BHARAT HEAVY ELECTRICALS LIMITED
PROJECT ENGINEERING MANAGEMENT, NOIDA

Date-13-Jun-24

CORRIGENDUM- 05

PROJECTs	**:**	**2 X 800 MW NTPC SINGRAULI TPP**
PACKAGE	**:**	**COOLING TOWER - Natural Draft Cooling Towers (NDCT)**
Enquiry No.	**:**	**PE/PG/SIR/E-7516/2024 dated 18.05.2024**
SUBJECT	**:**	**change in payment terms and replies to Pre bid queries.**

Type of Corrigendum			
Technical Corrigendum -	☑	Commercial Corrigendum -	☑

Bidders are requested to note

1. **The following change in the payment Terms for Civil Works i.e. clause no. 28(i)(a) of NIT –**

   In place of

   a) 5% payment against mobilization and installation for Sr No A.1, A.8 & A.9, of T&P deployment list (Annexure-II) + Labour colony duly certified by BHEL. (Further breakup during BBU approval as per joint agreed progress work plan).

   Please read as

   a) 5% payment against mobilization and installation for Sr No A.1, A.8, A.9, E, F & G of T&P deployment list (Annexure-II) + Labour colony duly certified by BHEL. (Further breakup during BBU approval as per joint agreed progress work plan).

   Following payment terms mentioned in Annexure-II is to be ignored.

   (Payment towards mobilization and installation for sr no A.8, A.9 A.10, E, F & G shall be made/allotted during detailed BBU ~~approval based on expenditure/cost incurred proof~~ submission by agency with maximum cumulative 5% of Civil contract value)

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

2. **Replies to pre-bid queries are enclosed.**

All the terms and conditions of the tender enquiry remain unchanged except the change mentioned above at sr. no. 1. All the bidders are requested to quote accordingly.

Yours faithfully,

For and on behalf of BHEL

Amit Kumar/ Manager/BOP

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Part 1/3

Sl. No.	Reference Clause of Tender Document	Existing Provision	Bidder's Query/ Deviations requested	BHEL REPLY
1.	Clause No. 4.4 **TECHNICAL DATA- PART A- MECHANICAL**	Number of cage ladders - Minimum 4 nos a) Upto top platform of Shell – Minimum 2 nos b) Upto intermediate level platform of Aviation light installation- Minimum 2 nos	The minimum no of cage ladders specified is four (4). Federal Aviation Authority (FAA) guidelines are used in the cooling tower industry for determining the aviation lighting requirements for NDCTs. These guidelines are available with BHEL as the same have been used in their previous NDCT packages These guidelines specify a single level of high intensity AOLs for NDCTs up to 600 ft (183 m) height. Similarly, Clause 3.02.00 of Technical Requirements also specify high intensity AOLs. Further, clause 3.06.00 of Technical Requirements specifies four nos. of AOL at each level. However, the FAA guidelines require the no. of AOLs to be determined based on the exit diameter of the shell at the top and accordingly, the no. of AOLs required for this NDCT at the top will be eight. Hence, please confirm that eight nos. of AOLs at the top of the shell can be adopted for this NDCT package as per FAA guidelines. Also, as a single level (top of NDCT) of high intensity AOLs is required for this NDCT package as per FAA guidelines, a single cage ladder will suffice to reach the top for AOL maintenance.	Bidder to follow Technical Specification.

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			Four nos. of cage ladders specified as a minimum are a waste of resources and hence, may please be modified to one or may be two, from a redundancy perspective. However, the best way is opt for a single SS 304 ladder from a longevity perspective in place of MS cage ladder(s). A single SS 304 cage ladder for NDCTs is a standard specification in NPCIL projects. Kindly review and let us know.	
2.	Clause No. 7.15 & 7.16 **TECHNICAL DATA- PART A- MECHANICAL**	**7.15** Maximum CW Pumping head permissible, viz. static head plus frictional losses as below- **17 MWC** - Static head w.r.t. FGL (Top elevation of hot water distribution header) - Frictional losses within bidder's T.P. with 10% margin **7.16** Minimum elevation of top of water level in hot water distribution duct with respect to FGL- **16 M**	There is a mismatch in the these two clauses. Clause 7.15 defines the Static head w.r.t FGL up to the top of distribution header, which is the PVC distribution pipe. Static head means the highest level to which water is raised in the NDCT, which is the water level in the distribution duct. This means the water level in the distribution duct (residual head after overcoming duct friction) for the functioning of the spray nozzle is part of the static head and not friction head. Clause 7.16 states that the water level in the hot water distribution duct must be 16 mWC as a minimum w.r.t FGL. This is the static head being defined correctly. Hence, please modify Clause 7.15 to match the terminology/definition in Clause 7.16. Further, we presume that BHEL has allowed a large pump head of 17 mWC because of the inclusion of staggered splash fills like V bar and Splash Grid in the specifications. However,	Bidder to follow Technical Specification. Further, top of distribution header refers to the top of RCC distribution Duct and not the PVC distribution pipe which is at a lower elevation.

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			BHEL may be aware that the modular splash fills like the trickle grid specified in the tender do not require such large a pump head. Bidders using staggered splash fills will be able to use up the available pump head, whereas those opting for modular splash fills will find it difficult to do so in optimizing their thermic designs. When an excess pump head is available, the only prudent way to utilize it is by increasing the friction loss in the system so that the thermic design is optimized. Friction loss through the piping system cannot be increased because the specification (Clause 7.4, Page 498) restricts the flow velocity to 2 m/s, which means the only possible way to is to increase the friction losses in the hot water duct to consume the excess head. The advantage of this process is that the size of the duct reduces, which means the obstruction to air flow also reduces, thus reducing the pressure drop through the NDCT. If the 16 mWC static head is imposed as a minimum, no such optimization is possible and the air inlet height and the spray height, etc will have to increased unnecessarily to match the water level. When the KaV/L from rain and spray together is limited to 20% of that from Fill, there is no advantage in using a large air inlet or a spray height. Moreover, there is also a point/height of optimum performance for the rain zone as well. Any additional air inlet will result in increased pressure losses because the air has to overcome the obstruction from the additional height of falling water. Also, the cost of the raker column will increase significantly if its height increases	

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			beyond an optimal point. Hence, the static head in the NDCT w.r.t FGL must either be left to the bidders to optimize or if specifying a minimum level is necessary to bring all bidders on par, then BHEL must reduce the top of water level in the duct (static head) from 16 mWC to 15 mWC at least for those using modular s[plash fills; It can remain at 16 mWC for staggered splash fills like V bar and Splash Grid. BHEL may kindly specify the static head as above considering the types of fills permitted to enable bidders optimize their thermic designs to the advantage of BHEL.	
3.	Clause No. 3.01.00 **TECHNICAL REQUIREMENT**	The cooling tower shall be designed to meet the duty conditions as specified in this tender specification. Employer may get the verification and review of contractor's design done through third party (who can be employer's consultant/reputed designer/ National or International Technological Institute/National or International body on cooling tower & it's components), if required (during detailed engineering). All necessary data/ details/ drawings shall be provided by the contractor to get the same carried out. The cooling tower shall be capable of cooling the rated capacity of water through the	It is mentioned that the employer may get the contractor's designs verified and reviewed, if required during detailed engineering through a third party who can be employer's consultant/reputed designer/ National or International Technological Institute/National or International body on cooling tower & it's components. Please let us know whether there is an employer's consultant in this project. If yes, how can he be considered as a third party as he represents employer's interests. If not, kindly let us know what the term "reputed designer" means. An individual considered reputable by one company may not be so for another company. Also, it is possible that reputed designs and/or companies/consultants are already involved in this project as designers for some of the participating contractors/bidders. Such	Bidder to follow Technical Specification.

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		designed cooling tower range at the design ambient wet bulb temperature, design relative humidity and other design parameters as specified elsewhere. The design parameters shall be met with average wind velocity taken as 3.5 m/sec	designers/consultants cannot be viewed as an independent third party because of the conflict of interest that entails In light of the above, the only way to eliminate conflict of interest will be by limited the definition of third party to National or International Technological Institutes like IITs, IISc, CTI, etc. Though CTI publishes cooling tower standards, they will not review thermic designs as it is not part of their charter. Hence, the only possible options are IITs and IISc that are truly independent and have already been offering the design review services to the Indian cooling tower industry, including BHEL for the last many years. Kindly review and let us know.	
4.	Clause No. 3.01.00 **TECHNICAL REQUIREMENT**	The cooling tower shall be designed to meet the duty conditions as specified in this tender specification. Employer may get the verification and review of contractor's design done through third party (who can be employer's consultant/reputed designer/ National or International Technological Institute/National or International body on cooling tower & it's components), if required (during detailed engineering). All necessary data/ details/ drawings shall be provided	This clause states that the drift loss limitation of 0.001% shall be demonstrated during the PG test as per relevant test codes. However, as per Clause 1 under Performance Guarantees of guarantees on drift loss are not applicable. Hence, as drift loss is not a guaranteed parameter, there is no necessity for the contractor to demonstrate the same during the PG test. In case the drift test needs to be included in the PG test, the only relevant code for such a test will be ATC-140 that covers the Isokinetic Method. This is the latest method and code by CTI and there	Bidder to follow Technical Specification.

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		by the contractor to get the same carried out. The cooling tower shall be capable of cooling the rated capacity of water through the designed cooling tower range at the design ambient wet bulb temperature, design relative humidity and other design parameters as specified elsewhere. The design parameters shall be met with average wind velocity taken as 3.5 m/sec	are no agencies in India who can perform this test. It will cost a lot (up to Rs. 90 lacs) to get a CTI licensed agency to conduct this test in this project. Further, **when the PG test itself is not required to be conducted by a CTI licensed agency as per BHEL specifications, the drift test need not be performed by a similar agency licensed for the purpose.** If the intention is to approximately determine the drift loss without financial implication, the only method is to follow the old BS 4485 guideline where the basin water level is monitored and recorded during the PG test to evaluate the evaporation loss and drift loss based on the reduction in the basin water level for the duration of the test. This approximate method has been followed in many projects in India, including NPCIL for record purposes. Kindly review and let us know	
5.	Clause No. 16.00.00 **TECHNICAL REQUIREMENT**	**PG Test** Ref PG test chapter. In addition, PG test shall be carried out by the contractor within one year of successful completion of trial operation of the cooling tower and at a	This clause permits the conduct of the PG test by the contractor himself. Please confirm that a third party PG test or the one by a CTI licensed test agency is not required/envisaged in this project	Bidder to follow Technical Specification.

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		time when the atmospheric conditions are within limits of deviation from the design conditions as specified, preferably in the period from May to September.		
6.	Clause No. 3 **STANDARD ELECTRICAL SCOPE**	Power Cables, control cables and screened cables for (Except for lighting and aviation lighting cables) a) Both end equipment in BHEL's scope b) Both end equipment in vendor's scope c) One end equipment in vendor's scope	The supply of power cables is by BHEL and E&C by contractor in case both end equipment are in vendor's scope. For example, the Emergency LDB and the AOLs are both in the contractor's scope, in which case the supply of power/lighting cables will be by BHEL. However, Clause 1.09.02 of Scope of Supply and Services mentions that LT power cables are in vendor's scope. Though LT power cables are not exactly lighting power cables, kindly clarify that lighting power cables between the Emergency LDB and the AOLs on the top of the NDCTs will be supplied by BHEL as per Clause no 3 on Standard Electrical Scope.	Scope of Electrical Items shall be as per 'STANDARD SCOPE BHEL AND VENDOR' at Page 26to 28 of 216.
7.	Clause No. 9 **STANDARD ELECTRICAL SCOPE**	Below Grade Grounding Scope Supply- BHEL Scope E&C- Vendor	The supply of below-ground earthing rods/mat is by BHEL and E&C by contractor. However, Clause 1.10.00 of Scope of Supply and Services mentions that the interconnection of earthing grid with the existing grid if Stage-1 is in contractor's scope. This is contradictory to Electrical Scope Split Matrix because the inter-	Scope of Electrical Items shall be as per 'STANDARD SCOPE BHEL AND VENDOR' at Page 26to 28 of 216.

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			connection is below-ground. Kindly review and let us know.	
8.	Clause No. 9 **SINGRAULI STPS RAW WATER DATA**	Sulphate- mg/l as CaCO3-32	The Raw Water Analysis shows that the BOD and COD are at 5 mg/l and 50 mg/l respectively. A BOD above 3 mg/l (the limit for drinking water) indicates that the water is moderately fouled. It is necessary to know the BOD in the circulating water at a COC of 5 envisaged in this project. Kindly note that there seems to be a potential for bio-growth in the PVC distribution pipes and fill surfaces of the NDCTs at this level of BOD and COD. Please let us know whether there is a biocide program envisaged to control the microbial activity and the associated BOD in the circulating water to protect the distribution conduits and heat transfer surfaces	Bidder to note that suitable provision to control scaling/ corrosion, microbiological growth is envisaged for condenser by BHEL.
9.	Clause No. 1.1 **TECHNICAL SPECIFICATION**	Bidder shall guarantee the CW Temperature for each Cooling Tower as below: The cold-water temperature of 32.5 deg C shall be guaranteed for the design conditions of CW flow, range, ambient WBT and RH as per the performance test procedure attached in the	The third paragraph under this clause is erroneous. Kindly confirm that the PG test has to be conducted by the contractor as per CTI code ATC-105 specified in various sections of the tender documents.	PG Test is to be conducted as per CTI code ATC-105 and CT PG Test Procedure at Page 120 to 133 of 216 of Technical Specification.

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		specification. "Predicted cold water temperature" shall be arrived from the guaranteed cold-water temperature by correcting the same for the test conditions of range, ambient conditions and circulating water flow using the performance curves furnished by the contractor. In case the "Test cold water temperature" is higher than the "Predicted cold water temperature", Employer reserves the right to accept the tower after assessing the liquidated damages. The liquidated damages for shortfall in cold water temperature shall be worked out for all the cooling towers as per relevant clause & sub-section		
10.	Clause No. 1.3 **PERFORMANCE GUARANTEES** **TECHNICAL SPECIFICATION**	Complete PG test and Instruments required for conducting the PG Test shall be as per 'CT PG Test Procedure' attached in the specification. PG test equipment being supplied, installed and commissioned for each unit by contractor, shall be retained by end Customer after completion of PG test.	It is mentioned that all the instruments brought to site by the contractor for conducting the PG test shall be retained by the Customer. This means that the PG test instruments need to be supplied by the contractor to the customer/employer as part of the contract. Kindly review and let us know.	Bidder's understanding is Correct.

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11.	Clause No. 5.17.01.02.06 (I) **TECHNICAL REQUIREMENTS**	**Design Criteria for Structures (Other than Tower Shell foundation)** a. The design of all liquid retaining/ conveying structures of cooling tower like CW basin, sump, outlet channel, sludge drain, pits and pedestals for raker column shall be designed as per IS 3370 (Part 2) with limiting crack width to 0.1 mm. b. The design of all liquid retaining/ conveying structures of cooling tower above Cold water basin slab such as Raker Columns, Shell Structure, fill/ drift eliminator support columns, beams, walkways, slabs, partition wall, precast beams etc. shall be carried out by limit state method as outlined in Clause 4.4 of IS:3370 (Part 2). Further, for limiting crack width, the stress for reinforcement shall be limited to 130 MPa (on all faces) as per clause 4.4.3.1 of IS:3370 (Part 2):2009 using the partial safety factor for serviceability condition as per clause 4.4.1.3.	Sub-Clauses a & b under this clause are confusing and contradictory for the following reasons: Sub-Clause a) requires that all the liquid retaining structures like CW basin, sump, channel, HW ducts and pedestals of raker columns be designed as per IS 3370, Part-2 with crack width limitation of 0.1 mm. Sub-Clause b) requires that all structures other than liquid retaining/conveying above the CW basin (like raker columns, shell, fill supporting columns and beams, walkways, partition walls, etc) be designed as per limit state method per Clause 4.4 of IS 3370, Part-2 but limiting the stresses in reinforcement steel to 130 MPa. BHEL realizes that limiting the stresses in reinforcement steel to 130 MPa results in near "zero" crack width, which is more stringent than limiting the crack width to 0.1 mm applicable for liquid retaining structures. **And when the liquid retaining structures are designed for 0.1 mm crack width, it is erroneous to specify "near zero" crack width for non-liquid retaining structures.** Kindly review and let us know	Refer amendment with page no. 239 and 240 of 317 NDCT book 2 of 2.

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12.	Clause No. 5.17.05.07 (v) **TECHNICAL REQUIREMENTS**	In case the hot water pipes of cooling tower are extended upto inner surface of shell, they shall be supported over the RCC brackets which are cast integral with the shell. Alternatively, these brackets and its fixed bolting arrangement shall be of stainless steel SS316L grade to ensure trouble free operation.	Brackets integral to the shell are not required for supporting the PVC distribution pipes in the periphery. The peripheral main beam will be utilized for terminating the PVC distribution pipes. Brackets or projections that may cause additional air-side pressure drop must be avoided. A suitable supporting system design for all the internals is in the scope of the NDCT designer. Kindly confirm.	Clause 5.17.05.07 (v) is applicable.
13.	Clause No. 5.17.05.07 (i) & 5.17.05.09 **TECHNICAL REQUIREMENTS**	5.17.05.07 (i)- The tower shall be provided with two numbers external RCC Staircase, leading to a heavy duty door giving access to the distribution system. Staircase shall be minimum 1000 mm wide (clear), with landings of minimum width of 1000 mm at not more than 2500 mm height intervals unless approved otherwise. The steps shall have a rise of about 175 mm and tread of about 250 mm. Anti - skid nosing at each step shall be provided 5.17.05.09- Platforms of size 1.5m x 1.5m clear dimensions shall be provided on the cooling tower for maintenance of aviation warning lights at levels specified elsewhere. At least two (2) diametrically opposite galvanized MS caged ladders, 600 mm wide, made out	These clauses are contradictory as the former specifies RCC staircases and the latter FRP. Kindly review and let us know.	Clause no. 5.17.05.07 for RCC staircase and 5.17.05.09 for outside cage ladder with only one top flight will be of FRP.

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		of 6 mm x 10 mm flats for full height of the tower shall be provided. Additional cage ladders for access to aviation obstruction lights at intermediate levels shall be provided at required locations upto the required height. Galvanization shall be provided for all MS components of ladder & caging as per specifications. All fastening bolts and anchor fasteners shall also be of galvanized finish. The ladder shall have 20 mm dia rungs at 300 mm centers, with stays at every 2250 mm, connected to the concrete shell and galvanized M.S. caging consisting of 50 mm x 70 mm vertical cage flats on the exterior surface of each cooling tower. The caged ladder shall be provided with intermediate landing of 1000 x 1200 mm wide at every 4500 mm height interval and further, the ladder shall be staggered at each such landing by a horizontal distance of 600 mm to avoid continuous climb. Some of the landing levels shall be suitably adjusted to give access to aviation warning beacons for maintenance. Handrails as described		

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		above, shall be provided on all platforms and landings. The ladder leading to the top platform shall have approach from the ground via the FRP Staircase.		
14.	Clause No. 5.23.25.1 **TECHNICAL REQUIREMENTS**	HDPE membrane system : For Raft water proofing The HDPE membrane should conform to the following parameters with shall be consider as minimum requirement. (i) Minimum thickness of HDPE layer 1.5 mm (ii) Resistance to hydrostatic head greater than 50m as per ASTM D 5385 (iii) Minimum peel adhesion to concrete greater than 880 N/m as per ASTM903 (iv) Minimum tensile strength 25 Mpa ASTM D412 **(iv) Minimum Puncture resistance 1000N as per** ASTM E154 (iv) Minimum Elongation 400% as per ASTM D412	These civil specs are general in nature and do not apply to the NDCTs package. However, please clarify that the requirement of HDPE membrane system for water proofing of raft is not applicable to this package.	Bidder's understanding is Correct.
15.	Clause No. 1.00.00 **SCOPE OF SUPPLY AND SERVICES**	The scope of Bidder for civil, structural and architectural works as defined above shall include but not be limited to the following buildings/ areas/ systems along with their foundations, super structures and finishes complete: **1.** Topographical Survey.	The scope of Civil, Structural, Architectural Works of EPC package is enclosed with the NDCT specs. This clause includes topographical survey and geotechnical investigation, site clearing, levelling, etc, etc. Please confirm that topographical surveys and geotechnical investigations are	"The scope of Civil, structural works shall include topographical survey, geotechnical investigation, site clearance,~~ dismantling of existing structure/substructure/facilities,~~ site levelling, preparation of design documents and drawings and

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		2. Geo-technical Investigation. **3.** Site clearance including cutting of trees of girth less than 30 centimeters. Cutting of trees of girth more than 30cm shall be done by the Owner, however, removal and disposal of roots, trees of girth less than 30cm and other vegetation is in Bidder's scope.	not in the NDCT contractors' scope as Corrigendum 02 already presents the net bore log data for the NDCT locations.	getting approval of the same from the Employer and construction of all Civil, structural and architectural works including supply of all construction materials of all buildings, equipment and facilities for the project." **Shall be read as** "The scope of Civil, structural works shall include ~~topographical survey, geotechnical investigation, site clearance, dismantling of existing structure/substructure/facilities, site levelling,~~ preparation of design documents and drawings and getting approval of the same from the Employer and construction of all Civil, structural and architectural works including supply of all construction materials of all buildings, equipment and facilities for the project."
16.	**CLIMATOLOGICAL TABLE**	The site elevation is shown to be 272 m above MSL	As per Clause 6.1.1 e) of BS:4485 the effect of site elevation above MSL should be considered only when it is more than 300 m. Higher altitude above 300 m will reduce the NDCT height slightly because of the variation in air densities. As the	Bidder to follow technical specification along with relevant codes and standards in this regard.

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			site elevation is less than 300 m, please confirm that the effect of altitude should not be considered in thermal design, i.e. the altitude must be considered equal to MSL for thermal design	
17.	**COMPLIANCE DRAWING** **C) COORDINATES AND BATTERY LIMIT OF NDCT (ANNEXURE-III)**		The Key Plan appears to be NTS. Hence, it is not clear whether the gap between the two NDCTs is a minimum of half the diameter required as per BS 4485. Kindly review and let us know.	BHEL confirms that the gap between the two NDCTs is a minimum of half the diameter required as per BS 4485.
18.	CLAUSE NO. 4.3.2 **PRE QUALIFYING REQUIREMENTS**	Bidder who does not meet the requirements under clause 4.3.1, can also participate in collaboration/association with a firm who fully meets the requirements at clause 4.3.1, provided the Bidder has executed projects involving RCC works of tall structures of minimum height of 100m using slip/jump form shuttering. In such a case, the Bidder shall be required to furnish a Deed of Joint Undertaking executed by the Bidder and its Collaborator/Associate for the successful performance of Cooling Tower, as per the format enclosed with the bidding documents. The Deed of Joint Undertaking (DJU) shall be submitted along with the bid/offer. In case of award, Bidder and	As per the clause, in case of award, bidder and associate are shall each be required to furnish an on-demand bank guarantee for INR 65 million (Sixty Five Million only) in addition to the contract performance security to be furnished by the bidder. As bidder is already submitting the CPBG, 65 million bank guarantee shall be furnished by the associate only and not by the bidder.	Bidder to follow Tender Specification.

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		Collaborator/Associate shall each be required to furnish an on-demand bank guarantee for INR 65 million (Sixty Five Million only) in addition to the contract performance security to be furnished by the bidder.		
19.	Clause No. 28 (a) **NIT** **&** Annexure-II **T&P**	**Clause No. 28-** **Payment Terms for Civil Works shall be as follows:** a) 5% payment against mobilization and installation for Sr No A.1, A.8 & A.9, of T&P deployment list (Annexure-II) + Labour colony duly certified by BHEL. (Further breakup during BBU approval as per joint agreed progress work plan). **Annexure-II** (Payment towards mobilization and installation for sr no A.8, A.9 A.10, E, F & G shall be made/allotted during detailed BBU approval based on expenditure/cost incurred proof submission by agency with maximum cumulative 5% of Civil contract value)	There is discrepancy between the two clauses. In Clause 28, 5% payment is against mobilization of Sr No A.1, A.8 & A.9, of T&P deployment list (Annexure-II) + Labour colony duly certified by BHEL whereas in Annexure II, 5% payment is against mobilization and installation of Sr. No A.8, A.9 A.10, E, F & G. Kindly review and clarify the same.	**Please note the following change in the payment Terms for Civil Works i.e. clause no. 28(i)(a) of NIT -** **In place of** a) 5% payment against mobilization and installation for Sr No A.1, A.8 & A.9, of T&P deployment list (Annexure-II) + Labour colony duly certified by BHEL. (Further breakup during BBU approval as per joint agreed progress work plan). Please read as a) 5% payment against mobilization and installation for Sr No A.1, A.8, A.9, E, F & G of T&P deployment list (Annexure-II) + Labour colony duly certified by BHEL. (Further breakup during BBU approval as per joint agreed progress work plan).

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				Following payment terms mentioned in Annexure-II is to be ignored. (Payment towards mobilization and installation for sr no A.8, A.9 A.10, E, F & G shall be made/allotted during detailed BBU ~~approval based on expenditure/cost incurred proof~~ submission by agency with maximum cumulative 5% of Civil contract value)
20.	Clause No 1.01.00 **TECHNICAL REQUIREMENTS**	All construction materials including cement, reinforcement steel, coarse & fine aggregate, structural steel and construction water etc., shall be arranged by the Bidder	Please delete as cement and reinforcement steel is provided by BHEL on free of charge basis.	Cement and reinforcement steel shall be free issued by BHEL as per NIT terms & conditions.
21.	Clause No 1.01.01 **Scope of Supply and Services**	All steel structures shall be fabricated in factory, transported, and erected at site. All factory-fabricated structures shall have bolted field connections. Coal bunkers with hoppers, Lime stone and Biomass Silo, Chimney flue liners, CW duct liners can either be fabricated at factory in segments, transported and welded at site before erection or fabricated at site. For coal/Lime/Biomass bunkers, hoppers and chimney flue liners,	Please delete this clause as not related to NDCT.	This clause can be ignored.

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		to prevent coal dust/flue gas leakages, the applicable field joints shall necessarily be welded. **Note:** Steel structures shall mean plant and non-plant building structures, boiler & ESP support structures, Coal, limestone and Gypsum handling structures, AHP structures, chimney flue liners support platforms & stairs, pipe and cable support structures		
22.	Clause No 1.00.00 (4) **Scope of Supply and Services**	**SCOPE OF CIVIL, STRUCTURAL & ARCHITECTURAL WORKS OF EPC PACKAGE** ~~Dismantling~~, removal, and disposal of identified facilities/ structures/ substructures/ foundations of ~~dismantled quarters/buildings/structures,~~ reinforcement, pavement/paving, pipes and any underground structure/materials, debris etc. all complete.	We request you to delete this work from the scope of work of the NDCT contractor.	Bidder to follow Technical Specification.
23.	Clause No. 1.1 **TECHNICAL SPECIFICATION**	**PERFORMANCE GUARANTEES** In case the "Test cold water temperature" is higher than the "Predicted cold water temperature", Employer reserves the right	In case the cold water temperature exceeds the acceptable limits, the bidder should be allowed to do the modification so that cold water temperature is as per acceptable limit.	Please refer clause no 1.8 of page 110 of 216 of PERFORMANCE GUARANTEES

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		to accept the tower after assessing the liquidated damages.		
24.	Clause No. 5.00.00 **TECHNICAL SPECIFICATION**	**Constructional Features:** 6. Fill supports – RCC/SS-316	Please change to: Fill supports – RCC/SS-316/FRP	Bidder to follow Technical Specification.
25.	Clause No. 3.10.00 **TECHNICAL SPECIFICATION**	Contractor shall submit, performance test reports of similar towers installed by them. Such reports shall include the details of packing arrangement and must have been duly approved by the purchaser. Contractor may note, the calculations specified above must be submitted. The contractor shall show, explain, and prove the validity of the basis, procedures and methods used in these calculations	Please change the sentence to "Contractor shall submit, performance test reports of similar towers **if** installed by them otherwise need not to submit. Such reports shall include the details of packing arrangement and must have been duly approved by the purchaser. Contractor may note, the calculations specified above must be submitted."	Bidder to follow Technical Specification.
26.	**ANNEXURE-XII** **GCC**	7. COOLING TOWER-NDCT - Final bill shall be paid after successful PG test completion	Please revise clause: Final bill to be released after successful completion of NDCT. BHEL will be having the Performance Bank Guarantee which can be released after successful PG test or Defect Liability Period whichever is earlier	No change in tender terms and conditions.

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27.	**ANNEXURE-VII** **GCC**	**A) PAYMENT TERMS** Payment will be released generally within 60 days after receipt of material/ services and complete documents as per order/ contract (45 days for vendors qualified and registered as micro or small as per MSMED Act) Loading will be done for vendors seeking earlier payment w.r.t. above, for the value and the period of deviation as per Clause 17.0 of 'Instructions to Bidders'.	We request you to release the payment within 30 days as we are medium enterprises as per MSMED Act	No change in tender terms and conditions.
28.	Clause No. 2 **ANNEXURE- V** **GCC**	**Recoveries arising out of Risk & Cost and LD or any other recoveries due from Contractor** Without prejudice to the other means of recovery of such dues from the seller recoveries from the seller on whom risk & cost has been invoked shall be made from the following: **a) Dues payable to the seller against other contracts, SDs, BGs in the same Region/Unit/ Division of BHEL.** **b) Dues payable to the seller against different contracts, SDs, BGs in the same Region/Unit/ Division of BHEL**	Please delete these clauses. This contract has to be treated independent of other contracts	Please refer clause no. 37 of NIT which state the following "Bidders to agree with all the clauses of GCC BOP except clause no-27.0 of GCTC of GCC-BOP (available on www.pem.bhel.com) & SCC of the project." Accordingly, clause no-27.0 of GCTC of GCC-BOP is not applicable. For Breach of contract, Remedies and Termination and related recoveries Please refer clause no. 36 of NIT. No change in tender terms and conditions.

PRE BID CLARIFICATIONS

29.	**ANNEXURE-III** **GCC**	**CONTRACT PERFORMANCE BANK GUARANTEE**	The Contract Performance Bank Guarantee format will be vetted by our bankers before issue of CPBG	No change in tender terms and conditions.
30.	Clause No. 46 (vi) **GCC**	The rate of interest applicable for the above advances shall be the base rate of State Bank of India prevailing on the date of release of advance plus 6%, and such rate will remain fixed till the total advance amount is recovered.	Please change the clause to "The rate of interest applicable for the above advances shall be the base rate of State Bank of India prevailing on the date of release of advance plus **2%**, and such rate will remain fixed till the total advance amount is recovered."	No change in tender terms and conditions.
31.	Clause No. 39.0 **GCC**	**HOLD ON CONTRACT EXECUTION CASES OTHER THAN FORCE MAJEURE** In case of uncertainty regarding lifting of HOLD on contract execution relating to any activity put by Buyer/BHEL (because of any reason other than Force Majeure) or by end customer (cancellation or hold on project), the contract/Purchase Order may be short closed by Buyer/BHEL after 3 years from date of imposition of HOLD without prejudice to any claim of either party with regard to the executed portion of the contract. However, all future obligations of the Buyer and Seller with respect to the contract/Purchase Order shall come to end in case of such short closure	Please change the clause to "In case of uncertainty regarding lifting of HOLD on contract execution relating to any activity put by Buyer/BHEL (because of any reason other than Force Majeure) or by end customer (cancellation or hold on project), the contract/Purchase Order may be short closed by Buyer/BHEL after **6 (six)** months from date of imposition of HOLD without prejudice to any claim of either party with regard to the executed portion of the contract. However, all future obligations of the Buyer and Seller with respect to the contract/Purchase Order shall come to end in case of such short closure."	No change in tender terms and conditions.

PRE BID CLARIFICATIONS

32.	Clause No. 30.3 **GCC**	If it is agreed between the parties that a Force Majeure event has occurred and its effect continues for a period of 36 months, then either party shall be free to cancel the contract. However, if the effect of such event ceases within this period of 36 months, the performance of the obligations put on hold shall be resumed immediately.	Please change the clause to "If it is agreed between the parties that a Force Majeure event has occurred and its effect continues for a period of 3 months, then either party shall be free to cancel the contract. However, if the effect of such event ceases within this period of 3 months, the performance of the obligations put on hold shall be resumed immediately."	No change in tender terms and conditions.
33.	Clause No. 10.0 **GCC**	**RECOVERY OF OUTSTANDING PAYMENT** ii. Dues payable to Seller against other contracts including SDs, BGs in the same Region/Unit/Division of BHEL. iii. Dues payable to Seller against other contracts including SDs, BGs in the different Region/Unit/Division of BHEL	Please delete these clauses. This contract has to be treated independent of other contracts.	No change in tender terms and conditions.
34.	Clause No. 12.4 **GCC**	This shall not be applicable on the recoveries arising out of Risk and Cost, recoveries made by Customer from BHEL on account of Contractor, any other type of recoveries for workmanship, material, T&P etc. due from the contractor	Please delete this paragraph. The maximum liability should be limited to total contract value.	Please refer clause no. 37 of NIT which state the following "Bidders to agree with all the clauses of GCC BOP except clause no-27.0 of GCTC of GCC-BOP (available on www.pem.bhel.com) & SCC of the project." Accordingly, clause no-27.0 of GCTC of GCC-BOP is not applicable.

PRE BID CLARIFICATIONS

				For Breach of contract, Remedies and Termination and related recoveries Please refer clause no. 36 of NIT. No change in tender terms and conditions.
35.	Clause No. 9.3 **GCC**	**ERECTION & COMMISSIONING PAYMENT** **10 % (Ten percent)** of contract E&C price along with taxes (as applicable) shall be released against (2.5% against each activity) (a) Trial run of the system/ package; (b) Successful completion of the PG test/ demonstration test of the system/ package, as applicable; (c) Submission of final documents, e.g. As-built drawings, O&M manual etc. as applicable and (d) Liquidation of Punch Point and handing over.	We request you to release 10% of contract E & C price against submission of equivalent Bank Guarantee on completion of work	No change in tender terms and conditions.
36.	Clause No. 4.3.1 **GCC**	**CUSTOM DUTY** Applicable Customs Duty/ IGST/ Goods and Services Compensation Cess under Goods and Services Tax (Compensation to States) Act, 2017 element for imported items shall be included in the Ex-Works prices unless specified in the price format of the NIT	Please confirm if custom duties are applicable on import of component like fills, etc. and this to be included in our price.	No change in tender terms and conditions.

PRE BID CLARIFICATIONS

37.	Clause No 6.4.4.2 **SCC**	**Cement Wastage:** **a. Allowable Wastage:** One and half percent (+1.5%) of theoretical consumption of cement.	Please revise: Actual consumption being Limited to one and half percent (+3%) of aforesaid theoretical consumption towards allowable wastage: Free	**No Change**
38.	Clause No. 22 **SCC**	**Construction Power:** Construction Power is available on chargeable basis which can be provided at single point source. Further distribution is to be done by concerned vendor. **Construction Water:** Available on chargeable basis at one point. Further distribution is to be done by concerned vendor.	**Construction Power:** We request you to provide the construction power point at 3 places within 100 m of NDCT Site, 100m of fabrication yard & 50 m of Batching Plant **Construction Water:** We request you to provide the construction water point at 3 places within 100 m of NDCT Site, 100m of fabrication yard & 50 m of Batching Plant	**No Change**
39.	Clause No. 4.2 **OTHER TAXES & LEVIES**	All taxes/ duties/ Cess / BOCW / seignior age fee other than GST shall be deemed to be included in the Ex-Works prices.	BOCW Cess to be provided extra. Please also clarify about new taxes	Refer annexure IV to NIT for BOCW.

PART 2/3

Technical Points :

1. **Clause 4.4, Page 494 of Common Binder**
   The minimum no. of cage ladders specified is four.

   Federal Aviation Authority (FAA) guidelines are used in the cooling tower industry for determining the aviation lighting requirements for NDCTs. These guidelines are available with BHEL as the same have been used in their previous NDCT packages.

   These guidelines specify a single level of high intensity AOLs for NDCTs up to 600 ft (183 m) height. Similarly, Clause 3.02.00 on Page 568 (common binder) of the specifications also specify high intensity AOLs.

   Further, clause 3.06.00 Page 569 (common binder) specifies four nos. of AOL at each level. However, the FAA guidelines require the no. of AOLs to be determined based on the exit diameterof the shell at the top and accordingly, the no. of AOLs required for this NDCT at the top will beeight. Hence, please confirm that eight nos. of AOLs at the top of the shell can be adopted for thisDNCT package as per FAA guidelines.

   Also, as a single level (top of NDCT) of high intensity AOLs is required for this NDCT package as per FAA guidelines, a single cage ladder will suffice to reach the top for AOL maintenance. Fournos. of cage ladders specified as a minimum are a waste of resources and hence, may please bemodified to one or may be two, from a redundancy perspective. However, the best way is opt fora single SS 304 ladder from a longevity perspective in place of MS cage ladder(s). A single SS 304 cage ladder for NDCTs is a standard specification in NPCIL projects.

   Kindly review and let us know.

   BHEL REPLY: Bidder to follow Technical Specification.

2. **Clauses 7.15 & 7.16, Page 497 of Common Binder**
   There is a mismatch in the above two clauses.
   Clause 7.15 defines the Static head w.r.t FGL up to the top of distribution header, which is the PVC distribution pipe. Static head means the highest level to which water is raised in the NDCT,which is the water level in the distribution duct. This means the water level in the distribution duct(residual head after overcoming duct friction) for the functioning of the spray nozzle is part of thestatic head and not friction head.
   Clause 7.16 states that the water level in the hot water distribution duct must be 16 mWC as a minimum w.r.t FGL. This is the static head being defined correctly. Hence, please modify Clause 7.15 to match the terminology/definition in Clause 7.16.

   Further, we presume that BHEL has allowed a large pump head of 17 mWC because of the inclusion of staggered splash fills like V bar and Splash Grid in the specifications. However, BHEL may be aware that the modular splash fills like the trickle grid specified in the tender do notrequire such large a pump head. Bidders using staggered splash fills will be able to use up theavailable pump head, whereas those opting for modular splash fills will find it difficult to do so in optimizing their thermic designs.

   When an excess pump head is available, the only prudent way to utilize it is by increasing the

friction loss in the system so that the thermic design is optimized. Friction loss through the piping system cannot be increased because the specification (Clause 7.4, Page 498) restricts the flow velocity to 2 m/s, which means the only possible way to is to increase the friction losses in the hot water duct to consume the excess head. The advantage of this process is that the size of the duct reduces, which means the obstruction to air flow also reduces, thus reducing the pressure drop through the NDCT.

If the 16 mWC static head is imposed as a minimum, no such optimization is possible and the air inlet height and the spray height, etc will have to increased unnecessarily to match the water level. When the KaV/L from rain and spray together is limited to 20% of that from Fill, there is no advantage in using a large air inlet or a spray height. Moreover, there is also a point/height of optimum performance for the rain zone as well. Any additional air inlet will result in increased pressure losses because the air has to overcome the obstruction from the additional height of falling water. Also, the cost of the raker column will increase significantly if its height increases beyond an optimal point. Hence, the static head in the NDCT w.r.t FGL must either be left to the bidders to optimize or if specifying a minimum level is necessary to bring all bidders on par, then BHEL must reduce the top of water level in the duct (static head) from 16 mWC to 15 mWC at least for those using modular s[plash fills; It can remain at 16 mWC for staggered splash fills like V bar and Splash Grid. BHEL may kindly specify the static head as above considering the types of fills permitted to enable bidders optimize their thermic designs to the advantage of BHEL.

BHEL REPLY: Bidder to follow Technical Specification. Further, top of distribution header refers to the top of RCC distribution Duct and not the PVC distribution pipe which is at a lower elevation.

3. **Clause 3.01.00, Page 499 of Common Binder**

It is mentioned that the employer may get the contractor's designs verified and reviewed, if required during detailed engineering through a third party who can be employer's consultant/reputed designer/ National or International Technological Institute/National or International body on cooling tower & it's components.

Please let us know whether there is an employer's consultant in this project. If yes, how can hebe considered as a third party as he represents employer's interests. If not, kindly let us know what the term "reputed designer" means. An individual considered reputable by one company may not be so for another company. Also, it is possible that reputed designs and/or companies/consultants are already involved in this project as designers for some of the participating contractors/bidders. Such designers/consultants cannot be viewed as an independent third party because of the conflict of interest that entails.

In light of the above, the only way to eliminate conflict of interest will be by limited the definitionof third party to National or International Technological Institutes like IITs, IISc, CTI, etc. ThoughCTI publishes cooling tower standards, they will not review thermic designs as it is not part oftheir charter. Hence, the only possible options are IITs and IISc that are truly independent and have already been offering the design review services to the Indian cooling tower industry,including BHEL for the last many years.

Kindly review and let us know.

BHEL REPLY: Bidder to follow Technical Specification.

4. **Clause 3.01.00, Page 499 of Common Binder**

This clause states that the drift loss limitation of 0.001% shall be demonstrated during the PG test as per relevant test codes. However, as per Clause 1 under Performance Guarantees (Page 599 of common binder), guarantees on drift loss are not applicable. Hence, as drift loss is not a

guaranteed parameter, there is no necessity for the contractor to demonstrate the same during the PG test.

In case the drift test needs to be included in the PG test, the only relevant code for such a test willbe ATC-140 that covers the Isokinetic Method. This is the latest method and code by CTI and there are no agencies in India who can perform this test. It will cost a lot (up to Rs. 90 lacs) to get a CTI licensed agency to conduct this test in this project.

Further, **when the PG test itself is not required to be conducted by a CTI licensed agency asper BHEL specifications, the drift test need not be performed by a similar agency licensed for the purpose**. If the intention is to approximately determine the drift loss without financialimplication, the only method is to follow the old BS 4485 guideline where the basin water level ismonitored and recorded during the PG test to evaluate the evaporation loss and drift loss basedon the reduction in the basin water level for the duration of the test. This approximate method hasbeen followed in many projects in India, including NPCIL for record purposes.

Kindly review and let us know.

BHEL REPLY: Bidder to follow Technical Specification.

5. **Clause 16.00.00, Page 503 of Common Binder**
   This clause permits the conduct of the PG test by the contractor himself. Please confirm that a third party PG test or the one by a CTI licensed test agency is not required/envisaged in this project.

   BHEL REPLY: Bidder to follow Technical Specification.

6. **Clause 3, Page 507 of Common Binder**
   The supply of power cables is by BHEL and E&C by contractor in case both end equipment are in vendor's scope. For example, the Emergency LDB and the AOLs are both in the contractor's scope, in which case the supply of power/lighting cables will be by BHEL. However, Clause 1.09.02 of Sub-Section IIB (Page 513 of common binder) mentions that LT power cables are in vendor's scope. Though LT power cables are not exactly lighting power cables, kindly clarify that lighting power cables between the Emergency LDB and the AOLs on the top of the NDCTs will be supplied by BHEL as per the Electrical Scope Split on Page 507 of the common binder.

   BHEL REPLY: Scope of Electrical Items shall be as per 'STANDARD SCOPE BHEL AND VENDOR' at Page 26to 28 of 216.

7. **Clause 9, Page 508 of Common Binder**
   The supply of below-ground earthing rods/mat is by BHEL and E&C by contractor. However, Clause 1.10.00 of Sub-Section IIB (Page 513 of common binder) mentions that the inter-connection of earthing grid with the existing grid if Stage-1 is in contractor's scope. This is contradictory to Electrical Scope Split Matrix because the inter-connection is below-ground.

   Kindly review and let us know.

   BHEL REPLY: Scope of Electrical Items shall be as per 'STANDARD SCOPE BHEL AND VENDOR' at Page 26to 28 of 216.

8. **Clause 9, Page 581 of Common Binder**

The Raw Water Analysis shows that the BOD and COD are at 5 mg/l and 50 mg/l respectively.

A BOD above 3 mg/l (the limit for drinking water) indicates that the water is moderately fouled. Itis necessary to know the BOD in the circulating water at a COC of 5 envisaged in this project.Kindly note that there seems to be a potential for bio-growth in the PVC distribution pipes and fillsurfaces of the NDCTs at this level of BOD and COD.
Please let us know whether there is a biocide program envisaged to control the microbial activityand the associated BOD in the circulating water to protect the distribution conduits and heat transfer surfaces.

BHEL REPLY: Bidder to note that suitable provision to control scaling/ corrosion, microbiological growth is envisaged for condenser by BHEL.

9. Clause 1.1, Page 599 of Common Binder

The third paragraph under this clause is erroneous. Kindly confirm that the PG test has to be conducted by the contractor as per CTI code ATC-105 specified in various sections of the tender documents.

BHEL REPLY: PG Test is to be conducted as per CTI code ATC-105 and CT PG Test Procedure at Page 120 to 133 of 216 of Technical Specification.

10. Clause 1.3, Page 599 of Common Binder

It is mentioned that all the instruments brought to site by the contractor for conducting the PGtest shall be retained by the Customer. This means that the PG test instruments need to besupplied by the contractor to the customer/employer as part of the contract.

Kindly review and let us know.

BHEL REPLY: Bidder's understanding is Correct.

11. Clause 5.17.01.02.06 (I), Page 750 of Common Binder

Sub-Clauses a & b under this clause are confusing and contradictory for the following reasons:

Sub-Clause a) requires that all the liquid retaining structures like CW basin, sump, channel, HW ducts and pedestals of raker columns be designed as per IS 3370, Part-2 with crack width limitation of 0.1 mm

Sub-Clause b) requires that all structures other than liquid retaining/conveying above the CW basin (like raker columns, shell, fill supporting columns and beams, walkways, partition walls, etc) be designed as per limit state method per Clause 4.4 of IS 3370, Part-2 but limiting thestresses in reinforcement steel to 130 MPa.

BHEL realizes that limiting the stresses in reinforcement steel to 130 MPa results in near "zero" crack width, which is more stringent than limiting the crack width to 0.1 mm applicable for liquid retaining structures. **And when the liquid retaining structures are designed for 0.1 mm crackwidth, it is erroneous to specify "near zero" crack width for non-liquid retaining structures.**

Kindly review and let us know.

BHEL REPLY: Refer amendment with page no. 239 and 240 of 317 NDCT book 2 of 2.

12. **Clause 5.17.05.07 (v), Page 759 of Common Binder**

Brackets integral to the shell are not required for supporting the PVC distribution pipes in the periphery. The peripheral main beam will be utilized for terminating the PVC distribution pipes.

Brackets or projections that may cause additional air-side pressure drop must be avoided. A suitable supporting system design for all the internals is in the scope of the NDCT designer. Kindly confirm.

BHEL REPLY: Clause 5.17.05.07 (v) is applicable.

13. **Clause nos. 5.17.05.07 & 5.17.05.09, Page 760 of Common Binder**

The above clauses are contradictory as the former specifies RCC staircases and the latter FRP.

Kindly review and let us know.

BHEL REPLY: Clause no. 5.17.05.07 for RCC staircase and 5.17.05.09 for outside cage ladder with only one top flight will be of FRP.

14. **Clause nos. 5.23.25.1, Page 773 of Common Binder**

These civil specs are general in nature and do not apply to the NDCTs package. However, please clarify that the requirement of HDPE membrane system for water proofing of raft is not applicableto this package.

BHEL REPLY: Bidder's understanding is Correct.

15. **Clause 1.00.00, Page 709 of Common Binder**

The scope of Civil, Structural, Architectural Works of EPC package is enclosed with the NDCT specs. The above clause includes topographical survey and geotechnical investigation, site clearing, levelling, etc, etc. Please confirm that topographical surveys and geotechnical investigations are not in the NDCT contractors' scope as Corrigendum 02 already presents the net bore log data for the NDCT locations.

BHEL REPLY:

"The scope of Civil, structural works shall include topographical survey, geotechnical investigation, site clearance, ~~dismantling of existing structure/substructure/facilities,~~ site levelling, preparation of design documents and drawings and getting approval of the same from the Employer and construction of all Civil, structural and architectural works including supply of all construction materials of all buildings, equipment and facilities for the project."

Shall be read as

"The scope of Civil, structural works shall include ~~topographical survey, geotechnical investigation, site clearance, dismantling of existing structure/substructure/facilities, site levelling,~~ preparation of design documents and drawings and getting approval of the same from the Employer and construction of all Civil, structural and architectural works including supply of all construction materials of all buildings, equipment and facilities for the project."

16. **Climatological Data, Page 485 of Common Binder**

The site elevation is shown to be 272 m above MSL.

As per Clause 6.1.1 e) of BS:4485 the effect of site elevation above MSL should be considered only when it is more than 300 m. Higher altitude above 300 m will reduce the NDCT height slightly because of the variation in air densities. As the site elevation is less than 300 m, please confirm that the effect of altitude should not be considered in thermal design, i.e. the altitude must be

considered equal to MSL for thermal design.

BHEL REPLY: Bidder to follow technical specification along with relevant codes and standards in this regard.

17. Annexure-III, Page 583 of Common Binder

The Key Plan appears to be NTS. Hence, it is not clear whether the gap between the two NDCTs isa minimum of half the diameter required as per BS 4485. Kindly review and let us know.

BHEL REPLY: BHEL confirms that the gap between the two NDCTs is a minimum of half the diameter required as per BS 4485.

18. Price Adjustment (PVC) – Payment terms & Conditions Clause

As per above tender clause : -

For the indices,
Subscript '0' refers to indices as ***on the month of the 'last date of submission of Tender'*** *&*
Subscript '1' refers to indices as on the billing month under consideration.

We request you to kindly modify this in line with standard practice as mentioned below :

For the indices,
Subscript '0' refers to indices as **"Last date of that calendar month, which date precedes the Bid Due Date by at least 28 days" &** Subscript '1' refers to indices as on the billing month under consideration.

BHEL REPLY: Bidder to follow Tender Specification.

19.

a) Non-Judicial Stamp value for issuing new/extension of Contract Performance Bank Guarantee: Clause 11 of GCTC of GCC-BOP

(i) As per Note no. 2 on page no. 5 of 36 GCC -BOP Annexure III: The BG should be on Non-Judicial Stamp paper / e-stamp of appropriate value as per Stamp Act prevailing in the state(s) where the BG is submitted or is to be acted upon or the rate prevailing in the State where the BG was executed, whichever is higher. …….
We understand that for providing BG & its further extension are to be given on Non-Judicial Stamp paper / e-stamp of appropriate value as per Stamp Act prevailing in the state(s). **In our case, this valve of Non-Judicial Stamp paper / e-stamp as per Stamp Act is 0.3% of BG value in Maharashtra which is very high**. We request you to kindly consider the same on Rs.500/- as per normal practice.

BHEL reply: BHEL terms and conditions remain unchanged.

(ii) We understand that Performance Security as per Clause no 35 on page 6 of 11 of NIT & Contract Performance referred above in Clause 11 of GCTC of GCC-BOP are same. Please confirm.

BHEL reply: Performance Security and Contract performance are same. BHEL terms and conditions remain unchanged.

20. **Use of Flyash**:

As per Clause 8.02.00 – Concrete – (c) page no. 5 of 20 Section VI-Part B Tech Specification – Concrete design mix of M50 grade concrete for TG top deck and substructure shall be carried out as per IS 10262 satisfying following condition / specifications (vi) – Flyash shall be not be used as replacement of total cementitious material.

Ordinary Portland Cement (OPC) separately mixed with Flyash (Contractor's supply) in Batching Plant can be used for components such as foundation & other misc. items of NDCT other than Raker column & Shell structure. Please confirm.

BHEL reply: Follow specification.

Part 3/3

Sl No	Reference			Queries	Response from BHEL
	Section	Chapter / Cl. No	Page No.		
1	Technical Specification No. PE-TS-512-165-W001 & Corrigendum - 01	Civil Work - Foundation System	--	During our site visit we observed certain discrepancies when our findings are compared with the Bore Log data provided in the bid document. Enlisted below are 2 such issues where we need your clarification – 1) The spot levels for the BH & DBH coordinates do not match with the tender specification document ref. Book 2 of 2. Refer embedded excel sheet where BH-55, BH-64 & DBH-12 have been highlighted as they are showing major variations. Please confirm which level is to be adopted. DT-24E031_Site Visit BH Review.xlsx 2) In the south-west quadrant of CT#1 ring beam foundation & partial area of the basin where the levels are primarily governed by DBH-12, it can be seen that the level is 4m below the average levels when compared with the rest of the NDCT area. As per Corrigendum # 1, Net Allowable Bearing Capacity available at 7 M below NGL is 35 t/sqm (which is required for the NDCT shell foundation). For the CT#1 area where average RL is approx. 275 M, the founding level can be established as 268 M. However, in the arc region of DBH-12 where the levels observed are 4 M below 275 M RL, a PCC filling of average 4 shall be required for the entire area of depression. Considering the above, we request M/s BHEL to confirm the following: (a) Cooling tower site will be handed over to cooling tower contractor graded to Finished Grade Level after completion of all PCC filling work, as applicable (b) All obstructions, jungle / plantation, boundary walls, etc. currently present in the cooling towers' location shall be dismantled or removed by M/s BHEL and clear encumbrance-free site will be handed over to the cooling tower contractor.	1) Please refer annexure-C of the specfication wherein it have been stated that the NGL of any point shall be the lowest of the levels at (i) TOPOGRAPHICAL SURVEY and (ii) Borelog data attached at Annexure to this chapter. 2)(a) Cooling tower site grading is not in bidder scope. All civil works related to cooling tower foundation system is in bidder scope including backfilling up to finished ground level. Any PCC filling work (required if any) shall also be in bidder's scope. (b)All obstructions, jungle / plantation, boundary walls, etc. currently present in the cooling towers' location shall be dismantled by M/s BHEL.