plant . All the air blower shown in the	Two (2) numbers (1Working + 1Standby) Air Blowers for air agitation system of the thickener sludge pit with piping, valves, instrumentation etc as indicated in P & ID enclosed for Pre treatment plant . All the air blower shown in the



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					P&IDs & referred in the technical specification shall be provided in the acoustic enclosures.	P&IDs & referred in the technical specification shall be provided in the acoustic enclosures.
5.	IIB	C1	3.30	12 of 869	Three (3) numbers (2Working + 1Standby) centrifuge feed pumps along with electric motor drive with piping, valves, fittings and instrumentation as indicated in P & ID enclosed for effluent treatment plant .	Three (3) numbers (2Working + 1Standby) centrifuge feed pumps along with electric motor drive with piping, valves, fittings and instrumentation as indicated in P & ID enclosed for Pre treatment plant .
6.	IIB	C1	3.31	13 of 869	Two (2) numbers centrifuges with piping, valves, fittings and instrumentation as indicated in P & ID enclosed for effluent treatment plant .	Two (2) numbers centrifuges with piping, valves, fittings and instrumentation as indicated in P & ID enclosed for Pre treatment plant .
7.	IIB	C1	3.32	13 of 869	One (1) number thickener Supernatant collection sump as indicated in P & ID enclosed for effluent treatment plant .	One (1) number thickener Supernatant collection sump as indicated in P & ID enclosed for Pre treatment plant .
8.	IIB	C1	3.33	13 of 869	Two (2) numbers (1Working + 1Standby) thickener Supernatant transfer pumps along with electric motor drive with piping, valves, fittings and instrumentation as indicated in P & ID enclosed for effluent treatment plant .	Two (2) numbers (1Working + 1Standby) thickener Supernatant transfer pumps along with electric motor drive with piping, valves, fittings and instrumentation as indicated in P & ID enclosed for Pre treatment plant .
9.	IIB	C1	3.73.2	15 of 869	Inlet and outlet pipes for each sumps, pits, pumps, other equipments, etc. with pipe connections to the respective sumps, pits, equipments as indicated in the P&ID of Pretreatment plant and effluent treatment plant .	Inlet and outlet pipes for each sumps, pits, pumps, other equipments, etc. with pipe connections to the respective sumps, pits, equipments as indicated in the P&ID of Pre treatment plant .
10.	IIB	C1	3.74	15 of 869	New clause added	In addition to the items as indicated in technical specification, following shall also be in Bidder's scope: One (1) number Electrically Operated Monorail Hoist of 1.0 Ton (minimum) safe working capacity and complete with all accessories for handling of Thickener supernatant transfer pumps.
11.	IIB	C1	3.75	15 of 869	New clause added	In addition to the items as indicated in technical specification, following shall also be in Bidder's scope: All consumables, bulk chemicals like alum, lime, poly electrolyte etc., required for pre commissioning, trial run, PG test till hand over of the plant shall be in the scope of the Bidder.



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12.	IIB	C1	6.0	15 of 869	SCOPE OF SUPPLY (CIVIL) All civil design and construction works except Chemical House and centrifuge building are in bidder's scope. All steel inserts, plates, bolts, nuts, sleeves, edge angle, rungs ladder, puddle pipes and all other embedding components etc. as required to grout in bidder's and BHEL civil works to hold/support the equipment being supplied under this specification for the pre-treatment plant shall be in the bidder's scope.	SCOPE OF SUPPLY (CIVIL) All civil design and construction works except Chemical House and centrifuge building are in bidder's scope. All steel inserts, plates, bolts, nuts, sleeves, edge angle, rungs ladder, puddle pipes and all other embedding components etc. as required to grout in bidder's and BHEL civil works to hold/support the equipment being supplied under this specification for the pre-treatment plant shall be in the bidder's scope. Site shall be fully leveled and graded as per plot plan by BHEL. Only micro grading shall be in bidder scope.
13.	IIB	C1	7.0, 5)	16 of 869	Plant shall be designed considering the available head at the terminal point, water level at clarified water storage tank and the head loss between the aerator to clarified water tank.	Plant shall be designed considering the available head at the terminal point, water level at clarified water storage tank and the head loss between the aerator to clarified water tank. The minimum height of the clarified water tank is 8.0 meters.
14.	IIB	C1	8.1	17 of 869	8.1 AERATOR Aerator section shall be of cascade type i.e. stepped design and shall allow water to flow downward after spreading over inclined thin sheets and the turbulence is secured by allowing the water to pass through a series of steps and baffles. Exposure time shall be suitably designed by providing adequate number of steps in the aerator. Plan area shall not be less than 0.03 m² per m³/hr. Detention Time shall not be less than 2 seconds. Water from aerator launder shall be led into the Stilling Chamber.	8.1 AERATOR Aerator section shall be of cascade type i.e. stepped design and shall allow water to flow downward after spreading over inclined thin sheets and the turbulence is secured by allowing the water to pass through a series of steps and baffles. Exposure time shall be suitably designed by providing adequate number of steps in the aerator. Plan area shall not be less than 0.04 m² per m³/hr. Detention Time shall not be less than 2 seconds. Water from aerator launder shall be led into the Stilling Chamber.



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15.	IIB	C1	8.5, 6)	17 of 869	The clarifier periphery (all around) shall have sufficient width (minimum 850 mm) to have an easy walkway for general inspection. This walkway shall be provided with handrail along with periphery access ladders (at least from two locations) with platforms and hand railing for the clarifier for good approach. Permanent ladders shall also be provided (not rungs) for approaching the sludge pipeline valves for maintenance. (However the sludge valves shall be operatable from the top of the sludge chamber through head stock and extended spindle arrangement.	The clarifier periphery (all around) shall have sufficient width (minimum 1200 mm) to have an easy walkway for general inspection. This walkway shall be provided with handrail along with periphery access ladders (at least from two locations) with platforms and hand railing for the clarifier for good approach. Permanent ladders shall also be provided (not rungs) for approaching the sludge pipeline valves for maintenance. (However the sludge valves shall be operatable from the top of the sludge chamber through head stock and extended spindle arrangement.
16.	IIB	C1	9.16	23 of 869	All other facilities/ services as described in section on site services in specification and related to Effluent Treatment Plant scope of work.	All other facilities/ services as described in section on site services in specification and related to Pre Treatment Plant scope of work.
17.	IIB	C1	10.0	23 of 869	10.0 TERMINAL POINTS 1) PT Plant inlet- The terminal point shall be 20Meters away from central shaft of Aerator above 0.5M above FGL. 2) 25 NB Instrument air supply at 5 to 7 kg/cm2 (g) – At 5 meter distance from the Chemical house of Pre treatment Plant. However distribution and piping inside Pre treatment plant area and effluent treatment plant area shall be in bidder's scope. 3) 25 NB Service air supply at 5 to 7 kg/cm2 (g) - At 5 meter distance from the Chemical house of Pre treatment Plant. However distribution and piping inside Pre treatment plant area and effluent treatment plant area shall be in bidder's scope. 4) Service water connection (50 NB connections) - At 5 meter distance from the Chemical house of Pre treatment Plant. However distribution and piping inside Pre	10.0 TERMINAL POINTS 1) PT Plant inlet- The terminal point shall be 20Meters away from central shaft of Aerator above 0.5M above FGL. 2) 25 NB Instrument air supply at 5 to 7 kg/cm2 (g) – At 5 meter distance from the Chemical house of Pretreatment Plant. However distribution and piping inside Pre treatment plant area shall be in bidder's scope. 3) 25 NB Service air supply at 5 to 7 kg/cm2 (g) - At 5 meter distance from the Chemical house of Pre treatment Plant. However distribution and piping inside Pre treatment plant area shall be in bidder's scope. 4) Service water connection (50 NB connections) - At 5 meter distance from the Chemical house of Pre treatment Plant. However distribution and piping inside Pre



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					treatment plant area and effluent treatment plant area shall be in bidder's scope. 5) Drinking water (or potable water) of 25 NB connections - At 5 meter distance from the Chemical house of Pre treatment Plant. However distribution and piping inside Pre treatment plant area and effluent treatment plant area shall be in bidder's scope.	treatment plant area shall be in bidder's scope. 5) Drinking water (or potable water) of 25 NB connections - At 5 meter distance from the Chemical house of Pre treatment Plant. However distribution and piping inside Pre treatment plant area shall be in bidder's scope.																																																																												
18.	IIB	C1	11.0, 3)	23 of 869	EXCLUSIONS 3) All Chemicals.	EXCLUSIONS 3) Stand deleted.																																																																												
19.	IIB	C1	4.0	80 of 869	MANDATORY SPARES LIST FOR PRE TREATMENT PLANT <table><tr><th>Sl. No.</th><th>Equipment/Package Name</th><th>Quantity</th><th>Remarks</th></tr><tr><td>4.0</td><td>Spares for Clarifiers</td><td></td><td></td></tr><tr><td>4.1</td><td>Floculator Assembly</td><td>1 Set.</td><td></td></tr><tr><td>4.2</td><td>Gear box for Floculator Driven</td><td>1 Set</td><td></td></tr><tr><td>4.3</td><td>Gear box for Rail drum drive</td><td>1 Set</td><td></td></tr><tr><td>4.4</td><td>Oil seals for all type of gear box</td><td>5Sets</td><td></td></tr><tr><td>4.5</td><td>Worm wheel</td><td>1Set for each type</td><td></td></tr><tr><td>4.6</td><td>Worm wheel worm shaft</td><td>1Set for each type</td><td></td></tr><tr><td>4.7</td><td>Coupling complete set</td><td>1Set for each type</td><td></td></tr></table>	Sl. No.	Equipment/Package Name	Quantity	Remarks	4.0	Spares for Clarifiers			4.1	Floculator Assembly	1 Set.		4.2	Gear box for Floculator Driven	1 Set		4.3	Gear box for Rail drum drive	1 Set		4.4	Oil seals for all type of gear box	5Sets		4.5	Worm wheel	1Set for each type		4.6	Worm wheel worm shaft	1Set for each type		4.7	Coupling complete set	1Set for each type		MANDATORY SPARES LIST FOR PRE TREATMENT PLANT <table><tr><th>Sl. No.</th><th>Equipment/Package Name</th><th>Quantity</th><th>Remarks</th></tr><tr><td>4.0</td><td>Spares for Clarifiers</td><td></td><td></td></tr><tr><td>4.1</td><td>Floculator Assembly</td><td>1 Set.</td><td></td></tr><tr><td>4.2</td><td>Gear box for Floculator Driver</td><td>1 Set.</td><td></td></tr><tr><td>4.3</td><td>Gear box for Floculator Driven</td><td>1 Set</td><td></td></tr><tr><td>4.4</td><td>Gear box for Rail drum drive</td><td>1 Set</td><td></td></tr><tr><td>4.5</td><td>Oil seals for all type of gear box</td><td>5Sets</td><td></td></tr><tr><td>4.6</td><td>Worm wheel</td><td>1Set for each type</td><td></td></tr><tr><td>4.7</td><td>Worm wheel worm shaft</td><td>1Set for each type</td><td></td></tr><tr><td>4.8</td><td>Coupling complete set</td><td>1Set for each type</td><td></td></tr></table>	Sl. No.	Equipment/Package Name	Quantity	Remarks	4.0	Spares for Clarifiers			4.1	Floculator Assembly	1 Set.		4.2	Gear box for Floculator Driver	1 Set.		4.3	Gear box for Floculator Driven	1 Set		4.4	Gear box for Rail drum drive	1 Set		4.5	Oil seals for all type of gear box	5Sets		4.6	Worm wheel	1Set for each type		4.7	Worm wheel worm shaft	1Set for each type		4.8	Coupling complete set	1Set for each type	
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20.	IIB	C1	1.1	99 of 869	<u>DATASHEET OF PIPING, ISOLATION GATES & VALVES FOR PRE TREATMENT PLANT</u>	<u>DATASHEET OF PIPING, ISOLATION GATES & VALVES FOR PRE TREATMENT PLANT</u>
					1.0 PIPING	1.0 PIPING
					SL NO. SERVICE MATERIAL	SL NO. SERVICE MATERIAL
					1.1 Raw water piping, Clarified Water piping, service water piping, sludge handling piping. Carbon Steel IS-1239 Heavy Grade upto 150 mm NB and IS-3589 for sizes above 150 mm with minimum pipe thickness as indicated in the P&ID.	1.1 Raw water piping, Clarified Water piping, and service water piping. Carbon Steel IS-1239 Heavy Grade upto 150 mm NB and IS-3589 for sizes above 150 mm with minimum pipe thickness as indicated in the P&ID.
21.	IIB	C1	1.7	99 of 869	New clause added.	<u>DATASHEET OF PIPING, ISOLATION GATES & VALVES FOR PRE TREATMENT PLANT</u>
						1.0 PIPING
						SL NO. SERVICE MATERIAL
						1.7 Sludge handling piping. • Cast Iron (underground) • Carbon Steel (overground)
22.	IIB	C1	2.1	99 & 100 of 869	<u>DATASHEET OF PIPING, ISOLATION GATES & VALVES FOR PRE TREATMENT PLANT</u>	<u>DATASHEET OF PIPING, ISOLATION GATES & VALVES FOR PRE TREATMENT PLANT</u>
					2.0 VALVES	2.0 VALVES
					2.1 <u>CAST IRON BODY BUTTERFLY VALVES :</u>	2.1 <u>CAST IRON BODY BUTTERFLY VALVES :</u>
					i. Service: For raw water, clarified water, filtered water, sludge handling. ii. Basic Design Code: All the Butterfly valves shall be of double flanged type of low leakage rate	i. Service: For raw water, clarified water, filtered water. ii. Basic Design Code: All the Butterfly valves shall be of double flanged type of low leakage



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					confirming to AWWA-C-504 class 150 (min.). iii. Material of construction • Body: 2% Ni Cast Iron as per IS-210 Gr. FG260 with 2% Ni. • Valve Disc: 2% Ni Cast Iron as per IS-210 Gr. FG260 with 2% Ni. • Shaft: Stainless Steel ASTM-A-479 type 304. • Seat ring: Clamping ring Stainless Steel ASTM-A-479 type 304. • Shaft Bearing: Ferrobestos LA-33. • Gland Packing: Impregnated Teflon • Seal: Nitrile Rubber iv. Construction: Cast Body and Disc v. Valve classification Code: CIBF vi. Pressure: To be suitably chosen by the Bidder according to requirement, but not less than class 75A as per AWWA-C-504. vii. All the butterfly valves shall be provided by the Bidder with Hand wheel or lever as per the requirements. viii. End preparation: Flanged, Drilled as per ANSI B16.1. Necessary counter flange nuts, bolts, gaskets are to be provided with each valve. ix. Testing: As per AWWA-C-504. However valve disc strength for both forward reverse flow is to be carried out as per BS5155. Certificate for proof of design test for similar type of valve is to be furnished by the bidder. x. All the butterfly valves shall be provided by the Bidder with an indicator to show the position of the disc.	rate confirming to AWWA-C-504 class 150 (min.). iii. Material of construction • Body: 2% Ni Cast Iron as per IS-210 Gr. FG260 with 2% Ni. • Valve Disc: 2% Ni Cast Iron as per IS-210 Gr. FG260 with 2% Ni. • Shaft: Stainless Steel ASTM-A-296 type 316. • Seat ring: Nitrile rubber, EPDM (Ethylene propylene rubber), Hypalon. • Shaft Bearing: Ferrobestos LA-33. • Gland Packing: Impregnated Teflon • Seal: Nitrile Rubber iv. Construction: Cast Body and Disc v. Pressure: To be suitably chosen according to requirement, but not less than class 75A as per AWWA-C-504. vi. All the butterfly valves shall be provided by the Bidder with Hand wheel or lever as per the requirements. vii. End preparation: Flanged, Drilled as per ANSI B16.5. Necessary counter flange nuts, bolts, gaskets are to be provided with each valve. viii. Testing: As per AWWA-C-504. However valve disc strength for both forward reverse flow is to be carried out as per BS5155. Certificate for proof of design test for similar type of valve is to be furnished by the bidder. ix. All the butterfly valves shall be provided by the Bidder with an indicator to show the position of the disc.



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23.	IIB	C1	2.2	100 of 869	<u>DATASHEET OF PIPING, ISOLATION GATES & VALVES FOR PRE TREATMENT PLANT</u> 2.0 VALVES <u>CAST IRON BODY GATE/GLOBE/CHECK VALVE</u> i. Service: For Service Water, Clarified Water, Potable Water. ii. Size: For sizes 65mm NB and above. iii. Valve Classification Code : CIGC i. Basic Design Code • Gate valve - IS 780 for 50 mm - 300 mm NB • Gate valve - IS2906 for 350 mm NB and above or as per MSS-SP-70 • Globe valve - MSS - SP – 85 • Check valve - IS-5312/MSS - SP -71 • Ball - BS-5351 iv. Pressure Class - To be suitably chosen considering the pressure requirement as indicated below: Unless otherwise specified, all pipe work shall be suitable for a minimum pressure of 10.0 kg/sq. cm(g) at 80 deg. C or as required by the design of the different piping system, if higher. v. Construction: Cast body and bonnet / cover vi. Material of Construction • Body & Bonnet/ cover: IS 210 Gr. FG 260 • Trim / Disc.: IS-210 Gr. FG 260 • Seating surface: 13% Cr steel as per IS 1570 • End Preparation: Socket welded for size equal to and below 50mm NB and flanged with	<u>DATASHEET OF PIPING, ISOLATION GATES & VALVES FOR PRE TREATMENT PLANT</u> 2.0 VALVES <u>CAST IRON BODY GATE/GLOBE/CHECK VALVE</u> i. Service: For Service Water, Clarified Water, Potable Water. ii. Basic Design Code • Gate valve - IS 14846 for 50 mm - 1200 mm NB • Gate valve- API 602 for below 50 mm. • Globe valve - MSS - SP – 85 • Check valve - IS-5312/MSS - SP -71 • Ball - BS-5351 iii. Pressure Class - To be suitably chosen considering the pressure requirement as indicated below: Unless otherwise specified, all pipe work shall be suitable for a minimum pressure of 10.0 kg/sq. cm(g) at 80 deg. C or as required by the design of the different piping system, if higher. iv. Construction: Cast body and bonnet / cover v. Material of Construction • Body & Bonnet/ cover: IS 210 Gr. FG 260 • Trim / Disc.: IS-210 Gr. FG 260 • Seating surface: 13% Cr steel as per IS 1570 • Stem: Stainless steel AISI 410/ 13% chrome steel. • End Preparation: Socket welded for size equal



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					counter flanges for 65mm NB and above. vii. Testing - Gate: As per IS - 780 for 50 mm - 300 mm NB - Gate: IS-2906 for sizes equal to and above 350 mm NB - Globe: Hydrostatic Test as per MSS-SP-85 - Check: S-5312/MSS-SP-71	to and below 50mm NB and flanged with counter flanges for 65mm NB and above. vi. Testing - Gate: As per IS - 780 for 50 mm - 300 mm NB - Gate: IS-2906 for sizes equal to and above 350 mm NB - Globe: Hydrostatic Test as per MSS-SP-85 - Check: S-5312/MSS-SP-71
24.	IIB	C1	2.3	100 & 101 of 869	<u>DATASHEET OF PIPING, ISOLATION GATES & VALVES FOR PRE TREATMENT PLANT</u> 2.0 VALVES <u>STAINLESS STEEL BODY/ GATE/GLOBE /CHECK/BALL VALVE</u> - Service: Potable Water, Service and Instrument Air. - Sizes: - Potable Water - For sizes less than and equal to 50 mm NB. - Service and Instrument Air- For all sizes. Ball valves shall be used in air line. Valve Classification Code : SSGC - Basic Design Code - Gate valve - ANSI-B-16.34 - Globe valve - ANSI-B-16.34 - Check valve - ANSI-B-16.34 - Ball - BS-5351 - Pressure Class - To be suitably chosen considering the pressure requirement as indicated below: Unless otherwise specified, all pipe work shall be suitable for a minimum pressure of 10.0 kg/sq.	<u>DATASHEET OF PIPING, ISOLATION GATES & VALVES FOR PRE TREATMENT PLANT</u> 2.0 VALVES <u>STAINLESS STEEL BODY/ GATE/GLOBE /CHECK/BALL VALVE</u> - Service: Potable Water, Service and Instrument Air. - Sizes: - Potable Water - For sizes less than and equal to 50 mm NB. - Service and Instrument Air- For all sizes. Ball valves shall be used in air line. - Basic Design Code - Gate valve - ANSI-B-16.34 - Globe valve - ANSI-B-16.34 - Check valve - ANSI-B-16.34 - Ball - BS-5351 - Pressure Class - To be suitably chosen considering the pressure requirement as indicated below: Unless otherwise specified, all pipe work shall be suitable for a minimum pressure of 10.0 kg/sq. cm(g) at 80 deg. C or as required by the design of



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					cm(g) at 80 deg. C or as required by the design of the different piping system, if higher. vi. Construction: Forged body up to 50mm NB and Cast body above that vii. Material of Construction - Body & Bonnet/ cover: ASTM-A-182 F304 for Ball Valves: - Body & Bonnet/ cover: A351 CF8M for cast body, A 182 F304 for forged body, - Trim / Disc.: ASTM-A-182 F304 for Gate, Globe, Check valves and 351CF 8M for Ball valves. - Seating surface: 13% Cr steel as per IS 1570. For Ball valves PTFE seats and seals. - End Preparation: Socket welded for size equal to and below 50mm NB and flanged with counter flanges for 65mm NB and above. viii. Testing : As per ANSI B-16.34	the different piping system, if higher. v. Construction: Forged body up to 50mm NB and Cast body above that vi. Material of Construction - Body & Bonnet/ cover: ASTM-A-182 F304 for Ball Valves: - Body & Bonnet/ cover: A351 CF8M for cast body, A 182 F304 for forged body, - Trim / Disc/Ball.: ASTM-A-182 F304 for Gate, Globe, Check valves and Stainless steel ASME-SA 479 Grade 316 for Ball valves. - Seating surface: 13% Cr steel as per IS 1570. For Ball valves PTFE seats and seals. - End Preparation: Socket welded for size equal to and below 50mm NB and flanged with counter flanges for 65mm NB and above. vii. Testing : As per ANSI B-16.34
25.	IIB	C1	--	104 of 869	P&ID OF PRE TREATMENT PLANT (SHEET 1 OF 2)	In addition to the requirements as indicated in the P&ID FOR PRE TREATMENT PLANT attached in the Technical Specification, following additional requirements need to be provided by the bidder: - Bidder to provide one number sampling line of 25 NB along with ball valve, fittings, flanges etc. The location of this sampling line shall be at inlet line of Pre-treatment plant just before the flow control station. Other details of piping, valves, fittings, flanges etc. shall be as indicated in the Technical Specification. - Bidder to provide one number level gauge for each compartment of Clarified water storage tank (total two



**AMENDMENT ON TECHNICAL SPECIFICATION
FOR PRE TREATMENT PLANT**

**1X800 MW TSGENCO KOTHAGUEDEM TPS
STAGE –VII, PALONCHA**

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						numbers). Technical requirement of these level gauges shall be as indicated in the Technical Specification.
26.	IIB	C1	--	104 of 869	P&ID OF PRE TREATMENT PLANT (SHEET 1 OF 2) New Note added	16) INSTRUMENTATION REQUIREMENTS AS INDICATED IN THE DRAWING ARE BASED ON TYPICAL CONFIGURATION OF THE PLANT. COMPLETE INSTRUMENTATION TO MEET ACTUAL FUNCTIONAL REQUIREMENT OF SPECIFICATION SHALL BE PROVIDED BY THE BIDDER.
27.	IIB	C1	--	105 of 869	P&ID OF PRE TREATMENT PLANT (SHEET 2 OF 2) Notes added	NOTES: 1) FLUSHING CONNECTIONS WITH VALVES SHALL BE PROVIDED FOR ALL THE PUMPS. 2) ALL THE INSTRUMENT ISOLATION VALVES SHALL BE GLOBE PATTERN. 2-VALVE MANIFOLD FOR PRESSURE MEASURING INSTRUMENTS/3-VALVE MANIFOLD FOR DP MEASURING INSTRUMENTS/ 5- VALVE MANIFOLD FOR DPTS, BALL VALVE FOR FLOW INDICATORS/ANALYTICAL INSTRUMENT SHALL BE PROVIDED BY BIDDER. 3) WHERE EVER PROVIDING 2 VALVE MANIFOLD IS NOT FEASIBLE TWO NUMBERS OF GLOBE VALVES SHALL BE PROVIDED TO MEET THE FUNCTION OF 2-VALVE MANIFOLD. 4) DIAPHRAGM SEALS WITH PRESSURE/DIFFERENTIAL MEASUREMENTS SHALL BE PROVIDED FOR ALL CORROSIVE/VISCOUS/SOLID BEARING/SLURRY TYPE FLUID APPLICATIONS WHETHER EXPLICITLY INDICATED IN THE TENDER P&ID OR NOT. 5) ALL SOLENOID OPERATED VALVES SHALL BE PROVIDED WITH SOLENOID VALVE, AIR LOCK RELAY ETC. AS REQUIRED BY PROCESS. 6) BLIND FLANGES, COUNTER FLANGES & ISOLATION



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						VALVES SHALL BE PROVIDED BY THE BIDDER AT THE TERMINAL POINTS WHEREVER APPLICABLE. 7) ALL THE INDIVIDUAL "Y" TYPE STRAINERS SHALL BE PROVIDED WITH DPI. 8) PRESSURE TRANSMITTER SHALL BE PROVIDED BY THE BIDDER FOR ALL THE PUMPS FOR AUTO OPERATION. 9) ALL THE VALVES, TANKS, VESSELS, INSTRUMENTS, EQUIPMENTS ETC. SHOWN IN THE P&ID ARE BARE MINIMUM. HOWEVER ANY ADDITIONAL VALVES, INSTRUMENTS, EQUIPMENTS ETC. AS REQUIRED BY BHEL/CUSTOMER AS PER SYSTEM REQUIREMENT DURING DETAILED ENGINEERING/EXECUTION/E&C STAGE SHALL BE PROVIDED BY THE BIDDER WITHOUT ANY DELIVERY AND COMMERCIAL IMPLICATION TO BHEL. 10) ALL THE EQUIPMENTS , VALVES, INSTRUMENTS, PIPING ETC SHOWN IN THE P & ID (SHEET 1 OF 2,SHEET 2 OF 2) ARE IN BIDDER'S SCOPE UNLESS EXCLUSIVELY MENTIONED. 11) ALL PNEUMATIC VALVES/DIAPHRAGM VALVES SHALL BE PLC OPERATED. 12) ALL THE TRANSMITTERS USED SHALL BE WITH DIAPHRAGM SEALS. 13) ALL THE SOV'S SHALL BE PLACED IN PNEUMATIC JUNCTION BOXES ONLY AND THE DISTRIBUTION AIR TUBING SHALL BE THROUGH SS MANIFOLD. 14) DRAINS MARKED SHALL BE LED TO FUNNELSTUNDISHES STRATEGICALLY LOCATED AT NEARBY PONIT. FROM THESE FUNNELSTUNDISHES DRAINS SHALL BE FINALLY



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						LED TO OUTDOOR DRAINS. 15) MANHOLES SHALL BE PROVIDED BY THE BIDDER AT THE SLUDGE OUTLET OF THE CLARIFIERS FOR EVERY 25 METERS DISTANCE. 16) INSTRUMENTATION REQUIREMENTS AS INDICATED IN THE DRAWING ARE BASED ON TYPICAL CONFIGURATION OF THE PLANT. COMPLETE INSTRUMENTATION TO MEET ACTUAL FUNCTIONAL REQUIREMENT OF SPECIFICATION SHALL BE PROVIDED BY THE BIDDER..
28.	IIB	D1	2.01.09	126 of 869	Three (3) numbers DMF Feed Pumps, each complete with drive motor and all other accessories.	Stands deleted.
29.	IIB	D1	6.05.00	133 of 869	Rake Mechanism Drive Motor and Recirculator Drive Motor for each Clarifier will be operated from local start/stop push buttons configured on Control Screen to be located on the bridge of each Clarifier.	Rake Mechanism Drive Motor and Recirculator Drive Motor for each Clarifier will be operated from local start/stop push buttons located on the bridge of each Clarifier. The start/stop indication shall be shown in the PLC.
30.	IIB	D3	--	504 of 869	BACK-UP DESK ☐ YES ☒ NO	BACK-UP DESK ☒ YES ☐ NO
31.	IIB	D4	12.02.02, 3 ii)	695 of 869	Sl. No.	Sl. No.
					Class	Class
					Grade of conc.	Grade of conc.
					3.	3.
					ii) Reinforced concrete for water retaining structure	ii) Reinforced concrete for water retaining structure
					M25	M30
