BHARAT HEAVY ELECTRICALS LIMITED
PROJECT ENGINEERING MANAGEMENT, NOIDA

Date-16-Nov-24

CORRIGENDUM- 03

PROJECTs	:	**KODERMA TPS PH-II (2x800 MW)**
PACKAGE	:	**Induced Draft Cooling Towers (IDCT)**
Enquiry No.	:	**77/23/6156/MAZ dtd 22.10.2024**
SUBJECT	:	**Amendment No. 1 to Technical Specification along with Pre-Bid Replies**

Type of Corrigendum			
Technical Corrigendum -	☑	Commercial Corrigendum -	☑

In reference to the above-mentioned tender enquiry please note the following.

1. Amendment No. 1 to Technical Specification along with Pre-Bid Replies are attached.

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

Yours faithfully,

For and on behalf of BHEL

Mazhar Wahab

Digitally signed by Mazhar Wahab
DN: cn=Mazhar Wahab, o=BHEL, ou=PEM, email=mazharwahab@bhel.in, c=IN
Date: 2024.11.16 14:54:26 +05'30'

Mazhar Wahab
Dy. Manager/BOP

2X800 MW KODERMA STPP STAGE-II

AMENDMENT NO. 1

TO TECHNICAL SPECIFICATION
FOR
INDUCED DRAFT COOLING TOWER

Specification No. : PE-TS-519-165-W001 (REV. 00)

BHARAT HEAVY ELECTRICALS LIMITED
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA, INDIA

	TECHNICAL SPECIFICATIONS	SPECN. NO.:	PE-TS-519-165-W001		
	INDUCED DRAFT COOLING TOWER				
	AMENDMENT NO. 1	REV. NO.	0	DATE:	14.11.2024

Sl no	Specification reference	Instead of	Read as
1	Cl no. 51.4, page no 16 of 195, book 1 of 2	If the total quantity of Cement and reinforcement steel during contract execution is found to be more than the quantities quoted at tender stage, the additional cost for excess quantity of Cement, reinforcement steel and Structural steel shall be deducted from the bidder's payments as per the rates specified in the NIT.	If the total quantity of Cement and reinforcement steel during contract execution is found to be more than the quantities quoted at tender stage, the additional cost for excess quantity of Cement and reinforcement steel shall be deducted from the bidder's payments as per the rates specified in the NIT.
2	Cl no. 2.14, page no 18 of 195, book 1 of 2	Contribution of Fill Zone KaV/L shall be minimum 85% of the total KaV/L required for the tower. i.e (KaV/L)fill ≥ 0.85 x (KaV/L) total (KaV/L)spray +rain ≤ 0.15 x (KaV/L) total	No contribution of rain zone and spray zone to be considered in thermal design of tower.
3	Cl no. 2.16, page no 18 of 195, book 1 of 2 (Maximum CW Pumping head permissible, viz. static head plus frictional losses as below: - Static head w.r.t. FGL - Frictional losses within bidder's T.P. with 10% margin)	16 MWC	15 MWC
4	Cl no. 2.17, page no 18 of 195, book 1 of 2 (Minimum elevation of top of water level in hot water distribution duct with respect to Basin curv level)	13.5M	13.0M
5	Cl no. 2.18, page no 18 of 195, book 1 of 2 (Maximum limit on total power consumption per cooling tower for the cooling tower fans at fan motor inlet terminals)	2600 KW	3000 KW
6	Cl no. 2.25, page no 18 of 195, book 1 of 2 (Minimum Fill Plan area (including standby cells))	7200 SqM	Deleted.

7.0 Annexure-1 to book 2 of 2 (Page no 154-155, Bore hole data for IDCT area) is revised as attached along with this amendment. Bore hole location drgawing (Geotechnical Investigation Layout) is also attached.

8.0 Topographical Survey drg and Plot Plan with contour details is attached.

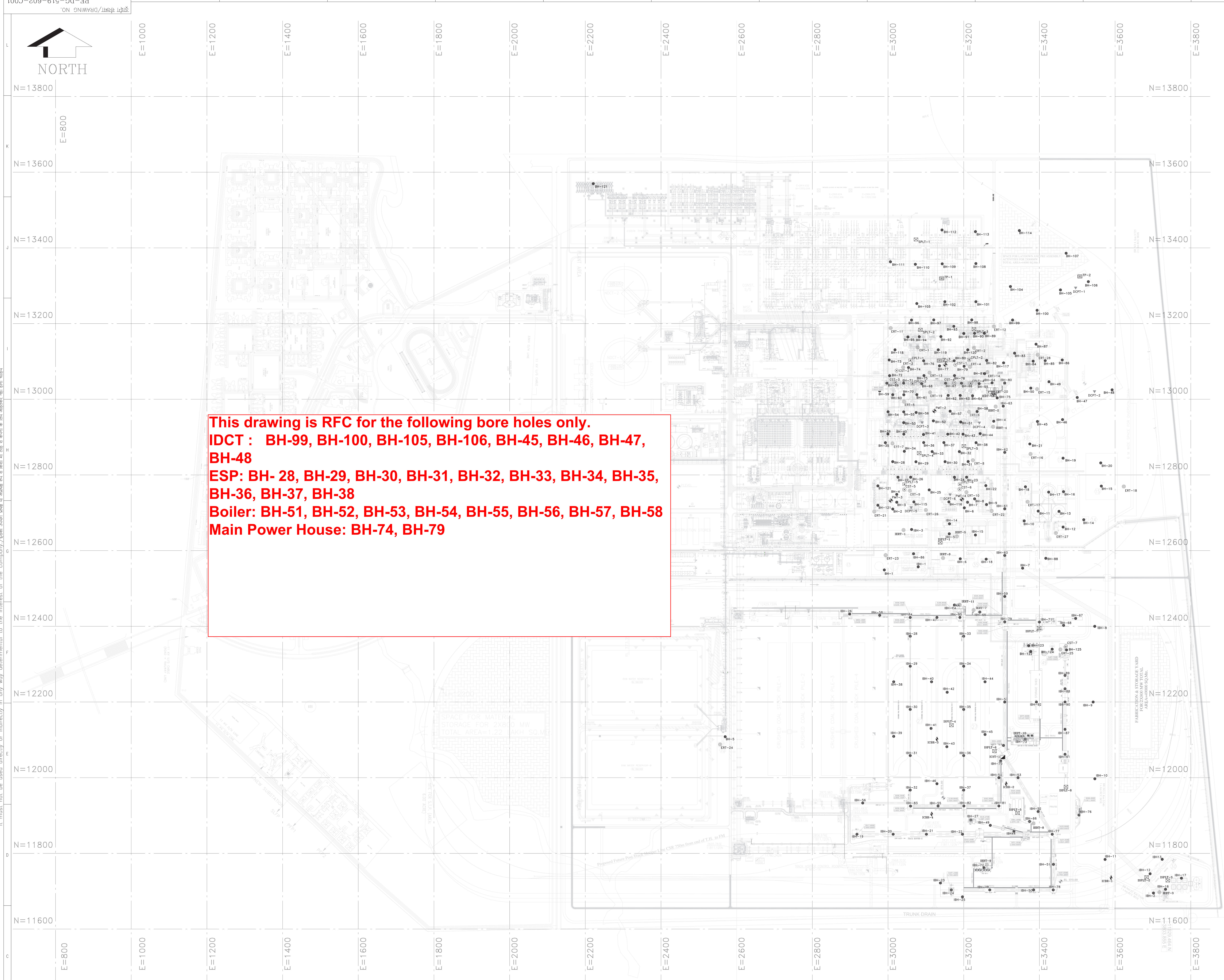
9.0 Clause no 47.12 and 47.15, General Technical Requirement, Book 1 of 2 of tender specification regarding "ANNUAL MAINTAINENCE SERVICE (AMS) FOR PROFIBUS INSTRUMENTS' is DELETED.

Additional Clause:

1. Final interpretation clause: The interpretation of any technical specification clause, requirement, or provision within this document (i.e technical specification book 1 and 2, technical amendments/ corrigendums etc)) shall rest solely with BHEL. The decision and interpretation made by BHEL shall be deemed final and binding on bidder without exception.

2. It bidder's responsibility to design the cooling tower and its components to meet the performance requirements at given design conditions while complying to all the technical constraints specified in technical specification

3. BHEL / Customer comments on drgs/docs shall be furnished within 14 days of submission date. However, drgs/docs submitted shall be complete in all respects with revised drawing submitted incorporating all comments. Any incomplete drawing submitted shall be treated as non-submission with delays to bidder's account. For any clarification/ discussion required to complete the drawings, the bidder shall himself depute his personal to BHEL for across the table discussions/ finalizations/ submissions of drawings.



This drawing is RFC for the following bore holes only.
IDCT : BH-99, BH-100, BH-105, BH-106, BH-45, BH-46, BH-47, BH-48
ESP: BH- 28, BH-29, BH-30, BH-31, BH-32, BH-33, BH-34, BH-35, BH-36, BH-37, BH-38
Boiler: BH-51, BH-52, BH-53, BH-54, BH-55, BH-56, BH-57, BH-58
Main Power House: BH-74, BH-79

BORE HOLE (BH/IBH)

MARKING	CO-ORDINATES EAST	NORTH	DEPTH(M)
BH-1	2990	12548	15
BH-2	3012	12709	25
BH-3	3023	12728	25
BH-4	3023	12748	20
BH-5	2569	12108	15
BH-6	3201	12713	25
BH-7	3210	12727	25
BH-8	3228	12736	20
BH-9	3260	12721	20
BH-10	3559	12678	10
BH-11	3396	12704	15
BH-12	3462	12662	15
BH-13	3451	12703	15
BH-14	3517	12681	15
BH-15	3563	12770	15
BH-16	3463	12755	15
BH-17	3424	12754	15
BH-18	3363	12768	15
BH-19	3462	12844	15
BH-20	3562	12883	10
BH-21	3374	12881	10
BH-22	3258	12771	20
BH-23	3207	12790	20
BH-24	3175	12794	20
BH-25	3108	12760	15
BH-26	3059	12794	20
BH-27	3026	12794	20
BH-28	3012	12835	20
BH-29	3073	12834	20
BH-30	3150	12835	20
BH-31	3211	12835	20
BH-32	3188	12861	25
BH-33	3116	12861	20
BH-34	3043	12862	20
BH-35	2993	12885	25
BH-36	3094	12885	20
BH-37	3147	12885	25
BH-38	3232	12885	20
BH-39	2999	12908	20
BH-40	3041	12908	20
BH-41	3093	12906	20
BH-42	3157	12907	20
BH-43	3198	12907	20
BH-44	3243	12909	20
BH-45	3394	12941	15
BH-46	3461	12946	15
BH-47	3499	13004	15
BH-48	3592	13024	15
BH-49	3425	13046	15
BH-50	3377	13029	15
BH-51	3192	12939	25
BH-52	3119	12942	20
BH-53	3041	12938	20
BH-54	3000	12966	25
BH-55	3041	12966	30
BH-56	3074	12965	25
BH-57	3164	12968	25
BH-58	3235	12967	25
BH-59	2977	13022	20
BH-60	3012	13012	25
BH-61	3076	13012	20
BH-62	3158	13010	20
BH-63	3190	13010	25
BH-64	3223	13009	20
BH-65	3240	13041	25
BH-66	3194	13042	20
BH-67	3152	13042	25
BH-68	3089	13041	20
BH-69	2996	13042	25
BH-70	3041	13011	25
BH-71	3041	13042	25
BH-72	3004	13062	20
BH-73	3002	13103	25
BH-74	3054	13083	20
BH-75	3094	13062	25
BH-76	3094	13101	20
BH-77	3136	13088	25
BH-78	3175	13062	20
BH-79	3201	13084	25
BH-80	3174	13101	25
BH-81	3255	13067	25
BH-82	3260	13102	25
BH-83	3334	13121	15
BH-84	3384	13100	15
BH-85	3415	13102	20
BH-86	3460	13103	20
BH-87	3391	13145	15
BH-88	3416	12580	15
BH-89	3254	13174	20
BH-90	3228	13174	20
BH-91	3200	13173	20
BH-92	3139	13165	20
BH-93	3173	13192	20
BH-94	3082	13165	20
BH-95	3052	13164	20
BH-96	3062	13209	20
BH-97	3120	13209	20
BH-98	3221	13209	20
BH-99	3329	13209	15
BH-100	3393	13235	15
BH-101	3232	13257	15
BH-102	3150	13257	15
BH-103	3076	13252	15
BH-104	3323	13297	15
BH-105	3455	13288	15
BH-106	3529	13310	15
BH-107	3470	13385	15
BH-108	3232	13358	15
BH-109	3143	13357	10
BH-110	3072	13356	15
BH-111	3006	13363	10
BH-112	3142	13447	15
BH-113	3230	13443	15
BH-114	3347	13445	10
BH-115	3068	12728	20
BH-116	3160	12728	20
BH-117	3305	13096	20
BH-118	3018	13130	20
BH-119	3132	13130	20
BH-120	3210	13130	20
BH-121	2221	13570	10
BH-122	3377	12333	15
BH-123	3371	12348	15
BH-124	3433	12340	15
BH-125	3471	12337	15

MARKING	CO-ORDINATES EAST	NORTH	DEPTH(M)
IBH-1	3080	12557	15
IBH-2	3701	11695	15
IBH-3	3062	12656	15
IBH-4	3279	12942	15
IBH-5	3162	12645	15
IBH-6	3191	12578	15
IBH-7	3356	12554	15
IBH-8	3546	12400	15
IBH-9	3542	12200	15
IBH-10	3547	11997	15
IBH-11	3574	11784	15
IBH-12	3693	11746	15
IBH-13	3725	11784	15
IBH-14	3162	12671	15
IBH-15	3162	12645	15
IBH-16	3733	11705	15
IBH-17	3775	11735	15
IBH-18	3259	12577	15
IBH-19	2918	11851	20
IBH-20	3013	11851	20
IBH-21	3101	11851	20
IBH-22	3197	11851	20
IBH-23	3138	11722	30
IBH-24	3167	11703	30
IBH-25	3197	11685	30
IBH-26	2899	12432	20
IBH-27	3219	11888	25
IBH-28	3059	12374	15
IBH-29	3059	12295	15
IBH-30	3059	12180	15
IBH-31	3059	12058	15
IBH-32	3059	11967	15
IBH-33	3200	12374	15
IBH-34	3200	12295	15
IBH-35	3200	12180	15
IBH-36	3200	12058	15
IBH-37	3200	11967	15
IBH-38	3015	12253	15
IBH-39	3015	12109	15
IBH-40	3115	12253	15
IBH-41	3114	12130	15
IBH-42	3156	12226	15
IBH-43	3155	12082	15
IBH-44	3256	12253	15
IBH-45	3256	12114	15
IBH-46	3129	11984	15
IBH-47	3129	12424	15
IBH-48	3269	11703	25
IBH-49	3270	11874	20
IBH-50	3385	11703	15
IBH-51	3437	11771	15
IBH-52	3397	11911	15
IBH-53	3343	12000	15
IBH-54	3293	12000	15
IBH-55	3132	11925	15
IBH-56	2933	11933	15
IBH-57	3308	12200	15
IBH-58	2978	12429	15
IBH-59	3308	12479	15
IBH-60	3308	12587	15
IBH-61	3308	12711	15
IBH-62	3308	12860	15
IBH-63	3304	12982	15
IBH-64	3275	13043	15
IBH-65	3242	12438	15
IBH-66	3374	11884	15
IBH-67	3496	12421	15
IBH-68	3464	12403	15
IBH-69	3305	12085	20
IBH-70	3298	12044	20
IBH-71	3400	12411	20
IBH-72	3253	11762	15
IBH-73	3362	12102	15
IBH-74	3175	12456	15
IBH-75	3288	13004	15
IBH-76	3505	11901	15
IBH-77	3434	11851	15
IBH-78	3437	11703	15
IBH-79	3308	12412	15
IBH-80	3308	13043	15
IBH-81	3293	11925	15
IBH-82	3200	11925	15
IBH-83	3059	11925	15
IBH-84	3059	12424	15
IBH-85	3190	12424	15
IBH-86	3067	12592	15
IBH-87	3468	12128	15
IBH-88	3468	12235	20
IBH-89	3468	12270	20
IBH-90	3468	12200	20
IBH-91	3468	12062	15
IBH-92	3392	12200	15

PRESSURE METER TEST (PMT)

MARKING	CO-ORDINATES EAST	NORTH
PMT-1	3151	13091
PMT-2	3122	12968
PMT-3	3007	12732
PMT-4	3195	12735

FIELD CBR TEST (IFCBR)

MARKING	CO-ORDINATES EAST	NORTH
ICBR-1	3589	11736
ICBR-2	3312	11984
ICBR-3	3129	12102
ICBR-4	3115	11904

ELECTRICAL RESISTIVITY TEST (ERT/IERT)

MARKING	CO-ORDINATES EAST	NORTH
ERT-1	3078	13136
ERT-2	3227	13135
ERT-3	3040	13084
ERT-4	3216	13085
ERT-5	3042	12993
ERT-6	3214	12966
ERT-7	3011	12883
ERT-8	3224	12838
ERT-9	3057	12758
ERT-10	3207	12754
ERT-11	3006	13188
ERT-12	3279	13192
ERT-13	3109	13070
ERT-14	3262	13071
ERT-15	3393	13026
ERT-16	3376	12855
ERT-17	3368	12729
ERT-18	3622	12769
ERT-19	3110	13018
ERT-20	3281	13026
ERT-21	2963	12703
ERT-22	3273	12705
ERT-23	2993	12588
ERT-24	2556	12087
ERT-25	3455	12338
ERT-26	3099	12707
ERT-27	3443	12646
ERT-28	3395	13117

MARKING	CO-ORDINATES EAST	NORTH
IERT-1	3041	12654
IERT-2	3284	12981
IERT-3	3717	11697
IERT-4	3278	12928
IERT-5	3182	12638
IERT-6	3145	12580
IERT-7	3226	12443
IERT-8	3384	11879
IERT-9	3261	11770
IERT-10	3348	12107
IERT-11	3189	12457
IERT-12	3277	13018

CYCLIC PLATE LOAD TEST (CPLT)

MARKING	CO-ORDINATES EAST	NORTH	DEPTH (M)
CPLT-1	3058	13102	3
CPLT-2	3214	13104	3
CPLT-3	3065	13041	2
CPLT-4	3218	13042	2
CPLT-5	3043	12775	2
CPLT-6	3190	12775	2

DYNAMIC CONE PENETRATION TEST (DCPT)

MARKING	EAST	NORTH
DCPT-1	3495	13295
DCPT-2	3545	13021
DCPT-3	3090	12939
DCPT-4	3241	12938
DCPT-5	3061	12714
DCPT-6	3164	12748

TRAIL PIT (TP/ITP)

MARKING	CO-ORDINATES EAST	NORTH	DEPTH (M)
TP-1	3141	13319	3
TP-2	3506	13324	3
TP-3	3136	13102	3

MARKING	CO-ORDINATES EAST	NORTH	DEPTH (M)
ITP1	3188	12621	3
ITP2	3705	11762	3
ITP3	3784	11719	3
ITP4	2891	12429	3
ITP5	3103	12200	3
ITP6	3343	11931	3
ITP7	3321	12059	3
ITP8	3390	12411	3
ITP9	3470	11995	3
ITP10	3310	12274	3

STATIC PLATE LOAD TEST (SPLT/ISPLT)

MARKING	CO-ORDINATES EAST	NORTH	DEPTH (M)
SPLT-1	3073	13422	3
SPLT-2	3085	13183	3
SPLT-3	3227	13184	3
SPLT-4	3082	12857	3
SPLT-5	3200	12876	3

MARKING	CO-ORDINATES EAST	NORTH	DEPTH (M)
ISPLT-1	3138	12621	3
ISPLT-2	3683	11737	3
ISPLT-3	3739	11728	3
ISPLT-4	3168	12139	3
ISPLT-5	3342	11907	3
ISPLT-6	3281	12071	3
ISPLT-7	3399	12396	3
ISPLT-8	3470	11976	3

CROSSHOLE SHEAR TEST (CST/ICST)

MARKING	CO-ORDINATES EAST	NORTH
CST-1	3177	13091
CST-2	3022	13075
CST-3	3019	13044
CST-4	3174	13043
CST-5	3043	12761
CST-6	3188	12762
CST-7	3470	12347

MARKING	CO-ORDINATES EAST	NORTH
ICST-1	3300	12057

DAMODAR VALLEY CORPORATION
Electricity Department
Approval/Comments conveyed herein neither relieves the vendor / contractor of his contractual obligation and his responsibilities for correctness of dimensions, materials of construction, weights, quantities, design details, assembly fits, performance requirements and conformity of the supplies with the Indian Statutory Laws as may be applicable, nor deposit limit the purchaser's rights under the contract.
This approval does not relieve the contractor of responsibility for conformity to specification and correct details and fittings of parts when assembled.
Engineer Date 24.09.24

1. No of BH in Main Power House Rows shall be adjusted asper tender requirement.
2. The test locations is based upon the present GLP of Plant, the test locations shall be adjusted if the GLP is changed.

NOTES:-

1. ALL DIMENSIONS ARE IN METERS UNLESS NOTED OTHERWISE.
2. BORE HOLE SHALL BE DRILLED UPTO THE DEPTH INDICATED AGAINST EACH BORE HOLE OR UPTO 5M IN ROCK WITH CONTINUOUS RQD OF 50% WHICH-EVER IS EARLIER.
3. BACKFILLING OF BORE HOLES AND PITS SHALL BE AS PER SPECIFICATION AND AS DIRECTED BY THE ENGINEER-IN-CHARGE.
4. STARTING DEPTH OF STANDARD PENETRATION TEST (SPT) SHALL BE 1M BELOW GROUND LEVEL AND THE TEST SHALL BE CONDUCTED AT EVERY 1M INTERVAL ALTERNATE TO COLLECTION OF UNDISTURBED SAMPLE (UDS) UPTO 10M DEPTH BELOW GROUND LEVEL AND AT EVERY 1.5M INTERVAL ALTERNATE TO COLLECTION OF UDS BEYOND 10M DEPTH, AT CHANGE OF STRATA & AT DEPTHS WHEREVER UDS COULD NOT BE COLLECTED.
5. STARTING DEPTH OF COLLECTION OF UDS SHALL BE 2M BELOW GROUND LEVEL AND UDS SHALL BE COLLECTED AT 1M INTERVAL ALTERNATE TO CONDUCTING SPT UPTO 10M DEPTH BELOW GROUND LEVEL & AT EVERY 1.5M INTERVAL ALTERNATE TO CONDUCTING SPT BEYOND 10M DEPTH.
6. CROSS HOLE SHEAR WAVE TEST SHALL BE CARRIED OUT AT 1M, 3M, 5M, 7M, 9M, 12M, 15M, 18M & 20M DEPTH BELOW GROUND LEVEL.
7. PUMP IN TYPE FIELD PERMEABILITY TEST SHALL BE CARRIED OUT IN BH-5, BH-6, BH-51, BH-48, BH-98, IBH-26, IBH-34 & IBH-72 AT 1M, 3M, 5M, 8M & 12M DEPTH BELOW GROUND LEVEL.
8. ELECTRICAL RESISTIVITY TEST SHALL BE CARRIED OUT BY WENNER'S METHOD.
9. PRESSURE METER TEST SHALL BE CARRIED OUT AT 1M, 3M, 5M, 7M, 9M, 12M, 15M, 18M & 20M DEPTH BELOW GROUND LEVEL.
10. GROUND WATER SAMPLE SHALL BE COLLECTED FROM BH-2, BH-5, BH-52, BH-74, BH-83, BH-16, BH-109, BH-105, BH-104, IBH-26, IBH-1, IBH-93, IBH-83, IBH-77 & IBH-17.
11. GEOTECHNICAL INVESTIGATION SHALL BE CARRIED OUT AS PER SPECIFICATION NO. PE-TS-999-602-002
12. DO NOT SCALE THIS DRAWING.

REF DRG :

PE-DG-519-100-M001---"PLOT PLAN".

GEOTECHNICAL INVESTIGATION LEGEND:

1. BOREHOLE (BH/IBH) . . . . . . ●
2. PLATE LOAD TEST (SPLT/ISPLT) . . . . . . ⊠
3. CYCLIC PLATE LOAD TEST (CPLT) . . . . . . ⊡
4. FIELD CBR TEST (IFCBR) . . . . . .
5. TRIAL PIT (TP/ITP) . . . . . .
6. CROSSHOLE SHEAR TEST (CST/ICST). . . . . . ⊙
7. PRESSURE METER TEST (PMT/IPMT). . . . . .
8. ELECTRICAL RESISTIVITY TEST (ERT/IERT) . . . . . . ◎
9. DYNAMIC CONE PENETRATION TEST (DCPT) . . . . . . ▼

BHEL-UNIT/DEPT.
THIS DRAWING MARKED(✓) IS RELEASED FOR
☑ COMMENTS/APPROVAL ☐ FABRICATION
☐ PLANNING ☐ INFORMATION
☐ CONSTRUCTION ☐ AS BUILT DRAWING
Before proceeding with construction please scan the QR code to know the latest revision
STAMP ALL PREVIOUS REVISION AS SUPERSEDED
ISSUED BY
NAME: VIVEK VARSHNEY
SIGNATURE: -Sd-
DATE: 21/09/2024

ग्राहक ड्राइंग संख्या / CUSTOMER DRAWING NO.: -------------

परियोजना / PROJECT: 2X800 मेगावाट डीवीसी कोडरमा ता. वि. के. चरण-II / 2X800 MW DVC KODERMA TPS PHASE-II

ग्राहक/CUSTOMER: दामोदर घाटी निगम / DAMODAR VALLEY CORPORATION

भारत हेवी इलेक्ट्रिकल्स लिमिटेड
BHARAT HEAVY ELECTRICALS LTD
पावर सेक्टर/POWER SECTOR
परियोजना अभियांत्रिकी प्रबंधन
PROJECT ENGINEERING MANAGEMENT
नोएडा (उ॰प्र॰)/NOIDA (U.P.)

कार्य संख्या- JOB NO.: 519
स्थिति STATUS: CONTRACT
मुद्रण स्केल मीटर में PRINT SCALE IN METRE: 0 2 4 6 8 10 20 30 40 50

INTERFACE DONE WITH ISG/TBG DATED 17/09/24

DEPT CODE		नाम NAME	हस्ताक्षर SIGNATURE	दिनांक DATE
C	तैयारकर्ता/DRN	DEEPAK/YK	--sd--	12/09/2024
	डिजाइनकर्ता/DESN	VV	--sd--	12/09/2024
	जांचकर्ता/CHD	AKV	--sd--	21/09/2024
	अनुमोदनकर्ता/APPD	KK	--sd--	21/09/2024

शीर्षक/TITLE: GEOTECHNICAL INVESTIGATION LAYOUT

एमपीएल MPL	सिविल CIVIL	इलेक्ट्रिकल ELEC	सीएण्डआई C&I	एमएसई MSE	मैक्स MAX	विभाग DEPT.	स्केल - SCALE-
						हस्ताक्षर SIGN / दिनांक DATE	

ड्राइंग संख्या/ DRAWING NO.: PE-DG-519-602-C001
शीट SHEET 1 OF 1 — पुनरीक्षण REV. 0

पुनरीक्षण REV.	दिनांक DATE	परिवर्तितकर्ता ALTD	जांचकर्ता CHD	अनुमोदनकर्ता APPD

Project : G/I work for 2X800 MW Koderma TPS, Phase-II, Jharkhand. CETEST

Job No : 4789 | Created by : Chandrani | Created on : 28/10/2024 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.47

Co-ordinates E=3499.000 N=13004.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	16	Undisturbed (UDS)	3
Cone (Pc)		Penetrometer (SPT)	16
Vane (V)		Disturbed (DS)	8
		Water Sample (WS)	0

Commencement Date : 23/10/2024
Completion Date : 24/10/2024
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 369.433 M.
Water Struck At :
Standing Water Level : 1.60 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15CM.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
			DS-1	0.50
		8		
		2 3 5	SPT-1	1.00-1.45
			UDS-1	2.00-2.45
		18		
Loose to medium dense, brownish grey, silty sand with kankars.		5 8 10	SPT-2	2.60-3.05
			DS-2	3.50
			*UDS-2	4.00-4.45
		19		
		6 8 11	SPT-3	4.60-5.05
5.50m.		N.X. rotary drilling from 7.50m to 25.00m	DS-3	5.50
		61	*UDS-3	6.00-6.08
Very dense, light grey, silty sand with kankar & decomposed rock.		22 28 33	SPT-4	6.20-6.65
		Refusal	DS-4	7.00
		50 4.0 cm Pentn.	*SPT-5	7.30-7.34
7.50m.		50 Refusal	*SPT-6	7.50-7.53 7.50
		3.0 cm Pentn.	R1	CR=NIL RQD=NIL
		50 Refusal	DS-5	
		3.0 cm Pentn.	*SPT-7	8.25-8.28 8.25
Completely weathered, light grey, coarse grained, decomposed & disintegrated rock fragments collected as sludge.		50 Refusal	R2	CR=NIL RQD=NIL
		2.0 cm Pentn.	DS-6	
		50 Refusal	*SPT-8	9.00-9.02 9.00
		4.0 cm Pentn.	R3	CR=NIL RQD=NIL
		50 Refusal	DS-7	
		3.0 cm Pentn.	*SPT-9	9.75-9.79 9.75
10.50m.		50 Refusal	R4	CR=NIL RQD=NIL
		3.0 cm Pentn.	DS-8	
		50 Refusal	*SPT-10	10.50-10.53 10.50
		3.0 cm Pentn.	R5	CR=14% RQD=NIL
		50 Refusal	*SPT-11	11.25-11.28 11.25
Completely weathered, reddish brown, coarse grained, fractured rock.		2.0 cm Pentn.	R6	CR=12% RQD=NIL
		50 Refusal	*SPT-12	12.00-12.02 12.00
		3.0 cm Pentn.	R7	CR=13% RQD=NIL
		50 Refusal	*SPT-13	12.75-12.78 12.75
		3.0 cm Pentn.	R8	CR=15% RQD=NIL
		50 Refusal	*SPT-14	13.50-13.53 13.50
		3.0 cm Pentn.	R9	CR=16% RQD=NIL
		50 Refusal	*SPT-15	14.25-14.27 14.25
		2.0 cm Pentn.	R10	CR=18% RQD=NIL
15.00m.		50 Refusal	*SPT-16	15.00-15.03 15.00
		3.0 cm Pentn.		

N.B. - '*' means sample could not be recovered.

Project : G/I work for 2X800 MW Koderma TPS, Phase-II, Jharkhand. CETEST

Job No : 4789 | Created by : Chandrani | Created on : 28/10/2024 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.48

Co-ordinates E=3592.000 N=13024.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	15	Undisturbed (UDS)	3
Cone (Pc)		Penetrometer (SPT)	15
Vane (V)		Disturbed (DS)	8
		Water Sample (WS)	0

Commencement Date : 22/10/2024
Completion Date : 23/10/2024
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 370.247 M.
Water Struck At :
Standing Water Level : 1.70 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15CM.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Stiff, reddish brown, clayey silt with sand & kankar.			DS-1	0.50
		3 5 8 — 13	SPT-1	1.00-1.45
1.50m.				
			*UDS-1	2.00-2.45
		4 7 9 — 16	SPT-2	2.60-3.05
Medium dense, light grey, silty sand with kankars.			DS-2	3.50
			*UDS-2	4.00-4.45
		5 6 11 — 17	SPT-3	4.60-5.05
5.50m.			DS-3	5.50
			*UDS-3	6.00-6.08
		24 31 35 — 66	SPT-4	6.20-6.65
		N.X. rotary drilling from 9.00m to 15.00m	DS-4	7.50
Very dense, light grey, silty sand with kankars & decomposed rock.		39 47 50 — >100 (2.0 cm Pentn.)	SPT-5	8.00-8.32
		50 — >100 (10.0 cm Pentn.)	SPT-6	8.70-8.80
9.00m.		50 — Refusal (3.0 cm Penth.)	*SPT-7 R1	9.00-9.03 CR=NIL RQD=NIL 9.00
			DS-5	
		50 — Refusal (3.0 cm Penth.)	*SPT-8 R2	9.75-9.78 CR=NIL RQD=NIL 9.75
Completely weathered, light brownish grey, coarse grained, deocmposed & disintegrated rock fragments collected as sludge.			DS-6	
		50 — Refusal (3.0 cm Penth.)	*SPT-9 R3	10.50-10.53 CR=NIL RQD=NIL 10.50
			DS-7	
		50 — Refusal (2.0 cm Penth.)	*SPT-10 R4	11.25-11.27 CR=NIL RQD=NIL 11.25
12.00m.			DS-8	
		50 — Refusal (4.0 cm Penth.)	*SPT-11 R5	12.00-12.04 CR=14% RQD=NIL 12.00
		50 — Refusal (2.0 cm Penth.)	*SPT-12 R6	12.75-12.77 CR=12% RQD=NIL 12.75
Completely weathered, light brownish grey to blackish grey, medium grained, fractured rock.		50 — Refusal (2.0 cm Penth.)	*SPT-13 R7	13.50-13.52 CR=10% RQD=NIL 13.50
		50 — Refusal (3.0 cm Penth.)	*SPT-14 R8	14.25-14.28 CR=08% RQD=NIL 14.25
15.00m.		50 — Refusal (2.0 cm Penth.)	*SPT-15	15.00-15.02 15.00

N.B. - '*' means sample could not be recovered.

Project : G/I work for 2X800 MW Koderma TPS, Phase-II, Jharkhand. CETEST

Job No : 4789 | Created by : Chandrani | Created on : 02/11/2024 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.99

Co-ordinates E=3329.000 N=13209.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	5	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	5
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	0

Commencement Date : 26/10/2024
Completion Date : 27/10/2024
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 375.110 M.
Water Struck At :
Standing Water Level : 1.70 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15CM.	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of coal dust & coal slag.			DS-1	0.50
0.70m. Very dense, reddish brown, silty sand with kankar & boulder.		21 25 31 56	SPT-1	1.00-1.45
			*UDS-1	2.00-2.10
		20 22 28 50	SPT-2	2.25-2.70
		N.X. rotary drilling from 4.50m to 15.00m	DS-2	3.50
4.00m. Very dense, deep grey, silty sand with decomposed rock. Obs. mica.		35 50/5.0 cm Pentn. >100	SPT-3	4.00-4.20
		50/3.0 cm Pentn. Refusal	*SPT-4	4.35-4.38
4.45m. Highly weathered, deep grey, coarse grained, fractured rock.		50/3.0 cm Pentn. Refusal	*SPT-5	4.50-4.53
			R1	CR=22% RQD=NIL (4.50 - 5.25)
			R2	CR=23% RQD=NIL (5.25 - 6.00)
			R3	CR=24% RQD=NIL (6.00 - 6.75)
6.75m. Highly weathered, deep grey, coarse grained, fractured rock.			R4	CR=27% RQD=13% (6.75 - 7.50)
			R5	CR=30% RQD=NIL (7.50 - 8.25)
			R6	CR=31% RQD=24% (8.25 - 9.00)
			R7	CR=30% RQD=16% (9.00 - 9.75)
10.15m.				

Project : G/I work for 2X800 MW Koderma TPS, Phase-II, Jharkhand.			CETEST
Job No : 4789	Created by : Chandrani	Created on : 02/11/2024	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.99

Co-ordinates E=3329.000 N=13209.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	5	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	5
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	0

Commencement Date : 26/10/2024
Completion Date : 27/10/2024
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 375.110 M.
Water Struck At :
Standing Water Level : 1.70 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15CM.	SAMPLES Ref. No	SAMPLES Depth (m)
10.15m.			R8	CR=31% RQD=17% 10.50
			R9	CR=30% RQD=18% 11.25
			R10	CR=26% RQD=18% 12.00
Highly weathered, deep grey, coarse grained, fractured rock.			R11	CR=24% RQD=NIL 12.75
			R12	CR=23% RQD=NIL 13.50
			R13	CR=26% RQD=18% 14.25
			R14	CR=28% RQD=20% 15.00
15.00m.				

N.B. – '*' means sample could not be recovered.

Project : G/I work for 2X800 MW Koderma TPS, Phase-II, Jharkhand.			CETEST
Job No : 4789	Created by : Chandrani	Created on : 02/11/2024	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.100

Co-ordinates E=3393.000 N=13235.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	11	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	11
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 26/10/2024
Completion Date : 27/10/2024
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 374.250 M.
Water Struck At :
Standing Water Level : 1.10 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15CM.	SAMPLES Ref. No	Depth (m)
0.00m.				
Medium dense, light brown to light grey, silty sand with decomposed rock.		3 5 8 — 13	DS-1	0.50
			SPT-1	1.00-1.45
		N.X. rotary drilling from 3.00m to 15.00m		
2.00m.			*UDS-1	2.00-2.07
Very dense, light brown to light grey, silty sand with decomposed rock.		26 39 53 — >100	SPT-2	2.15-2.50
		5.0 cm Penth.		
		50 — Refusal	*SPT-3	2.80-2.83
		3.0 cm Penth.		
3.00m.		50 — Refusal	*SPT-4	3.00-3.02 3.00
		2.0 cm Penth.	R1	CR=13% RQD=NIL
		Refusal		
		50	*SPT-5	3.75-3.78 3.75
		3.0 cm Penth.	R2	CR=16% RQD=NIL
		Refusal		
		50	*SPT-6	4.50-4.54 4.50
		4.0 cm Penth.	R3	CR=17% RQD=NIL
		Refusal		
		50	*SPT-7	5.25-5.27 5.25
		2.0 cm Penth.	R4	CR=17% RQD=NIL
		Refusal		
		50	*SPT-8	6.00-6.02 6.00
Completely weathered, light brownish grey, medium grained, fractured rock.		2.0 cm Penth.	R5	CR=20% RQD=NIL
				6.75
			R6	CR=16% RQD=NIL
		Refusal		
		50	*SPT-9	7.50-7.53 7.50
		3.0 cm Penth.	R7	CR=20% RQD=NIL
				8.25
			R8	CR=18% RQD=NIL
		Refusal		
		50	*SPT-10	9.00-9.04 9.00
		4.0 cm Penth.	R9	CR=14% RQD=NIL
		Refusal		
9.75m.		50	*SPT-11	9.75-9.77 9.75
Highly weathered, light grey, medium to fine grained, fractured rock. 10.15m.		2.0 cm Penth.		

Project : G/I work for 2X800 MW Koderma TPS, Phase-II, Jharkhand.			CETEST
Job No : 4789	Created by : Chandrani	Created on : 02/11/2024	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.100

Co-ordinates E=3393.000 N=13235.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	11	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	11
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 26/10/2024
Completion Date : 27/10/2024
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 374.250 M.
Water Struck At :
Standing Water Level : 1.10 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15CM.	SAMPLES Ref. No	SAMPLES Depth (m)
10.15m.			R10	CR=24% RQD=NIL 10.50
Highly weathered, light grey, medium to fine grained, fractured rock.			R11	CR=22% RQD=NIL 11.25
			R12	CR=21% RQD=NIL 12.00
12.00m.			R13	CR=26% RQD=NIL 12.75
Highly to moderately weathered, light grey with blackish shades medium to fine grained, fractured rock.			R14	CR=33% RQD=NIL 13.50
			R15	CR=38% RQD=17% 14.25
			R16	CR=40% RQD=24% 15.00
15.00m.				

N.B. – '*' means sample could not be recovered.

Project : G/I work for 2X800 MW Koderma TPS, Phase-II, Jharkhand. CETEST

Job No : 4789 | Created by : Chandrani | Created on : 02/11/2024 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.106

Co-ordinates E=3529.000 N=13310.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	8	Undisturbed (UDS)	0
Cone (Pc)		Penetrometer (SPT)	8
Vane (V)		Disturbed (DS)	6
		Water Sample (WS)	0

Commencement Date : 27/10/2024
Completion Date : 29/10/2024
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 371.844 M.
Water Struck At :
Standing Water Level : 0.95 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 15CM.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Very dense, light yellowish brown, silty sand with decomposed rock.		31 50 8.0 cm >100 Pentn.	DS-1	0.40
		50 Refusal	SPT-1	0.50-0.73
		50 4.0 cm Pentn. Refusal	*SPT-2	0.80-0.84
1.00m.		3.0 cm Pentn. Refusal	*SPT-3	1.00-1.03 1.00
			R1	CR=NIL RQD=NIL
		50 3.0 cm Pentn. Refusal	DS-2 *SPT-4	1.75-1.78 1.75
			R2	CR=NIL RQD=NIL
Completely weathered, light yellowish grey, coarse to medium grained, decomposed & disintegrated rock.		50 3.0 cm Pentn. Refusal	DS-3 *SPT-5	2.50-2.53 2.50
			R3	CR=NIL RQD=NIL
		50 2.0 cm Pentn. Refusal	DS-4 *SPT-6	3.25-3.27 3.25
			R4	CR=NIL RQD=NIL
		50 2.0 cm Pentn. Refusal	DS-5 *SPT-7	4.00-4.02 4.00
			R5	CR=NIL RQD=NIL
4.75m.		50 3.0 cm Pentn.	DS-6 *SPT-8	4.75-4.78 4.75
			R6	CR=30% RQD=NIL
Highly weathered, light grey, coarse grianed, fractured rock.		N.X. rotary drilling from 1.00m to 15.00m		5.50
			R7	CR=38% RQD=13%
6.25m.				6.25
			R8	CR=43% RQD=NIL
				7.00
Moderately weathered, ligtht grey, coarse to medium grained, fractured rock.			R9	CR=47% RQD=NIL
				7.75
			R10	CR=48% RQD=19%
				8.50
			R11	CR=48% RQD=NIL
9.25m.				9.25
Moderately to slightly weathered, ligtht grey, coarse to medium grained, fractured rock.			R12	CR=54% RQD=22%
10.15m.				10.00

Project : G/I work for 2X800 MW Koderma TPS, Phase-II, Jharkhand.			CETEST
Job No : 4789	Created by : Chandrani	Created on : 02/11/2024	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO.106

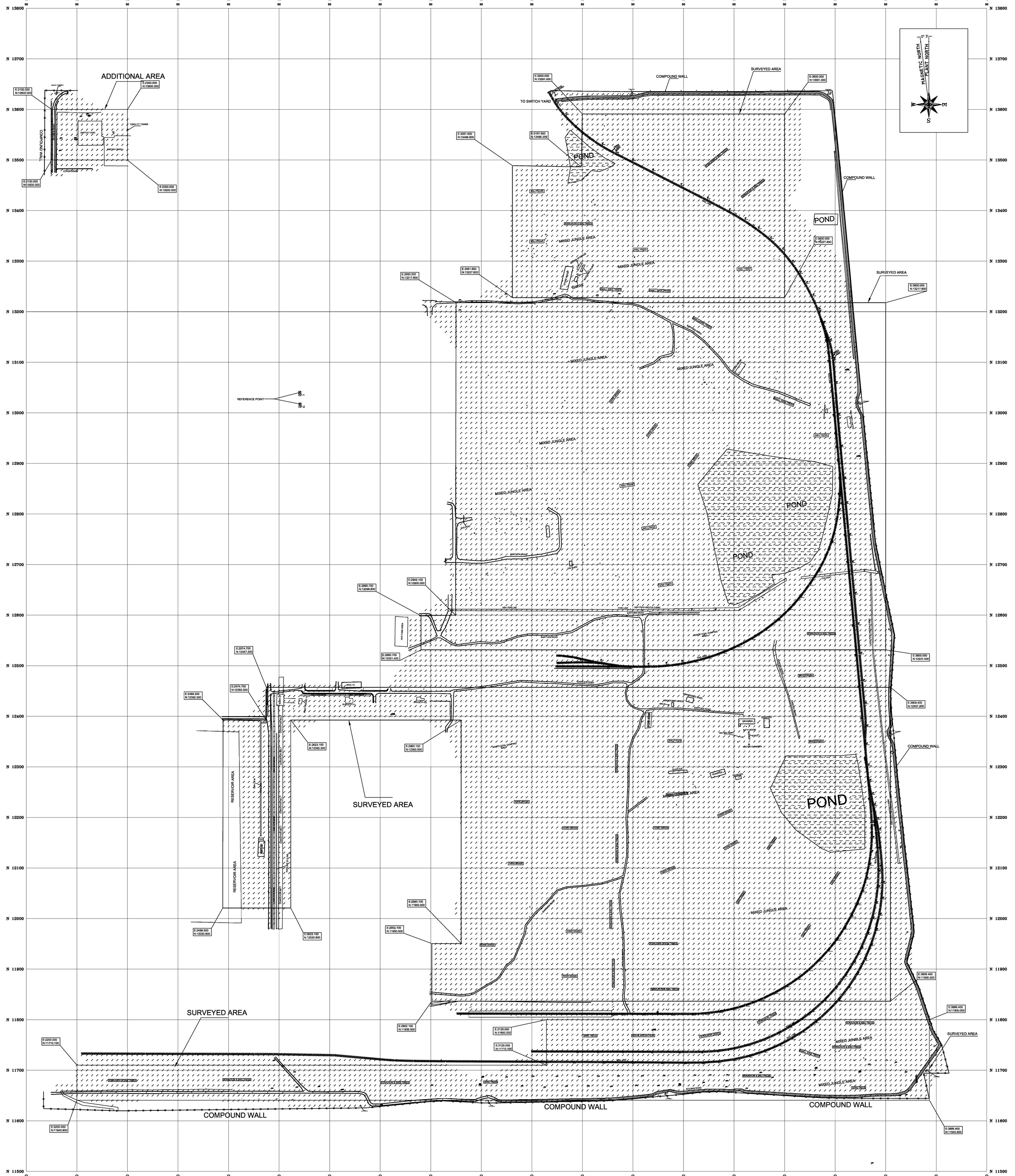
Co-ordinates E=3529.000 N=13310.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	8	Undisturbed (UDS)	0
Cone (Pc)		Penetrometer (SPT)	8
Vane (V)		Disturbed (DS)	6
		Water Sample (WS)	0

Commencement Date : 27/10/2024
Completion Date : 29/10/2024
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 371.844 M.
Water Struck At :
Standing Water Level : 0.95 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 15CM.	SAMPLES Ref. No	SAMPLES Depth (m)
10.15m.			R13	CR=55% RQD=13% 10.75
			R14	CR=61% RQD=40% 11.50
			R15	CR=63% RQD=40% 12.25
Moderately to slightly weathered, ligtht grey, coarse to medium grained, fractured rock.			R16	CR=67% RQD=55% 13.00
			R17	CR=71% RQD=35% 13.75
			R18	CR=77% RQD=54% 14.50
			R19	CR=80% RQD=66% 15.00
15.00m.				

N.B. – '*' means sample could not be recovered.



LEGEND		
SL NO.	DESCRIPTION	SYMBOL
1	BITUMEN ROAD	
2	EARTHE ROAD	
3	RAIL LINE	
4	COMPOUND WALL	
5	RAIL ELECTRIC POST	
6	TREE	
7	ELECTRIC POST(11KV)	
8	LAMP POST	
9	POND	
10	CONTOUR	
11	SPOT LEVEL	
12	ELECTRIC POST(33KV)	
13	SIGNAL POST	
14	TRANSFORMER	
15	BUILDING	
16	SEMIPUCCA HUTMENT	
17	HIGH MAST TOWER	

TREE SUMMARY		
SL NO	GIRTH(M)	NO OF TREES
1	0.300-0.600	404
2	0.600-1.200	431
3	1.200-Above	17

NOTES.

1. All dimensions are in Metre.
2. Co-ordinates & Levels of this Survey are with respect to the following :

Point No.	Plant Coordinate		RL(m)	Remarks
	Northing(m)	Easting(m)		
RP-1	13040.301	2640.992	378.448	At North East Corner Of Canteen
RP-2	13017.287	2641.475	378.443	At South East Corner Of Canteen

Levels of this Survey are with respect to Local Bench mark.

3. North direction : Plant North.
4. Contour interval =0.5 Metre.
5. Surveyed Area=1575897.475 Sqm./ 389.412 Acre

REV	DATE	ALTD	CHD	APPD	REV	DATE	ALTD	CHD	APPD	REV	DATE	ALTD	CHD	APPD
										0	11.11.2014			

JOB NO. 519
STATUS CONTRACT
DRG./REF. NO. (INTERNAL)
PRINT SCALE IN METRE 0 4 8 12 16 20 40 60 80

PROJECT :
2X800 MW DVC KODERMA TPS PHASE-II

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR-PROJECT ENGINEERING MANAGMENT, NOIDA

SURVEY AGENCY.
CETEST
Engineering & Geotechnical Investigations
An ISO 9001:2008 & 14001 Certified Company

C.E.TESTING COMPANY PVT. LTD.
124A NSC BOSE ROAD,
KOLKATA-700092

	NAME	SIGN	DATE
SUV			
DWG	BG		
CHD			
APPD			

TITLE : TOPOGRAPHICAL SURVEY & GEOTECH INVESTGATION OF 2X800 MW KODERMA THERMAL POWER STATION, PHASE-II, BANJHIDIH, JHARKHAND.

	MPL	ELEC	C&I	MSE	MAX
DEPT.					
SIGN					
DATE					

SCALE VARIES
DRAWING NO. SUV/4789/PLAN/F&S
SHEET 1 OF 1 REV. 00

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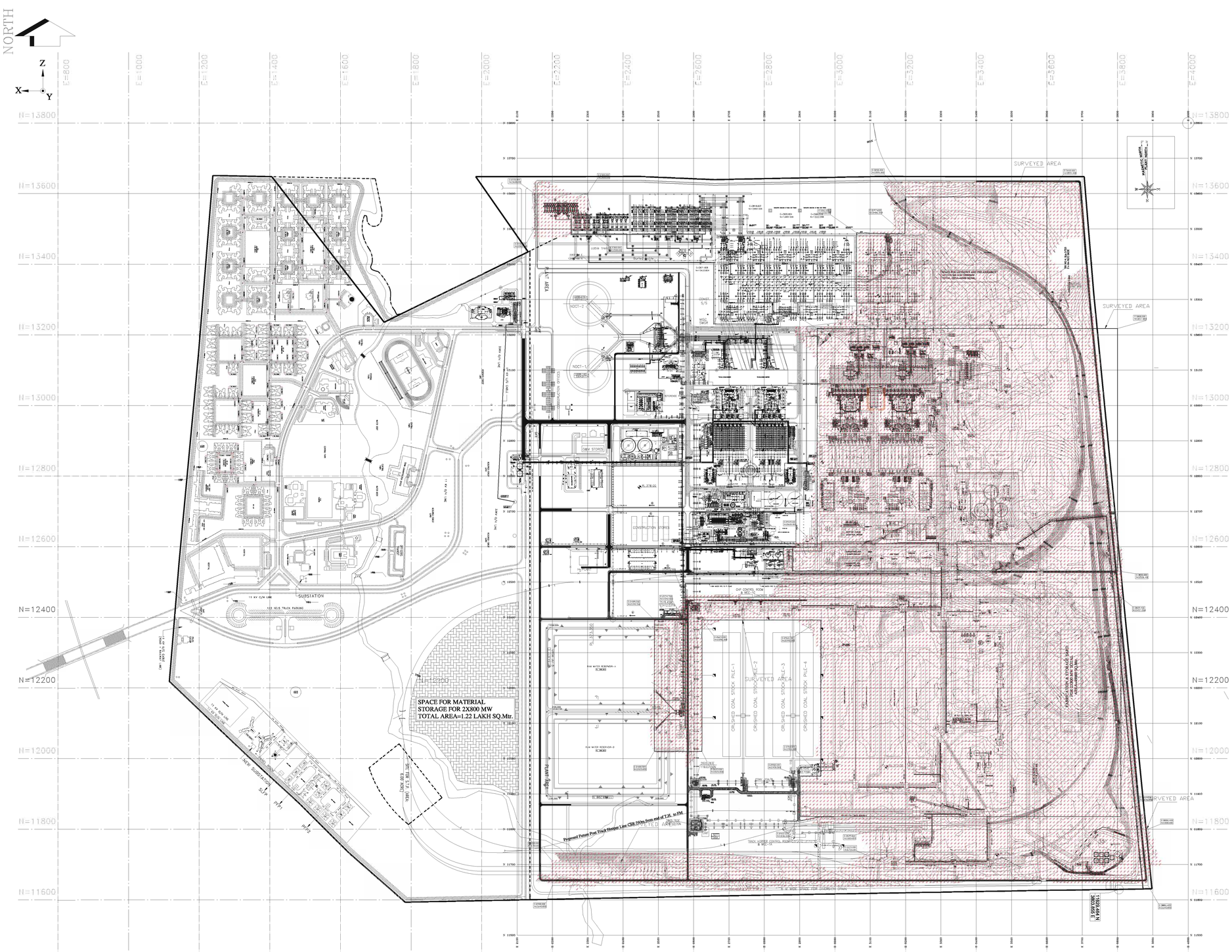

LIST OF BUILDING/EQUIPMENT SHOWN

NO	DESCRIPTION
1	SWITCHYARD & SWITCHYARD CONTROL ROOM
2	TRANSFORMER YARD
3	POWER HOUSE BUILDING
4	BOILER
5	MILL BAY
6	ELECTROSTATIC PRECIPITATOR
7	CHIMNEY
8	WATER SYSTEM CONTROL ROOM & ANNEX.
9	FOA LAB.
10	RAW WATER PUMP HOUSE & MCC
11	PT PLANT
12	D.M PLANT(RO/CONVENTIONAL)
13	D.M. WATER TANKS & PUMP HOUSE
14	SEWAGE TREATMENT PLANT
15	EFFLUENT TREATMENT PLANT
16	CW TREATMENT PLANT
17	F.O.P.H.
18	O&M STORES
19	COOLING TOWER
20	C.W. PUMP HOUSE & FOREWAY
21	PLANT CLO2 SYSTEM
22	COMPRESSOR HOUSE
23	MRS SILO
24	DG SET
25	ESP CUM FGD CONTROL ROOM
26	CONDENSATE STORAGE TANK & PH
27	COAL STOCK YARD
28	CHEMICAL HOUSE-PT PLANT
29	SWITCHYARD CONTROL ROOM
30	FLY ASH SILO / ASH DESPATCH AREA
31	SAFETY CONTROL ROOM
32	CLARIFIED WATER TANK & PUMP HOUSE
33	FLY ASH CLASSIFIER HOPPER
34	ELECTRICAL LAB
35	CLARIFIRE FOR AHP
36	FIRE WATER BOOSTER PUMP HOUSE
37	CPU REGENERATION AREA
38	BA SLURRY TRANSPORTATION PUMP HOUSE
39	COAL SLURRY SETTLING POND
40	ASH COMPRESSOR HOUSE
41	CHP PUMP HOUSE-2
42	AHP MCC
43	CHP PUMP HOUSE-1
44	CHP MCC-1B
45	HCSD CUM SILO UTILITY BUILDING
46	ASH WATER TANK/ PUMP HOUSE
~~47~~	~~DOZER SHED~~ DELETED
48	CRUSHER HOUSE (ISG)
49	GYPSUM DEWATERING BILDING
50	BALL MILL BUILDING
51	MCC CUM CONTROL ROOM FOR CHP
52	PT PLANT-CSSP
53	COMBINED ASH SLURRY PUMP HOUSE

LEGEND:

1. ROAD
2. BOUNDARY WALL
3. FENCING
4. RAILWAY LINE (PLANNED IN SATGE I)
5. LAND ACQUISITION LINE
6. PEM SCOPE PIPE RACK
7. ISG SCOPE PIPE RACK

NOTES:-

1. ALL DIMENSIONS ARE IN MM & ELEVATIONS IN METERS UNLESS STATED OTHERWISE.
2. TG BUILDING FINISH FLOOR LEVEL EL 0.0M, CORRESPONDS TO RL (+)373.50 M FTL IN BOILER AREA SHALL BE RL (+)373.30M AND FTL IN TRANSFORMER YARD SHALL BE RL (+)373.40M.
3. BOILER AREA, ESP AREA & FGD LAYOUT IS SHOWN INDICATIVE ONLY FOR SPACE ALLOCATION PURPOSE. FOR DETAILS, PL. REFER RESPECTIVE DRAWING OF BHEL TRICHY & RANIPET.
4. LOCATION/SIZE/LAYOUT OF VARIOUS FACILITIES/BUILDINGS ARE TENTATIVE ONLY AND SHALL BE FINALISED DURING FURTHER DETAIL ENGINEERING.
5. ADDITIONAL RAIL LINE IS REQUIRED FOR TRACK HOPPER, WAGON TIPPLERS AND ASH SILOS RAIL LINE SHOWN IN GLP ARE INDICATIVE. ALL THE REQUIRED STUDY,NECESSARY APPROVALS & CONSTRUCTION REQUIRED FOR RAILWAY SIDING WORK ARE IN THE SCOPE OF DVC

PROGRESSIVE AS ON DTD. 16.10.2024

REV.	DATE	ALTD	CHD	APPD	REV.	DATE	ALTD	CHD	APPD

CUSTOMER: DAMODAR VALLEY CORPORATION

PROJECT: KODERMA THERMAL POWER PROJECT PH-II (2x800 MW)

JOB NO. 519
STATUS CONTRACT
DISTRIBUTION

BHARAT HEAVY ELECTRICALS LTD
POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA

DEPT		NAME	SIGN	DATE
CODE	DRN	DINESH	-Sd-	03.09.2024
M	DES'N	MUKESH	-Sd-	03.09.2024
	CHD	KK	-Sd-	03.09.2024
	APPD	BKA	-Sd-	03.09.2024

TITLE: PLOT PLAN

DEPT. | SCALE | SIGN | DRAWING NO. PE-DG-519-100-M001 | SHEET 1 OF 1 | REV. 00

SIZE-A0

Reply to Pre-Bid Queries:

Sr. No.	Document	Clause no.	Page no.	Subject	Query	BHEL Reply
1	SCC, Rev. 00	22	3 of 5	Construction facilities to vendor	We request you to provide the per unit cost of construction power and water.	Construction power will be free for construction works but will be chargeable for bidders office and other establishments. Charging rate will be as per "DISCOM" rate. Construction water to be arranged by bidder.
2	Pre-qualifying requirements	4.3.1 Para 1,2 & 3	1 of 16	PQ (technical)	"The bidder should have ……capacity not less than 13000 m3/hr….." We request that these words to be read as "design flow capacity not less than 13000 m3/hr…"	Bidder to follow technical specification.
3	Pre-qualifying requirements				As an added provision, in case of a consortium bidding with Indian civil partner, the criterion of "combined turnover of lead partner and civil partner" can be considered, provided the technical criterion is met by the lead partner based on the "credentials of his parent company."	Please follow NIT documents
4	NIT	32	4 of 10	Reverse auction	The process of RA has led to bidders going "overboard and cutting on the bid prices, resulting in financially unviable bids, which in turn lead to executional hazards and failure of contractor. Many" reputed public sector companies have done "away with RA as a regular practice. This effect is very profound in cooling tower industry. We request to remove reverse auction from the bidding process."	Please follow NIT documents
5	Technical specification for IDCT, book 1 of 2. Spec. no. PE-TS-519-165-W001 REV NO. 00	18	10 of 195	Sizing of hot water distribution system	We request to accept maximum velocity of 2.5 m/sec for sizing the hot water distribution system.	Bidder to follow technical specification.
6	Technical specification for IDCT, book 1 of 2. Spec. no. PE-TS-519-165-W001 REV NO. 00	58	175 of 195	DETAILS OF EXTERANL M.S. LADDER	We request that the MOC of access ladder for FRP cooling tower should be of pultruded FRP. Please confirm your acceptance.	Technical specification is clear in this regard. Please refer technical Data Part-A.
7	Technical specification for IDCT, book 1 of 2. Spec. no. PE-TS-519-165-W001 REV NO. 00	4.10.3.	32 of 195	Handrails shall be provided all around the periphery of the cooling tower fan deck. Pipes shall be of 32 NB (Medium class)	We request that the MOC of handrail for FRP cooling tower shall be as mentioned in page 26 MOC of Components.	Noted. However, same shall be subject to customer approval during detailed engineering.
8	Technical specification for IDCT, book 1 of 2. Spec. no. PE-TS-519-165-W001 REV NO. 00	4.9	20 of 195	Louvers – bidder's proven practise.	During detail engineering stage, we may use extended basin with spray catchers provided at basin top. We may not provide louvers at air inlet level. Please confirm your acceptance.	Noted. Please also refer cl no. 4.5 at page no 28-29 of 195.
9	Technical specification for IDCT, book 1 of 2. Spec. no. PE-TS-519-165-W001 REV NO. 00	4.01.00	25 of 195	MOC of fill supports – SS 316	In case of trickle grid, the fill supports will be of pultruded FRP. Please confirm your acceptance.	Noted. However, same shall be subject to DVC approval during detailed engineering.
10	Technical specification for IDCT, book 1 of 2. Spec. no. PE-TS-519-165-W001 REV NO. 00	SUB VENDOR LIST	132 of 195	Approved makes of fan assembly – cooling tower	We request you to approve M/s. Coolflo Engineers Pvt Ltd. They are one of the reputed makes of cooling tower fans and have supplied fans for NTPC projects in the past.	Sub-vendor approval shall be taken up with DVC during detailed engineering.

11	Technical specification for IDCT, book 2 of 2. Spec. no. PE-TS-519-165-W001 REV NO. 00			Piling	We request that piling and pile caps, if any be excluded from cooling tower bidder's scope. We shall carry out pile design and provide layout drawing.	Not acceptable. Bidder to follow technical specification.
12	Technical specification for IDCT, book 2 of 2. Spec. no. PE-TS-519-165-W001 REV NO. 00	10.6	8 of 161	Plastering of internal surface of all water retaining structures	Plastering of internal surface of cooling tower basin and cold-water channel is not a standard practise. We request you to relax this requirement.	Bidder to comply with tender specification requirement.
13	Technical specification for IDCT, book 2 of 2. Spec. no. PE-TS-519-165-W001 REV NO. 00	7.01.00	43 of 161	Soil data	We request you to share the topographical survey drawing for variation in existing ground level at the cooling tower location and FGL. Further, please inform if the site will be handed over to the successful bidder on as is where is basis or graded site upto FGL of 207.0 m will be handed over.	Detailed topographical survey drg is attached in Amendment-1. Further, it is to inform that the site will be handed over to the successful bidder on as is where is basis. Further, Earth work in stripping of top soil upto a maximum depth of 0.30 m below ground level so as to exclude all debris, grass, vegetation, bushes, trees having girth upto 300mm including roots and organic materials etc for leveling and grading including dressing to specified levels & grades and compacting the graded/stripped surface by manual/ mechanical means, disposal of stripped materials all complete shall be in bidders scope.
14	Technical specification for IDCT, book 2 of 2. Spec. no. PE-TS-519-165-W001 REV NO. 00	7.00.01	43 of 161	Successful bidder to carry out his own detailed soil investigation	Increase in design quantities as a result of variation between soil investigation report shared with tender documents and detailed soil investigation conducted after award of contract would be charged extra by contractor. Please confirm your acceptance.	Bidder to follow technical specification.
15	Technical specification for IDCT, book 2 of 2. Spec. no. PE-TS-519-165-W001 REV NO. 00	7.00.02	43 of 161	Borelog details	We request you to provide the borelog details of locations specific to both the cooling towers.	Refer Amendment-1.
16	Technical specification for IDCT, book 2 of 2. Spec. no. PE-TS-519-165-W001 REV NO. 00	7.0202	148 of 161	Soil bearing capacity for IDCT 3 & 4	The SBC's provided are for 25 mm, 40 mm and 75 mm settlement criteria in soil. Please confirm if we can adopt 75 mm settlement criteria for designing the raft foundation.	Bidder to follow technical specification.

PRE-BID CLARIFICATIONS					
Sl No	Reference			Queries	Response from BHEL
	Section	Chapter / Cl. No	Page No.		
				COMMERCIAL	
1	Tender Notice_8	NIT / Cl. 21	2 of 10	Bidder expects that comments on our documents / drawings will be be received by us within 7 days of our submission of those documents / drawings. Kindly confirm.	BHEL / Customer comments on drgs/docs shall be furnished within 14 days of submission date. However, drgs/docs submitted shall be complete in all respects with revised drawing submitted incorporating all comments. Any incomplete drawing submitted shall be treated as non-submission with delays to bidder's account. For any clarification/ discussion required to complete the drawings, the bidder shall himself depute his personal to BHEL for across the table discussions/ finalizations/ submissions of drawings.
2	TenderNotice-8	NIT Cl. 21 (C)	2 of 10	Bidder request BHEL to consider the clause as follows : Mandatory Spares: 30 months from date of LOA or 6 Months from the date of BHEL clearance whichever is earlier.	Please follow tender documents.
3	TenderNotice-8	NIT Cl. 21 (E)	2 of 10	It is a conflict as Bidder does not understand if BHEL will be ready with UNIT CODs as per the Cooling Tower construction plan. Please clarify or add one qualification for waiver of PG Test if front cannot be provided within 6 months from bidder's readiness.	Please follow tender documents.
4	TenderNotice-8	NIT Cl. 28	3 of 10 / Payment terms for civil works (i) (a)	Bidder does not agree to submit any Bank Guarantee on this payment. We shall have to take loan or finance the mobilization in the manner agreed as per Bidder's standard policies. Over that, applicablity of additional Bank Guarantee is absolutely unfair and the clause has to be deleted therefore.	Please follow tender documents.
5	Tender Notice_8	NIT Cl. 28	3 of 10	For a project of this dimension Bidder expects 10% interest-free advance on Main Supply contract value. Please confirm. Referring to release of last 10% payment on Main Supply, kindly note that PG test will depend upon the ideal test conditions viz., plant load etc. which is beyond cooling tower contractor's control. Hence Bidder cannot continue to extend the validity of the subject BG till completion of the PG Test, which is not under our control. Therefore, there should be a cut-off period for revalidating the BG. Ideally the PBG should be valid till the warranty period only.	Please follow tender documents.
6	Tender Notice_8	NIT Cl. 28	3 of 10	Bidder expects 10% interest-free advance on E&C contract value. Please confirm. Referring to release of last 10% payment on E&C, kindly note that PG test will depend upon the ideal test conditions viz., plant load etc. which is beyond cooling tower contractor's control. Hence in case PG test / demonstration test of the cooling tower(s) cannot be completed within one year after completion of commissioning of cooling tower(s), for reasons not attributable to the contractor, BHEL shall release payment towards PG Test / demonstration test of the cooling tower(s) against existing performance security, valid till warranty period, that would have been submitted as per NIT Clause No 35 (Page 5 of 11). PLease confirm.	Please follow tender documents.
7	Tender Notice_8	28 (i-a)	3 of 10	Please confirm that BHEL shall release 5% of the civil work payment against site mobilization and not linking it with installation of the T&P as per Annexure - II. Also kindly note that labour colony shall be constructed as per bidder's standard practice / drawing.	Please follow tender documents.
8	Tender Notice_8	28 (i) (a)	3 of 10	Contractor do not agree to additional BG provisions against mobilization advance of 5% as the payment of 5% will be paid after mobilization and installation, which is not logical. Further, if BG is provided, a mechanism to reduce the BG against recoveries in bill is to be done by BHEL. Further, when will these BGs be discharged- to be clarified by BHEL.	Please follow tender documents.
9	Tender Notice_8	28 (ii)	3 of 10	For the last 10% payment against Civil Work, In case PG test / demonstration test of the cooling tower(s) cannot be completed within one year after completion of commissioning of cooling tower(s), for reasons not attributable to the contractor, BHEL shall release payment towards PG Test / demonstration test of the cooling tower(s) against existing performance security that would have been submitted as per NIT Clause 35 (Page 5 of 9). Please confirm.	Please follow tender documents.
10	Tender Notice_8	NIT / Cl. 35	5 of 10	This is understood to be applicable in case of a composite contract or for E&C package. Please provide PBG validity terms for Supply, Mandatory Spares and Civil packages.	Please follow tender documents.
11	Tender Notice_8	NIT / CL. 35	5 of 10	Contractor cannot agree to a timeline of 14 days for submission of performance secutiry from issuance of LOA. The timeline of 14 days should be calculated solely from issuance date of Purchase Order.	Please follow tender documents.
12	TenderNotice-8	NIT Cl. 36	6 of 10 / breach of contract	Bidder disagrees to the provisions under Sub-Cl. 36 (ii) and (iii). Requesting BHEL is same may be omiited from consideration.	Please follow tender documents.
13	Tender Notice_8	NIT / CL. 38	7 of 10	Please confirm that BOCW Cess, as applicable for civil construction scope of work for cooling tower, has to be borne by cooling tower contractor as per the guiding principles for BOCW Act and the Cess Act.	Please follow tender documents.
14	Tender Notice_8	NIT / Cl. 51	8 of 10	It is not possible for bidder to assess any unprecedented or unforeseen situation which are non existent at the time of site visit, hence cost consideration for such events is not considered. Hence in case of any circumstance or site related information which was non existent at the time of site visit / bidding stages or not shared along with the tender document, suitable compensation (if applicable at the time of execution) has to be paid to the contractor. Please confirm.	Please follow tender documents.

PRE-BID CLARIFICATIONS

Sl No	Reference			Queries	Response from BHEL
	Section	Chapter / Cl. No	Page No.		
15	TenderNotice-1	T&P List Whole List	1 of 26	T&P shall be deployed by us at site as per requirement to suit overall completion period based on our tried and proven standard for RCC structured IDCT as offered by us for the subject project. At the time of start of work, joint MOM may be prepared between BHEL and contractor about T&P to be deployed at site along with their individual quantities & deployment period.	Please follow tender documents.
16	TenderNotice-1	T&P List Whole List	1 of 26	Bidder understands that applicability of the T&P List shall depend on actual requirement of these equipment at site. Please confirm.	Please follow tender documents.
17	TenderNotice-1	3.11.1	5 of 26	Bidder understands that open space for fabrication yard or any other construction related activities will be also provided by BHEL / Owner within the plant premises near the cooling towers' location within the plant premises..	fabrication yard will be provided near new switchyard area indicated in GLP by PEM.
18	TenderNotice-1	3.3.1 (a) / 3.3.2 (a) / 3.3.3 (a)	7 of 26	Please confirm that water shall be made available by M/S BHEL near each IDCT area within the plant premises for construction purposes / drinking purpose @ office, canteen strores etc. Same has been indicated under Bidder's scope in the Scope Matrix.	Construction water to be arranged by bidder.Boring may be done.
19	TenderNotice-1	3.9.1	8 of 26	We request BHEL / Owner to provide space for labour colony on free of charge basis.	bidder has to arrange space for labour colony outside township boundary.
20	TenderNotice-1	3.1.1.a & b & 3.8.1	5 of 26 8 of 26	Bidder / Contractor objects to the phrase "as per availability within project premises". BHEL to ensure availability within the premises and within 100-150 meters from the site location.	as there are very limited space available for Ph-2 ,hence it will be as per availibility.
21	TenderNotice-1	3.11.1	9 of 26	Bidder requests BHEL to provide construction power at 2 points per IDCT (one near each IDCT & the other near the batching plant area for each IDCT). Bidder also requests BHEL to provide the distance of point of connection of construction power from each cooling tower.	Construction power will be provided in a single point only.
22	TenderNotice-1	Scope Matrix Cl. 3.11 & SCC point-22	9 of 26 & 3 of 6	We understand that power for construction works shall be provided free of cost by BHEL. In addition Bidder requests BHEL to provide free power to Bidder's office, store and other establishment inside the plant, except for labour colony (if constructed within the plant). Further, the provision is in conflict with SCC Cl. 22 to some extent. Hence, kindly clarify the order of precedence between these two documents. This is to be read with NIT provision as per Cl. 46.	Construction power will be free for construction works but will be chargeable for bidders office and other establishments. Charging rate will be as per "DISCOM" rate.
23	TenderNotice-1	3.11.1	9 of 26	Bidder requests BHEL to provide the distance of point of connection of construction water from each cooling tower. Also we request BHEL to provide water for drinking purpose for site office / canteen.	Please follow tender documents.
24	TenderNotice-1	3.12	9 of 26	Please confirm that water shall be made available by M/S BHEL near each IDCT area within the plant premises for construction purposes / drinking purpose @ office, canteen strores etc.	construction water to be arranged by Bidder.
25	TenderNotice-1	Scope Matrix Cl. 3.12 & SCC point-22	9 of 26 & 3 of 6	We request BHEL to provide free water at one point inside the plant. Since further distribution will have to be done by Bidder, please provide the distance of point of supply from cooling tower site for each IDCT / batching plant loaction. Further, the provision is in conflict with SCC Cl. 22. Hence, kindly clarify the order of precedence between these two documents. This is to be read with NIT provision as per Cl. 46.	construction water to be arranged by Bidder.
26	TenderNotice-1	Issue of Materials Cl. 3	11 of 26	Contractor should be entitled to compensations in case of delay in supply of free issue materials/ non-suppy of materials by BHEL. This compensation shall apply for both time and price.	Please follow tender documents.
27	TenderNotice-1	Material Handing, Storate and Preservation etc. Cl. 1.7	12 of 26	In view of scope of approach road conditions from the stores / yards to the erection/ construction site, Bidder requests BHEL to maintain approach road from time to time, especially during rainy seasons, so that minimum disruption is sufferred by bidder.	Motoable road will be availiable in round the year.
28	TenderNotice-1	Material Handing, Storate and Preservation etc. Cl. 3.4.4	14 of 26	bidder requests BHEL to issue cut-to-length steel in order to save wastage of national resource.	Please follow tender documents.
29	Special Conditions of Contract	General	--	Following provisions need to be incorporated in SCC / NIT: (a) Timeline for approval of drawing / documents. (b) Provision of Change Order should be incorporated. (c) Provision towards extension of time. (d) Formal Contract Agreement format is required for our review & comments, if any. (e) Order of precedence.	(a) bidder to refer Amendment no-1. (b) Please follow tender documents. (c) Please follow tender documents. (d) Please follow tender documents. (e) Already covered in tender document.

PRE-BID CLARIFICATIONS					
Sl No	Reference			Queries	Response from BHEL
	Section	Chapter / Cl. No	Page No.		
30	Tender Notice_3	Price Adjustment - PVC	1 thru' 4 of 4	Price Adjustment Clause / PVC should be applicable for entire duration of contract period, as accepted by BHEL in their recent tenders. Please confirm. In case of delays for reasons not solely attributable to the bidder / contractor, L3 schedule shall be revised and PVC needs to be calculated and paid based on revised L3 schedule. Please confirm. In case of negative price variation, payable amount to be restricted to ZERO. Please confirm. Price Adjustment Formula for Supply and Mandatory Spares should not be limited to Plastic, Steel, Electrical Equipment and Labour components only. Bidder / Contractor should be allowed to furnish the list along with assigned co-efficients for items on which PVC should be applicable. It is understood that "If the works are executed in an x month, then indices pertaining to that particular x month shall be considered (subscript 1) for calculation irrespective of the month the work has to be completed as per L3 schedule.	Bidder to refer the Amendment no-1.
31	GCC	Definition of Terms Cl. 11, Cl. 12, Cl. 20 and Cl. 23	3 of 86	Under Definition of Commissioning, Trial Run, Performance Guarantee Test and Handing over, Initial Operation has not been defined anywhere. In relation to completion of Commissioning, Trial Operation & PG Test, (+ subsequent Handing Over) and overall health of Cooling Tower in absence of continuous water charging, we state that timely providing all necessary inputs from BHEL of utmost importance. We seek confirmation on this.	Please follow tender documents.
32	GCC	ITB General Instructions Cl. 1.6 / Framework Agreement	7 of 86	BHEL shall have to enter into a formal Contract Agreement (maybe framework only) once the PO is issued.	Please follow tender documents.
33	GCC	GCC Cl. 9.0 / Terms of Payment	25 of 86	We understand that the Terms of Payment shall be guided by the NIT document and the GCC provisions shall be applied only if there as some gaps in NIT provisions.	Please follow tender documents.
34	GCC	GCC Cl. 9.6.5 / Claiming the Retention Payment	29 of 86	Retention money should be released immediately, if BHEL is unable to provide fronts/inputs for Commissioning/Trial Run/PG Test/Handing Over etc. within 30 days from physical work completion by Contractor.	Please follow tender documents.
35	GCC	GCC Cl. 9.5 / Release of Payment	28 of 86	The payment timeline of 60 days is to be reduced to 30 days.	Please follow tender documents.
36	GCC	GCC Cl. 9.10 / Interest on Delayed Payment	30 of 86	It has been observed that BHEL is not able to meet payment timelines often and majorly delays all payments in most of the projects. Hence, this provision cannot be accepted. A interest @ SBI PLR + 2% admin. We request BHEL to agree to charges for all delayed payments.	Please follow tender documents.
37	GCC	GCC Cl. 10 / Recovery of Outstanding Payment of Other Contracts	30 of 86	Contractor doesn't agree to adjustment of recoveries from any other contract against this contract.	Please follow tender documents.
38	GCC	GCC Cl. 11.3 / Validity of CPBG	30 of 86	Guarantee period shall start from completion of physical works (excluding commissioning, trial run, PG Test and handing over) by Contractor if BHEL is unable to provide necessary inputs timely. Further, "whichever is later" is to be changed to "whichever if earlier" as the Handing over of the project may get delayed if commissioning inputs are not made available by BHEL.	Please follow tender documents.
39	GCC	GCC Cl. 12.1 / Guarantee Period	31 of 86	Guarantee period shall start from completion of physical works (excluding commissioning, trial run, PG Test and handing over) by Contractor.	Please follow tender documents.
40	General Conditions of Contract	GCC BOP - GCTC / Clause No 33.2	43 of 86	Arbitration should be by joint arbitration procedure as per Arbitration & Conciliation Act, 1996 and as amended thereafter. The arbitration shall be conducted by a tribunal of three arbitrators, each party shall appoint one arbitrator, and the two arbitrators so appointed shall appoint the third arbitrator who shall act as the presiding arbitrator. If the two arbitrators fail to agree on the name of the presiding arbitrator, then appointment shall be made as per the provisions of Section 11 of the Arbitration & Conciliation Act, 1996 read with all its subsequent amendments up-to-date. Please confirm	Please follow tender documents.
41	GCC	GCC Cl. 44.i / ORC Charges	48 of 86	ORC Charges capping to be increased to at least 7.5% of the contract value limited to 15 lacs per months as Contractor will be deploying resources for 2 IDCTs together and also there will substantial T&P mobilizations in the project. Current cap of 1% of contract value limited to Rs. 1,00,000 /- per month is insufficient and doesn't appear practical.	Please follow tender documents.
42	GCC	GCC Cl. 45 / PVC Clause	48 of 86	We understand the the Annexure named "PRICE ADJUSTMENT-PVC payment terms and conditions" (Tendernotice 13) is the only document for PVC calculations as per NIT. Please furnish annexure / attachment if any in standard BHEL format as in other tenders, if applicable.	Please follow tender documents.
TECHNICAL					
43	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 6)	Scope of Supply and services / Clause 16.3	6 of 195	We confirm to include Supply of first fill of lubricants for all equipment under this package under our scope. Since commissioning of cooling tower is dependent on process readiness and hence is beyond bidder / contractor's control, we take exception in including the scope of second fill/ replenishment of chemicals as necessary after commissioning & handing over of the plant.	Please follow tender specification.

PRE-BID CLARIFICATIONS

Sl No	Reference			Queries	Response from BHEL
	Section	Chapter / Cl. No	Page No.		
44	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 6)	Scope of Supply and services / Clause 18.2	6 of 195	Provision for installing BHEL supplied VMS sensor / probes shall be avaialble in our gear box. However, as per standard practice, vibration pad is a part of scope of supply of VMS sensor / probes supplier only. Please note and confirm.	Bidder to follow tender specification.
45	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 6)	Scope of Supply and services / Clause 18.2	6 of 195	Scope demarcation of cable trays for VMS is not clear. Since all of VMS equipment and instruments shall be under BHEL supply scope, we understand that the entire run of cables and cable trays from plant DCS upto cooling tower VMS equipment end shall be furnished by BHEL. Please confirm.	Technical Specification is clear in this regard.
46	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 6)	Aproved Sub-Vendor List	14 of 195	M/s ABB's name is enlisted as an approved vendor for FF Temperature transmitter in the approved sub vendor list . Please note that M/s ABB has Non invasive Profibus type temperature transmitter, where the non invasive temperature measurement is not at all proven and hence not at all recommended for gear box lube oil temperature measurement. In this regard, please confirm acceptance of Bidder's proposed Sub-Vendors as M/s SMAR and M/s Baldota as approved make of Profibus type Temperature transmitters with dual input and display unit, for the concerend instrumentation equipment.	Bidder to follow tender specification. Further, approval of additional sub-vendors shall be taken up during detailed engineering and shall be subject to customer approval.
47	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 6)	Scope of Supply and services / Clause 47.2	14 of 195	Please confirm that Bidder's scope of instruments for the subject project is limited to the instruments mentioned in Clause No 47.4 only. No other field instruments is in Bidder's scope.	Instruments mentioned at cl no 47.4 are minimum requirement. Bidder has to supply any other instrument required as per contract and as per system requirement.
48	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 6)	Scope of Supply and services / Clause 47.5	14 of 195	All instruments for PG testing, in line with specification as applicable, shall be supplied on returnable basis and will remain testing agency's property. PG test instruments will be taken back by the testing agency after completion of the PG tests. No new PG test instruments need to be supplied by bidder. Please confirm accpetance.	Scope of instruments for PG test shall be as per CT PG Test Procedure.
49	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 6)	Clause no. 47.15 / Annual Maintenance Service	15 of 195	Regarding AMS for Profibus instruments, we requesdt BHEL to delete this requirement from cooling tower bidder / contractor's scope.	Please refer Amendment -1.
50	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 6)	Clause No 51.4	16 of 195	This clause needs to be suitably amended since Structural steel is not a free issue items in case of the subject tender.	Please refer Amendment -1.
51	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 6)	Technical Data - Part A (Mechanical) Sl No 2.17	18 of 195	Minimum elevation of hot water distribution duct w.r.t. Basin Curb Level shall be left to the bidder to decide / optimise. Kindly confirm.	Bidder to follow technical specification.
52	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 6)	Technical Data - Part A (Mechanical) Sl No 2.25	18 of 195	Fill plan area shall be decided by the bidder. Please confirm.	Bidder to follow technical specification. Fill plan area indicated in specification is minimum required fill plan area. However, bidder may consider higher fill plan area to meet the performance requirement.
53	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 6)	Technical Data - Part A (Mechanical) Sl No 4.2.2	19 of 195	Casing in case of pultruded FRP structured cooling tower option shall be corrugated FRP.	Noted. However, same shall be subject to DVC acceptance during detailed engineering.
54	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 6)	Technical Data - Part A (Mechanical) Sl No 4.2.3	19 of 195	Cell partition wall shall be corrugated FRP.	Noted. However, same shall be subject to DVC acceptance during detailed engineering.
55	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 6)	Technical Data - Part A (Mechanical) Sl No 4.2.5	20 of 195	In case of pultruded FRP structured cooling tower option, fan cylinder / recovery stack shall be of moulded FRP / GRP. Same is pultruded FRP is not feasible.	Noted. However, same shall be subject to DVC acceptance during detailed engineering.
56	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 6)	Sub-Section A-15 / Clause No 4.8	31 of 195	Bidder recommends to offer self-manufactured 3-pass cellular type drift eliminators designed to limit drift loss to maximum 0.001% of the circulating water flow. Please confirm.	These details shall be finalized during detailed engineering and shall be subject to DVC approval.
57	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 6)	Clause no. 2.12 / Specifications of Junction Box	53 of 195	(i) We understand that FRP Junction box as per subject clause specification is applicable for Level Switch, Gear Box TT and Butterfly Valve limit switch open/close signal. Please confirm. (ii) Also, For Profibus type Temperature transmitter we need to provide Profibus type Junction boxes whose technical specification and approved sub vendor list are not provided. Kindly furnish the same.	Bidder to follow tender specification.
58	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 6)	Aproved Sub-Vendor List	139 of 195	Referred clause does not have any approved make for Float type level switch. Kindly note that same will be self-manufactured item for Bidder.	Make of insputments / equipments not mentioned in technical specification shall be finalized during detailed engineering and shall be subject to customer approval.
59	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 7)	Clause No 5.6	6 of 161	This stipulation is not acceptable to Bidder. BHEL / Owner should take responsibility for the correctness of the geo-technical investigation report. Nature of soil, type of foundation, soil bearing capacity, sub-soil water, etc. should be considered by Bidder for estimation purpose based on available geo-technical investigation report only. However, any price &/or time implication due to change in the actual soil profile, if encountered by Bidder / Contractor during execution stage, should be borne by BHEL / Owner. Please confirm.	Bidder to follow technical specification.

PRE-BID CLARIFICATIONS

Sl No	Reference			Queries	Response from BHEL
	Section	Chapter / Cl. No	Page No.		
60	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 7)	Technical Specification 10.5	8 of 161	With respect to water proofing of structures, detailed specification & list of approved manufacturer is required.	Detailed specification is already attached. Bidder to follow specification. List of approved manufacturers shall be finalized during detailed engineering and shall be subject to DVC apporval.
61	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 7)	Technical Specification 10.6	8 of 161	Cooling tower cold water basin inside surfaces are generally not plastered. This may also result in increased dampness in the inside surfaces being plastered. Hence, as per standard insdustrial practice, the clause stating requirment of plastering on inner walls of basin should be deleted. Please confirm.	Bidder to comply with tender specification requirement
62	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 7)			This stipulation is not acceptable to Bidder. BHEL / Owner should take responsibility for the correctness of the geo-technical investigation report. Nature of soil, type of foundation, soil bearing capacity, sub-soil water, etc. should be considered by Bidder for estimation purpose based on available geo-technical investigation report only. However, any price &/or time implication due to change in the actual soil profile, if encountered by Bidder / Contractor during execution stage, should be borne by BHEL / Owner. Please confirm.	Bidder to follow technical specification.
63	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 7)	Technical Specification 10.10	8 of 161	Contour map / Topographical survey drawing is required to determine the backfilling activities required as per site soil data. Please provide the same.	Detailed topographical survey drg is attached in Amendment-1.
64	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 7)	3.01.01	141 of 161	This stipulation is not acceptable to Bidder. BHEL / Owner should take responsibility for the correctness of the geo-technical investigation report provided along with tender. Onus of correct assessment / interpreptation and understanding of provided geo=technical investigation report / bore log data is Bidder's responsibility but the correctness of the data given by BHEL / Owner as part of the tender document has to be ensured by BHEL / Owner only. Any price &/or time implication due to change in the actual soil profile, if encountered by Bidder / Contractor during execution stage, should be borne by BHEL / Owner. Please confirm.	Bidder to follow technical specification.
65	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 7)	Annexure-D1-10 / 7.01.01	143 of 161	BHEL / Owner should take responsibility for the correctness of the geo-technical investigation report provided along with tender. Also kindly nite that we could not locate the topographical survey drawings mentioned as "enclosed" in this stipulation. Kindly furnish the same.	Bidder to follow technical specification.
66	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 7)	Annexure-D1-10 / 7.01.02	143 of 161	Any price &/or time implication due to change in the actual soil profile, if encountered by Bidder / Contractor during execution stage, should be borne by BHEL / Owner.	Bidder to follow technical specification.
67	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 7)	General	--	Plrease confirm that dismantling & disposal of existing over-ground as well as underground facilities, if applicable within Bidder's scope limit, is BHEL's responsibility prior to handing over of the cooling tower site to Bidder / Contractor.	Dismantling & disposal of existing over-ground as well as underground facilities coming within IDCT area(if applicable) will be in Bidder's scope. Further, Earth work in stripping of top soil upto a maximum depth of 0.30 m below ground level so as to exclude all debris, grass, vegetation, bushes, trees having girth upto 300mm including roots and organic materials etc for leveling and grading including dressing to specified levels & grades and compacting the graded/stripped surface by manual/mechanical means, disposal of stripped materials all complete shall be in bidders scope.
68	Technical Specification No. PE-TS-519-165-W001 (Tender Notice 7)	General	--	Kindly furnish the complete plant layout & contour drawing for our study.	Detailed topographical survey drg is attached in Amendment-1.