Corrigendum 1 dated May 23, 2015 to Tender Specification BHEL PSSR SCT 1584

A) One new item which is mentioned below is added to the price bid. Bidders are requested to add this item in the existing price bid and quote for this item also.

ST. No.	DESCRIPTION OF ITEM	Unit of Measurement	Quantity	Rate per Unit in Rs. (In figures)	Rate per Unit in Rs. (In words)	Total Amount in Rs. (In figures)	Total Amount in Rs. (In words)
1506	Item Description: Providing and fixing insulation of resin bonded mineral wool of 50 mm nominal thickness conforming to IS 8183 having a density of 32 kg/cum glass wool or 48 kg/cum for rock wool, for cladding / under deck insulation including application of glue and tying with lacing wire, for glass/rock wool as per manufacturer's recommendations.	Sqm	3550				

B) The description of items of the following are MODIFIED / REVISED as below:

ST.No.	EXISTING DESCRIPTION OF ITEM	MODIFIED / REVISED DESCRIPTION OF ITEM
2301	**Supply,** fabrication and erection of structural steel with mild steel rolled section / built up section / combination of both conforming to IS:2062, pipes conforming to IS:1161/ IS:1239, chequered plate conforming to IS: 3052, mild steel rounds, monorails, stays, safety chains, ladders, MS grating etc. in columns, beams, gantry girders, bunkers, silos, hoppers, roof trusses, portals, laced purlins, space frames, hangers, struts, monorails, galleries, stiffeners, wall beams, sheeting runners, brackets, stub columns, bracings, cleats, trestles, base plates,	Fabrication and erection of structural steel with mild steel rolled section / built up section / combination of both conforming to IS:2062, pipes conforming to IS:1161/ IS:1239, chequered plate conforming to IS: 3052, mild steel rounds, monorails, stays, safety chains, ladders, MS grating etc. in columns, beams, gantry girders, bunkers, silos, hoppers, roof trusses, portals laced purlins, space frames, hangers, struts, monorails, galleries, stiffeners, wall beams, sheeting runners, brackets, stub columns, bracings, cleats, trestles, base plates, splice

	splice plates, chequered plate flooring, decking and seal plates, steel frame grid over false ceiling, walkway platforms, ladders, stairs, stringers, treads, landings, hand-rails etc.....	plates, chequered plate flooring, decking and seal plates, steel frame grid over false ceiling, walkway platforms, ladders, stairs, stringers, treads, landings, hand-rails etc .....
2421	**Providing,** straightening, cutting, bending, placing in position at any level, binding in position of steel reinforcements of TMT steel of grade Fe-500 confirming to IS:1786 including cost of binding wire, labour, scaffolding, transportation to & from stores etc all complete as per specification, drawing and as directed by Engineer	Straightening, cutting, bending, placing in position at any level, binding in position of steel reinforcements of TMT steel of grade Fe-500 confirming to IS:1786 including cost of binding wire, labour, scaffolding, transportation to & from stores etc all complete as per specification, drawing and as directed by Engineer
A1401	Providing and laying 50 **mm thick** heavy duty patent stone cement concrete in flooring with metallic hardener pigmented topping 12mm thick uniform graded treated iron paricles in flooring. Under layer of **38mm thick** cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates 12.5mm well graded) and top layer of 12mm thick metallic concrete of mix 1:2 (1 cement hardner mix with approved quality metallic hardening compound :2 stone aggregate 6mm nominal size) by volume including cement slurry, rounding off edges, aluminium strips etc. all complete for following (Quoted item rate shall be inclusive of providing glass joint strips): as per spec.	Providing and laying **40 mm thick** heavy duty patent stone cement concrete in flooring with metallic hardener pigmented topping 12mm thick uniform graded treated iron paricles in flooring. Under layer of **28mm thick** cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates 12.5mm well graded) and top layer of 12mm thick metallic concrete of mix 1:2 (1 cement hardner mix with approved quality metallic hardening compound :2 stone aggregate 6mm nominal size) by volume including cement slurry, rounding off edges, aluminium strips etc. all complete for following (Quoted item rate shall be inclusive of providing glass joint strips): as per spec.
28 of Raw Water reservoir	**Providing,** straightening, cutting, bending, placing in position at all levels, binding in position of steel reinforcements of TMT steel of grade Fe-500 or 500EQR confirming to IS:1786 including cost of binding wire, labour etc all complete per specification, drawing and as directed by engineer-in-charge.	Straightening, cutting, bending, placing in position at all levels, binding in position of steel reinforcements of TMT steel of grade Fe-500 or 500EQR confirming to IS:1786 including cost of binding wire, labour etc all complete per specification, drawing and as directed by engineer-in-charge.

C) The bid / offer submission date is revised as follows:

Sl.No	Published in	Existing			Revised as		
1	Techno commercial bid Volume – I Book - I Notice Inviting Tender Clause no 1.0 (iv) to Clause no 1.0 (vi)	1.0 (iv)	Issue of Tender Documents	1. Sale from BHEL PSSR Regional office at :Chennai Closes: May 27, 2015 Time :15.00 Hrs	1.0 (iv)	Issue of Tender Documents	1. Sale from BHEL PSSR Regional office at :Chennai Closes: June 09, 2015, Time :15.00 Hrs
		1.0 (v)	Due date & time of offer submission	Date : May 28, 2015, Time :15.00Hrs	1.0 (v)	Due date & time of offer submission	Date : June 10, 2015, Time :15.00Hrs
		1.0 (vi)	Opening of tender	Date : May 28, 2015 Time :15.30Hrs	1.0 (vi)	Opening of tender	Date : June 10, 2015, Time :15.30Hrs

D) Some of the bidders had raised queries in the published tender specification. The Clarifications issued by BHEL are furnished below:

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
1)	Price Bid ST. No 101	Earth work in excavation in all types of soil including ash which can be excavated by any …. …… ……. …….. …….. …. below ground level.	Kindly specify the type of Excavation i.e. Mass or Pit Excavation.	Please follow the item description.
2)	Price Bid ST. No 103	Earth work in excavation in soft rock (rock without any recovery of excavated materials …… …. ….. ….. ….. ……. …….below ground level.	Kindly specify the type of Excavation i.e. Mass or Pit Excavation.	Please follow the item description.

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
3)	Price Bid ST. No A205	Providing and laying Design Mix cement concrete (M20) conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size in grade slab and paving using Vaccum Dewatered Flooring (VDF) method etc ..... …….. …….. ……. ……as per specification & drawing.	Kindly specify the thickness of the VD Flooring to work out the cost more accurately.	The thickness of VDF concrete shall be between 100mm to 250mm.
4)	Price Bid ST. No 400	Reinforcement Works	We understand that the Reinforcement for these works shall be supplied by BHEL free of cost to us (As per Cl. 1.3.6, TCC). Please confirm.	Only TMT will be supplied by BHEL free of cost. Mild steel supply is in bidder scope.
5)	Price Bid ST. No 501	Providing and laying under bed grading plaster with cement mortar 1:4 (1 cement : 4 sand) and average thickness of 25 mm including preparation of surface, batching, mixing, levelling etc. all complete./**Elastomeric Water Proofing Treatment**	Please confirm whether we shall consider Plaster in CM 1:4 only or Elastomeric Water Proofing Treatment. Also, please specify the detailed Tech. Spec. of Elastomeric Water Proofing, if required to be considered. We presume that elastomeric waterproofing works shall be paid separately apart from 25mm screed plaster. Please clarify.	The description is **modified as** "Providing and laying under bed grading plaster with cement mortar 1:4 (1 cement : 4 sand) and average thickness of 25 mm including preparation of surface, batching, mixing, leveling etc. all complete."

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
6)	Price Bid ST. No A502	Providing and laying rigid insulation (extruded polystyrene blocks) as per relevant IS Code in suitable panels …….. …… …… ……. for following.	Please indicate the Density of Polystyrene Blocks.	Please refer IS 4671 : 1984 for detail
7)	Price Bid ST. No A506	Providing and applying PU based water proofing…… …….. …….. ……. ……. in charge.	Wearing course made of plain cement concrete of specified proportion and thickness, if applicable over water proofing layer, will be paid separately in relevant item. Please confirm.	Confirmed
8)	Price Bid ST. No C506	Providing and applying 4mm thick APP modified …… …….. …….. ……. ……. in charge.	Wearing course made of plain cement concrete of specified proportion and thickness, if applicable over water proofing layer, will be paid separately in relevant item. Please confirm.	Confirmed

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
9)	Price Bid ST. No A508	Providing and laying pressed precast concrete tiles of 20 mm thickness and size 600x600 mm…….. ……. …… …… ….. elsewhere)	As you are aware that handling of 600x600mmx20mm thick size pressed precast concrete tiles are difficulty and also not available in the present market. Hence, we request your good selves to accept for 300x300mmx20mm thick or 250x250mmx20mm thick in lieu of 600x600mmx20mm thick pressed precast concrete tiles.	Please follow the item description.
			* Precast concrete tiles of size 600x600 mm with 20 mm thickness is not available. Please check it. We propose the size of tiles as 250x250 / 300x300 mm with thickness 22 mm to 25 mm. - Please confirm. * As per IS code IS-13801, the maximum size recommended is 300x300 mm. - Please check.	
10)	Price Bid ST. No 705b	PVC pipes / conduits of all diameters	Unit of Measurement is mentioned as "Quintal". Please clarify.	Please follow the item description.
11)	Price Bid ST. No 705c	UPVC pipes / conduits of all diameters	Unit of Measurement is mentioned as "Quintal". Please clarify.	Please follow the item description.

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
12)	Price Bid ST. No A902	Providing and fixing teakwood frame panel door with PVC lamination on both sides shutter as per IS 1003 with 35 mm x 150 mm vertical rail & 35mm x 125 mm horizontal rail and 12 mm thick interlocked panels of teakwood …… …… …… …… … separately)	Please indicate the Spacing / No of Horizontal Rails and thickness of PVC Lamination.	Shall be furnished during detailed engineering stage.
13)	Price Bid ST. No 912	Providing and fixing pressed steel frames fabricated ……. ……. ……. ……. specifications.	The total quantity is 10099 kg. It seems to be on higher side, please confirm the same.	Bidder to quote for the quantity given
14)	Price Bid ST. No 916	Supplying and fixing weather stripping of approved make and quality to doors as per instructions of engineer in charge and specification complete.	Kindly specify the width of the weather stripping as the UOM is in Rmt	Shall be furnished during detail engineering stage.
15)	Price Bid ST. No 920	Roof sky light structure for atrium …. ……. ……. ……. …….. …….specification	Indicative sketch (Plan & Elevation) showing framing sections may please be provided.	Shall be furnished during detailed engineering stage.

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
16)	Price Bid ST. No A921	Supplying, installing and commissioning of self sliding mechanism for aluminum door (double shutter) including photo operated sensors, fittings, motors, mechanical systems, electrical systems, warranty all inclusive in working condition as per specifications (aluminum and glazing to be paid separately)	Please provide us the General arrangement drawing with door sizes, required accessories and relevant technical specifications etc. along with the list & contact details of Specialized agencies.	Drawing shall be furnished during detailed engineering stage.
17)	Price Bid ST. No A1001c, A1002c	Brick work Using burnt clay bricks of class designation 7.5 of nominal dimension	We requested to accept for locally available good quality burnt clay bricks of 35kg/sq cm strength in lieu of burnt clay bricks of class designation 7.5	Please follow the item description.
18)	Price Bid ST. No. A1001, 1002, A1003 & A1004	Brick Works of all types (Crushing strength of 75 Kg/Sqcm)	We request you to consider locally available best quality Bricks.	Please follow the item description.

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
19)	Price Bid ST. No. A-1003	Providing brick work in cement mortar 1:4 (1 cement 4 coarse sand) in partition walls, chambers etc. in thickness 115mm at all heights, places and position above or below plinth/graded level **including providing two nos. 6 mm diameter MS bars** at every third layer, raking out joints, curing, scaffolding etc complete excluding plastering and painting as per specification.	6 mm dia M.S bars in brickwork will be paid separately under item no.ST-406. - Please confirm.	6mm dia MS bar in brickwork is inclusive in item A1003.
			We understand that the cost towards Reinforcement shall be measured and paid separately in BOQ item No. 406 (Mild Steel Reinf. In Brickwork) and hence we need not include the cost towards the same in A1003 item. Please confirm	
20)	Price Bid ST. No. A-1004	Brick Soling	Unit of this item will be in 'Sqm' instead of 'Cum'. - Please confirm.	The quantity of item A1004 shall be read in 'SQM'.
21)	Price Bid ST. No. 1007	Providing and encasing of structural steel member with masonary work around flanges, webs etc. ……. …… ……. …… …… separately)	Kindly specify the Cement Mortar ratio for the Masonry Work.	Please follow the item description.
22)	Price Bid ST. No. 1205	Providing 12mm thick plaster in walls, drains / culverts with a paste… …….. ……. ……. …….. all complete.	Kindly specify the Cement Mortar ratio for Plaster.	Please follow the item description.

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
23)	Price Bid ST. No. 1206	Providing and making decorative plaster of all types and design ……. ……. ……. ……. . all complete.	Please provide the detailed technical specifications etc.	Please follow the item description.
24)	Price Bid ST. No. 1303, 1304, 1305	Various painting works	Cost of white cement putty / POP is not in the scope of these items. -Please confirm.	Item description is clear.
25)	Price Bid ST. No.1401	Providing and laying 50 mm thick heavy duty cement concrete in ….. …. …. …….. including cement slurry, rounding off edges, **aluminium strips** etc. all complete for following (Quoted item rate shall be inclusive of providing **glass joint strips**):	Kindly specify whether Aluminium or Glass strips are to be included in this item. Also as there is a separate item exists for providing & fixing of dividing strips in flooring (Item No. 1430), we request you to measure and pay separately under Item No. 1430. Please confirm	Please follow the item description.

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
26)	Price Bid ST. No. 1401 & A1401	Heavy Duty Cement Concrete Flooring	* In item description both aluminium strip and glass strip has been mentioned. Please specify which type of dividing strip will be used in this item. * Item ST-1401 and ST-A1401 appears identical. - Please clarify.	*Please follow the item description *Item ST-1401 is flooring of 50mm (with 12mm & 38mm layers) while ST-item A1401 is being modified as " flooring of 40mm (with 12mm & 28mm layers)". **Refer point (B) of this corrigendum for revised item description.**
27)	Price Bid ST. No. A1401	Providing and laying 50 mm thick heavy duty **patent stone cement** concrete in flooring .... including cement slurry, rounding off edges, **aluminium strips** etc. all complete for following (Quoted item rate shall be inclusive of providing **glass joint strips**): as per spec.	Kindly specify whether Aluminium or Glass strips are to be included in this item. Also as there is a separate item exists for providing & fixing of dividing strips in flooring (Item No. 1430), we request you to measure and pay separately under Item No. 1430. Please confirm	Please follow the item description. **Refer point (B) of this corrigendum for revised item description.**

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
28)	Price Bid ST. No. A1404	Providing and laying 50 mm thick coloured interlocking M30 concrete tile in paving with approved colour and pattern and should be laid on the subbase ……. ……. ……. ……. of manufacturer.	Kindly specify the subbase and bedding details for the Tile	The same shall be furnished during detailed engineering stage.
29)	Price Bid ST. No. 1408	Providing polished Kota stone 18mm to 20mm thk in skirting…… ……. …….. ……. ……. all complete.	Kindly specify the Cement Mortar ratio for Skirting.	Please follow the item description.
30)	Price Bid ST. No 1427	Providing and fixing glazed ceramic tiles of approved color and design of size 200x300mm / 300x300mm in dado of …… ……. ……. …….. ……. ……..thicknesses:	Kindly specify the Cement Mortar thickness.	Shall be furnished during detail engineering stage.

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
31)	Price Bid ST. No. 1503	Designing, providing and fixing **External sheet of Permanent colour coated metal cladding with troughed M.S. sheets of 0.6mm** bare metal thickness having minimum yield strength 250 MPa and zinc aluminium alloy coating not less than 275 gm/sqm total on both sides including fixing to supports / rails by concealed fixing system	Provision for Zinc Aluminium alloy coating @ 275 gm / sqm is not available in India . Accordingly in our existing project with M/s BHEL (PKG B Unit 9 for 2 X 250 MW Barauni TPP), our order had been amended and the provision kept for 150 gm /sqm instead of 275 gm/ sqm. The reference document no. for the said amendment is PSER:SCT:BRM-C1273:15:PKG-B:WO: Amendment-01:4420 dated 09.04.2015 . We presume Zinc Aluminium alloy coating 150 gm/ sqm for this item. Please confirm.	Bidder to quote as per BOQ item.
32)	Price Bid ST. No. 1508	Under deck insulation	This item is excluding cost of insulation. Hence, please clarify in which item cost of under deck insulation will be operated and paid.	The cost of insulation will be paid under item 1506 **(added as an additional item. Refer point (A) of this corrigendum for item description.**
33)	Price Bid ST. No.1606	Providing and Fixing CALCIUM Silicate Board / Tiles in false ceiling of HILUX or AEROLITE or equivalent consisting of metal supporting grid system forming panels of specified size etc	Please indicate the size of panel and thickness of board.	Please follow the item description.

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
34)	Price Bid ST. No. 1813	Providing Earthing pit **as per drawing** with charcoal ….. ……. ……. ……... all complete.	Kindly provide us the drawing. Please give us drawing as mentioned in item so as to quote it properly.	Drawing shall be furnished during detailed engineering stage.
35)	Price Bid ST. No. 1814	Construction of below ground earthing system test pits **as per drawing / sketches** ……. … …… …… ……... earthwork.	Kindly provide us the drawing/sketch. Please give us drawing as mentioned in item so as to quote it properly.	Drawing shall be furnished during detailed engineering stage.
36)	Price Bid ST. No. 1819	Stop log gate	Please give more details with drawings.	Drawing will be issued only during detail Engineering stage.
37)	Price Bid ST. No. 1823	Fire proofing of steel structures with VERMICULITE cementious coating including supply of all…… ……. ……. …… ……. all complete.	Unit of Measurement is mentioned as Cum, which is not clear. Please clarify.	Please quote as per item description.

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
38)	Price Bid ST. No.2301	Supply, fabrication and erection of **structural steel with mild steel rolled section / built up section / combination of both** conforming to IS:2062, pipes conforming to IS:1161/ IS:1239, chequered plate conforming to IS: 3052, mild steel rounds, monorails, stays ..... …… …… ..... etc all complete. Including appointment of a seperate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL.	As per cause no. 1.3.6 of T.C.C the Structural steel will be issued by BHEL at free of cost. But as per the item description of the refer BOQ item supply of Structural steel is under contractor's scope. Please Confirm which one is correct.	Supply of steel is in BHEL scope. **Refer point (B) of this corrigendum for revised item description.**
			As per TCC 1.3.6 & 1.14.1 all structural steel is free supply by BHEL but in BOQ item no 2301 its written that supply and fabrication of structural steel, we presume that steel is free supply by BHEL and item is for fabrication and erection only.	
			We understand that the Structural Steel Material for this item shall be supplied by BHEL free of cost, as mentioned in the TCC and elsewhere in BOQ. Please confirm. Also kindly specify the Payment Terms for Structural steel works.	
			Structural Steel will be free supply by BHEL. Hence, the word "supply" will be deleted from the item description. - Please confirm.	

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
39)	Price Bid ST.No.2301	Supply, fabrication and erection of **structural steel with mild steel rolled section / built up section / combination of both** conforming to IS:2062, pipes conforming to IS:1161/ IS:1239, chequered plate conforming to IS: 3052, mild steel rounds, monorails, stays .... …… …… ..... etc all complete. Including appointment of a separate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL.	We presume contactor will prepare the detail fabrication drawing based on the design drawings supplied by BHEL and the same will be reviewed by BHEL or Consultant Appointed by BHEL. Please confirm.	Item description is clear.
40)	Price Bid ST. No. 2306	Providing, laying and clamping of **crane rails** over the crane girder … … …. …… …….. ….. and specification.	We presume that supply of Rail in contractor's scope. Please confirm. Please confirm whether Crane rail materials to be supplied by BHEL free of cost to us.	Supply of rail is in bidder scope.
41)	Price Bid ST. No. 2401	Preparation of sub grade by excavating earth to required depth for **all types of soil/ rock**,……. ……. …….. …….. all complete.	Kindly specify the type of earth; soil or rock.	Type of earth soil is as per geotechnical data furnish to bidders.

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
42)	Price Bid ST. No. 2404 & 2405	Water bound macadam sub base course	Can we consider Murrum as the blinding material. Please confirm	Please follow the item description.
43)	Price Bid ST. No. A2418	Providing and laying cement concrete of grade M30 using Vaccum Dewatered Flooring (VDF) method …….. providing & fixing for work etc. all complete. (Excluding the cost of reinforcement and dowel bar)	Kindly provide the thickness of VD Flooring	The thickness of VDF concrete shall generally be between 200mm to 300mm.
44)	Price Bid ST. No. 2420, 2421 & 2422	Reinforcement Section	We understand that the Reinforcement for these works shall be supllied by BHEL free of cost to us (As per Cl. 1.3.6, TCC). Please confirm.	Only TMT will be supplied by BHEL free of cost. Mild steel supply is in bidder scope.
45)	Price Bid ST. No. 2421	Steel Reinforcement in road work	TMT bars of grade Fe-500 will be free supply by BHEL. Please confirm.	Yes. **Refer point (B) of this corrigendum for revised item description.**
46)	Price Bid ST. No. 2423	Providing & installation of bitumen impregnated fibre board of specified thickness …… …… …… ……. … …….. by engineer.	Kindly specify the board thickness & width as the UOM is in Rmt.	Shall be furnished during detail engineering stage.

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
47)	Price Bid ST. No. 2423, 2424 & 2425		For item no 2423, 2424 & 2425 for bitumen impregnated fiber board, bitumen sealing compound and debonding strip / tape no drawing is given and no width is given then how to quote it in Running meter. Please specify.	Drawing will be issued only during detail Engineering stage.
48)	Price Bid ST. No. 2424	Providing and filling in position hot applied bitumen sealing compund ……. …… …… … ……. by Engineer.	Kindly specify the size of the gap as the UOM is in Rmt.	Shall be furnished during detail engineering stage.
49)	Price Bid ST. No 2425	Providing and laying debonding strip / tape of specified thickness …… ……. ……..by Engineer.	Kindly specify the thickness & width of the tape as the UOM is in Rmt.	Shall be furnished during detail engineering stage.
50)	Price Bid ST. No. 2701	structural glazing	For item no 2701 of structural glazing, drawing required for height and also what quantity is paid in this item. Also in which item glass will be paid. Please clarify.	Item description is clear. Bidder to quote in line with the BOQ.
51)	Price Bid ST. No. 2, A2 & B2 (Earthen Raw Water Reservoir)	Earthwork in Excavation	We request you to provide the depth of Excavation.	The same shall be furnished during detailed engineering stage.

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
52)	Price Bid ST. No.18 (Earthen Raw Water Reservoir)	Providing and laying Water Bound Macadam (WBM) …….. ……. …….. ……..... **binding materials,** watering and consolidation / compaction with road roller to make required line, slope and level etc all complete as per drawing, specification and as directed by the engineer-in-charge.	Can we consider Murrum as the blinding material. Please confirm	Please follow the item description.
53)	Price Bid ST. No. 20 (Earthen Raw Water Reservoir)	Earth work in excavation up to **any depth** in all types of soil including …… ……. …… . ….. …….. surplus excavated materials within a lead upto 1km, spreading / levelling of disposed materials etc all complete.	Kindly specify the depth for Exacavtion	The same shall be furnished during detailed engineering stage.
54)	Price Bid ST. No. 28 (Earthen Raw Water Reservoir)	Reinforcement Section	We understand that the Reinforcement for these works shall be supllied by BHEL free of cost to us (As per Cl. 1.3.6, TCC) . Please confirm.	Yes. TMT will be supplied by BHEL free of cost. **Refer point (B) of this corrigendum for revised item description.**

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
55)	Price Bid ST. No. A35 (Earthen Raw Water Reservoir)	Supply, fabrication and fixing of GI pipe hand railing (1000 mm (min) high not exceeding 1.5m (max) c/c) of 32 NB heavy duty as per relevant codes and shall be galvanized with class-1 galvanisation (as per IS-277) including transportation, loading / unloading, painting etc. all complete.	Please provide the Railing drawing to work out the cost more accurately.	The same shall be furnished during detailed engineering stage.
56)	Price Bid ST. No. A37 (Earthen Raw water Reservoir)	Design, supply, fabrication, erection of stop gates with embedment required, lifting beams, special tools & plants, spare parts for three years, machining, casting, all materials such as structural steel, cast steel, stainless steel, brass used for seals, rubber seals, gears, ball and roller bearing, branch bushings, greasing, bolts, nuts, lugs, threaded fastners etc.,	Please provide the General arrangement drawings indicating the size and details of various components as required. Stop gates drawings and details required.	Drawings Shall be furnished during detailed engineering stage.

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
57)	Price Bid ST. No. A41 (Earthen Raw Water Reservoir)	Cutting of trees having girth more than 300 mm measured at a height of 1m above ground level including removal of roots, stacking the seviceable material like trunks, branches etc at specified area within the plant boundary and disposal of unseviceable parts / materials witthin a lead upto 1km etc all complete.	Please specify the girth limit of trees. Also we understand that the approval of cutting trees will be obtained by BHEL. Please confirm.	Item description is clear. Within the plant on clearance from BHEL, tree cutting can be taken up.
58)	Techno commercial bid Volume – I Book - I Notice Inviting Tender Clause no 1.0 (vi)	Due date & Time for offer submission	We request you to kindly extend the date of submission of bid for at least 15 (fifteen) days i.e. upto 12-06-2015.	Refer point (C) in this corrigendum for extended date.
			Kindly extend the bid submission for minimum of two (2) weeks from the schedule date of submission to enable us to submit our most competitive offer.	
			We request you to extend the bid submission day for 21 days from the due date of submission.	
			Request to extend bid submission date upto 15.06.15	
			It is requested to give atleast 15 – 20 days time after giving clarifications to all the Bidders by BHEL for submission of bid.	

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
59)	Techno commercial bid **Volume – I Book - I** Notice Inviting Tender Clause no. 5.0	Procedure for Submission of Tenders - PART-II A (Price Bid for Pacakge A) – in sealed and superscribed envelope (ENVELOPE-III)· PART-II B (Price Bid for Pacakge B) – in sealed and superscribed envelope (ENVELOPE-IV)	We understand that Package-A & Package-B shall not be applicable as there is only one Price Bid is available. Please clarify.	There is no package A or package B. Only one price bid is applicable for this tender
60)	TCC Volume IA, Part-I Chapter - III FACILITIES IN THE SCOPE OF BIDDER / BHEL Clause 1.3.1.3.1.1	Water for Construction purpose	The clauses 1.3.5.1 at Pg.46 and 1.3.1.3.1.1 at Pg.43 of NIT are contradicting. We request you to provide water supply at a single point within the plant area free of cost.	Water will be provided by BHEL at free of cost
61)	TCC Volume IA, Part-I Chapter - III FACILITIES IN THE SCOPE OF BIDDER / BHEL Clause 1.3.4 and 1.3.5	General Construction Power & Construction Water	One extra point of construction power & construction water each may please be provided free of cost at Batching Plant area. - Please confirm.	Tender conditions prevail.

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
62)	TCC Volume IA, Part-I Chapter - III FACILITIES IN THE SCOPE OF BIDDER / BHEL Clause 1.3.6	Supply of Cement and Steel	It is stipulated that the Bidder has to arrange Cement, aggregates, sand and other materials at his own cost. But under cl. 1.14.1 of chapter XIV of vol 1A – part I – it is indicated that Reinforcement steel and Stainless Steel shall be issued by M/s.BHEL on recoverable cost of Rs.65,000/- M.T. It is requested to give cement required for works also may be included in the list of materials issued by M/s BHEL on recoverable basis. This may please be considered.	Structural steel and TMT rods shall be issued by BHEL at free of cost. MS rods, rails, cement, sand etc shall be in the bidder's scope.
63)	TCC Volume IA, Part-I Chapter –IV T&Ps and MMEs TO BE DEPLOYED BY CONTRACTOR Clause 1.4.2	TCC /Chapter-IV / B/B-3 T&P to be deployed by Contractor	2 nos. Batching Plant of capacity 30 Cum/Hr. each will be installed instead of 1 no. 60 Cum/Hr. - Please confirm.	2 nos. Batching Plant of capacity 30 Cum/Hr. each instead of 1 no. 60 Cum/Hr. is acceptable.

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
64)	TCC Volume IA, Part-I Chapter –IV T&Ps and MMEs TO BE DEPLOYED BY CONTRACTOR Clause 1.4.2	(B3) Concrete Batching Plant of 60Cum /Hr Capacity	As the total Quantity of Concrete is about 82,300Cum which can be catered by a Batching Plant of 30Cum capacity. Hence, we request you to accept for concrete batching plant of 30cum /hr capacity in lieu of 60cum capacity.	Tender condition prevails
65)	TCC Volume IA, Part-I Chapter –IV T&Ps and MMEs TO BE DEPLOYED BY CONTRACTOR Clause 1.4.2	4 nos. transit mixer (5/6 M^3 capacity) with standby 2 nos.	We presume as per tender speculation minimum no. of Transit Mixer are 4 including the 2 nos as standby. Pleaseconfirm.	Tender condition prevails.
66)	TCC Volume IA, Part-I Chapter –IV T&Ps and MMEs TO BE DEPLOYED BY CONTRACTOR Clause 1.4.2	(B31) 1 no. Concrete Paver machine for RCC Roads	As per BOQ the RCC road work will be done by using Vaccum Dewatered Flooring (VDF) method and the BOQ quantity is only 655 cum. Hence, we request you to delete the Concrete Paver Machine from the list of Minimum T&P list.	Tender condition prevails

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
67)	TCC Volume IA, Part-I Chapter –VII Clause 1.6.3.1	**Issue of Approved Drawings:** Referring to the tentative Construction Programme area wise furnished in the documents cl.1.6.3.1 of vol I –Chapter VI.	Since the scope of Civil Non Plant Buildings involve various types of Buildings at different locations in the plant area including Roads and drainage system – It is requested to confirm that uninterrupted lands shall be given for taking up construction works and issue working drawings without delay to execute the works as per programme without hampering the progress of works and utilizing the Plant and Machinery without idling.	Tender conditions prevail.
68)	TCC Volume IA, Part-I Chapter –VII clause 1.7.2	Request for Mobilization Advance	We request you to provide interest free mobilization advance of 10% of Contract value. The said advance shall be recovered on pro rata basis commencing after first ten percent (10%) of the gross value of the work is executed and paid and entire advance is recovered by the time 80% of the gross value of the contract is executed and paid	Tender condition prevails

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
69)	TCC Volume IA, Part-I Chapter –VII clause 1.7.2.1	Interest bearing advance for Mobilization, limited to 5% of the contract value will be paid against submission of bank guarantee of at least 110% of the advance valid for the contract period, which will be recovered from the first running bill onwards	Request for 10% Mobilization advance. Please confirm	Tender condition prevails
70)	TCC Volume IA, Part-I Chapter –VII clause 1.7.3	(1.7.3.2) All interim payments shall be limited to 90% of the item rate. (1.7.3.3) 5% of the item rate shall be released after submission of the quality check formats / documents as per the quality plan for the quantum of work billed and duly certified by engineer.	We request you to release of 95% payment of the item rate on the basis of quantity executed & measured instead of releasing 90% payment and the Checked Quality document shall be submitted before submission of the next RA Bill for better cash flow in project. For example in RCC work cube testing result will come after 28 days. Hence, 5% value of RCC work will be under hold till the time of next interim payment and which effects the cash flow for the project.	Tender conditions prevail.
71)	TCC Volume IA, Part-I Chapter –VII clause 1.7.4	Retention Money - 5% of CV in the form of cash from RA Bill. Release - 2.5% along with Final Bill & Remaining 2.5% on Commencement of DLP aganist BG of equivalent amount valid till completion of DLP	We request you to consider Bank Guarantee (from Scheduled Bank) equal to 5% of the total Contract Value valid upto the Contract period towards Retention Deposit. On completion of works BG equal to 2.5 % of the value of works executed valid up to the defects liability period shall be submitted. Please confirm	Tender conditions prevail.

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
72)	TCC Volume IA, Part-I Chapter –VIII and VI Clause no 1.8.4 and 1.6.4.		We have considered the prevailing rates of Taxes, duties, entry tax, Royalty, duties etc. as on the date of submission of Tender. The construction period is 30 months and cannot assess the policy of the Government in the future 3 years. As such we request that incase of increase of Royalty, duties, entry tax, or any additional taxes are imposed during the contract period. We request that extra expenses incurred may be reimbursed to us as per actuals.	Tender conditions prevail.
73)	TCC Volume IA, Part-I, Chapter XIII, MATERIAL HANDLING Clause No. 1.13.5	The contractor shall in no case be entitled for any compensation or damages on account of any delay in supply or non-supply thereof for all or any such material.	Shall be discussed.	Tender condition prevails
74)	TCC VOLUME-IA PART-I Chapter - XIV ACCOUNTING OF MATERIALS ISSUE Clause No. 1.14.3.4 & 1.14.3.5	If wastage exceeds the specified limit, the recovery of excess wastage shall be made from monthly Running Account (RA) Bill at the Penal Rate	Request for recovery of material shall be at prevailing market rate.	Tender condition prevails

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
75)	TCC VOLUME-IA PART-II Chapter – 2 Plot plan drawing	Only layout Drawings are Provided along with Tender	Please provide any Sectional, other Architectural & Structural Drawings, to work out the cost more accurately.	The same shall be furnished during detailed engineering stage.
76)		Requirement of Drawings	Please provide the following Drawings for preparation our correct Bid. 1. Drawing of Earthen Raw Water Reservior with sectional detail. 2. Drawing of Stop Log gate for CW Pump. 3. Drawing of Structural Steel Structure to enable us to understand the maximum height of structure & the maximum wt. of structure to be lifted	Drawing shall be furnished during detailed engineering stage.
77)		Raw Water Reservoir	Tender drawings for Earthen Raw Water Reservoir may please be provided.	Drawing will be provided during the detail Engineering stage.
78)		Bore Log Details / Soil Investigation Reports are not Provided along with Tender	Please provide soil investigation report. Please provide the Bore Log Details / Soil Investigation Report Soil Investigation Report along with Bore Log Data at BOP area and Raw Water Reservoir area may please be provided.	Preliminary data attached. Detail report can be seen at Chennai HQ on request.

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
79)	General conditions of Contract/Page No. 18 of 32/ Cl. No. 2.7.9	BHEL shall have the right to impose Liquidated Damage / Penalty at the rate of 0. 5% of the contract value, per week of delay or part thereof subject to a maximum of 10% of the contract value	Request for a max. limit of 5% in lieu of 10% as per Tender.	Tender condition prevails
80)	General conditions of Contract/Page 29 of 32/Cl. No. 2.21	Sole Arbitrator	Request for 2 + 1 Arbitration system	Tender condition prevails
81)	General conditions of Contract cl.2.17.9 (p28 of 32)	**Escalation :** In terms of cl.2.17.9 (p28 of 32) of G.C.C,	We presume that price variation is applicable for the entire contract period including extended periods. This may please be confirmed.	Refer TCC - VOLUME-IA PART – II CHAPTER 1 Sl no 3 – clauses on PVC
82)	General conditions of Contract (cl.10.5 – page 45 of 48)	Payment of R.A bills (cl.10.5 – page 45 of 48) of GCC :	It is stipulated that in case of Civil works 60% of RA bill amount shall be paid in 15 days and the balance shall be made in 30 days. To have adequate cash flows it is requested to release atleast 70% of RA bill amount within 15 days and the balance within 30 days. This may be considered.	Tender condition prevails

No	Reference clause	Existing provision	Bidder's query	BHEL's clarification
83)	General conditions of Contract (cl.2.13.8 (a), p.24 of 32)	Recovery of Advances (cl.2.13.8 (a), p.24 of 32) of GCC :	It is stated that the Rate of Recovery of advances shall be at 10% of each R.A. bill. It is not mentioned at which time recovery shall be effected or commenced. Generally in all Government works the recovery towards the advances along with interest shall be recovered after completion of 20% of the value of the work. We request that BHEL to consider this aspect for recovering the advances after completion of 20% of the value of work and issue amendment as this will help the contractor for free flow of funds.	Tender condition prevails

Preliminary report on Geotechnical investigation, Bore log details, Generalised soil profile of raw water storage reservoir, Generalised soil profile of raw water pump house are available in the next 43 pages.

Bidders are requested to consider this corrigendum as part of tender specification and quote accordingly.

All other conditions of the tender specification remain unchanged.

-Sd-
Manager / Subcontracts

Job No: 3421

PRELIMINARY REPORT ON GEOTECHNICAL INVESTIGATION WORK FOR 1 x 800MW KOTHAGUDAM THERMAL POWER STATION STAGE VII, UNIT-12 AT KHAMMAM DISTRICT, TELANGANA STATE

Clients :

M/s. Bharat Heavy Electricals Limited
Power Sector – Southern Region
690, Annasalai, Nandanam, Chennai - 600035

Foundation Consultants :

C. E. Testing Company Pvt. Limited
An ISO 9001, 14001& OHSAS 18001 Certified Company
NABL Accredited Laboratory
124A, N.S.C. Bose Road : Kolkata - 700 092
Phones: 2428-6221/6222/6223 Fax: (033) 2428-6220
Email: cetest@cetestindia.com

February - 2015

PRELIMINARY REPORT ON GEOTECHNICAL INVESTIGATION WORK FOR 1 x 800MW KOTHAGUDAM THERMAL POWER STATION STAGE VII, UNIT-12 AT KHAMMAM DISTRICT, TELANGANA STATE

1. INTRODUCTION

The **Telangana State Generation Corporation Limited** has proposed 1 x 800MW Kothagudam Thermal Power Station, Stage – VII, Unit - 12 & the job was awarded to **M/s. Bharat Heavy Electricals Limited**. For designing of Foundation Structures coming under this project, it was necessary to conduct a Detailed Geotechnical Investigation Work and **M/s Bharat Heavy Electricals Limited**, in turn awarded the job to **M/s. C. E. Testing Company Pvt. Ltd., Kolkata.**

The scope of the work comprised of sinking 68 nos. bore holes. The scope also includes PLT (Plate Load Tests – 5Nos.), CPLT (Cyclic Plate Load Tests – 5Nos.), TP (Trial Pit – 10Nos.), ERT (Electrical Resistivity Tests – 20Nos.), CST (Cross Hole Tests – 4Nos.), PMT (Pressure meter Test – 3Nos.), BVT (Block Vibration Test – 2Nos.), SCPT (Static Cone Penetration Tests – 5Nos.), DCPT (Dynamic Cone Penetration Tests – 10Nos.), Field Permeability – 2Nos., Field CBR – 4Nos.

The site work is in progress**. <u>This preliminary report is prepared based on 13nos. boreholes (BH-19, 25, 26, 32, 34, 37, 42, 48, 57, 58, 62, 63 & 66) only.</u>**

2. CHOICE OF FOUNDATION AND FOUNDING LEVEL

Considering the nature of the subsoil and the type of structures to be constructed at the present site, it is suggested to go for open foundation. Such foundations should be placed at 1.00m or more below EGL depending on requirement. The determination of bearing capacity is presented below.

DETERMINATION OF BEARING CAPACITY AT COOLING TOWER LOCATION:

Let us consider BH-19.

Let us place the foundation at 1.50m below FGL (FGL= 101.500M).

The founding level falls inside hard clay layer.

Design N = 33, So, estimated cohesion from "N" value = 1.22 kg/sqcm

In absence of any laboratory test results, Use C = 1.10 kg/sqcm & $\Phi = 0°$.

Evaluation of Strength & Deformation Parameters:

FOR HARD CLAY FROM 0.00M TO 4.18M

Total soil modulus, $E_s = 4.4 \times N = 145.2$ kg/sqcm

[Ref. to "History of Soil penetration testing" by B. B. Broms & N. Flodin in "Penetration Testing 1988", ISPOT-1: vol.1, p – 185]

Undrained Young's modulus, $E_u = K \times C = 500 \times 1.10 = 550$ kg/sqcm

Again, $1/E_s = 1/E_u + 1/E_d$ giving drained young's modulus, $E_d = 197.28$ kg/sqcm

Now, we have, $E_d = E_u/3 = 183.33$ kg/sqcm

[Refer to "Cone Penetration Testing" by A.C.Meigh, pp. No. – 53]

Considering the above, let us use $E_d = 190$ kg/sqcm

From E_d, $m_{vc} = 1/G.E_d = 0.0088$ sqcm/kg [Geological Factor, G = 0.60 & $\mu = 0.35$]

Again from SPT "N", $m_{vc} = 1/5N = 0.0061$ sqcm/kg

[Refer to "Standard Penetration Test, State-of-the-art-Report" by Ivan K. Nixon in "Penetration testing 1" Edited by A.Verrujt, F.L.beringen & E.H.De Leeuw, pp. No. 11]

Therefore, average $m_{vc} = [0.0088 + 0.0061]/2 = 0.0075$ sqcm/kg

Rock layer

The 'E' value for fissured and jointed rock varies from a minimum of 1500 kg/sqcm to a maximum of 30000 kg/sqcm whereas for sound rock the same is 30000 kg/sqcm or more.

Let us use lowest probable E value of layer V (CR=0% to 25%), VI (25%<CR≤50%) & VII (CR>50%) = 1000kg/sqcm, 2000kg/sqcm & 4000kg/sqcm respectively.

[Refer to "Soil Mechanics and Foundation Engineering" 4th Edition by Prof. V. N. S. Murthy, pp – 271]

Calculation of Safe Bearing Capacity:

Use depth of foundation = 1.50M below FGL

The Net Ultimate Bearing Capacity is given as:

$$q_{nu} = C.N_c.S_c.D_c + q.N_q.S_q.D_q + 0.5\gamma.B.N_\gamma.S_\gamma.D_\gamma - q$$

Where,

N_c, N_q and N_γ are bearing capacity factors,
S_c, S_q and S_γ are shape factors,
D_c, D_q and D_γ are depth factors,

And

C = Cohesion
q = Effective Overburden pressure,
B = Width of foundation,
γ = Effective density below foundation.

For 4m x 6m Isolated Footing

Cohesion, C = 11.00 t/sqm
Using ϕ = 0 degree, the bearing capacity factors are:

N_c = 5.14
N_q = 1.00
N_γ = 0.00

Use,

Depth of Foundation = D_f = 1.5 M below FGL
Width of Foundation = B = 4 M
Length of Foundation = L = 6 M

Overburden Pressure = q =1.500 (Depth) x 0.90 (Submerged density) = 1.35 t/sqm (assuming water table is flushing with the ground)
The Shape factors are [IS:6403 - 1981]

S_c = 1.13 S_q = 1.13 S_γ = 0.73

The Depth factors are [IS:6403 - 1981]

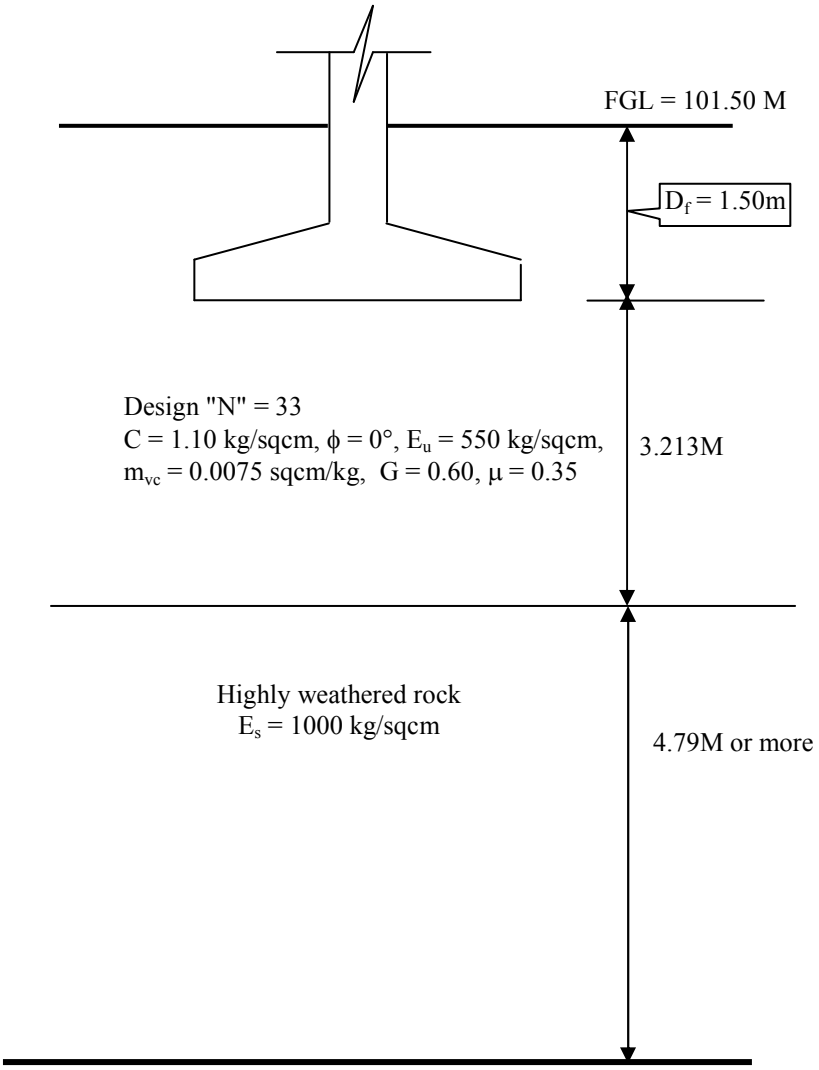
D_c = 1.08 D_q = 1.00 D_γ = 1.00

Computed Net Ultimate Bearing Capacity = 69.12 t/sqm
Using a factor of safety of 2.5, Net Safe Bearing Capacity = 27.65 t/sqm

For 10m x 15m Isolated Footing

Computed Net Ultimate Bearing Capacity = 66.23 t/sqm
Using a factor of safety of 2.5, Net Safe Bearing Capacity = 26.49 t/sqm

The above bearing capacity should be checked against settlement criteria. This is shown below.



SHALLOW FOUNDATION DESIGN MODEL
(NDCT Area)
(Not to Scale)

SETTLEMENT CALCULATION

Settlement Analysis for 4m x 6m foundation

A) General Data:

Width of foundation =	4.0	m
Length of foundation =	6.0	m
Depth of foundation =	1.5	m
Net Base Pressure =	2.5	kg/sqcm

B) Subsoil Properties:

Layer - III			**Layer - V**		
Young's Modulus =	550	kg/sqcm	Young's Modulus =	1000	kg/sqcm
Poisson Ratio, μ =	0.35		Poisson Ratio, μ =	0.25	
Top of Stratum =	1.50	m	Top of Stratum =	4.71	m
End of Stratum =	4.71	m	End of Stratum =	9.50	m
Geological factor, G =	0.60		Geological factor, G =	1.00	
m_{vc} =	0.0075	sqcm/kg	m_{vc} =	0.0000	sqcm/kg

C) Calculation of Immediate Settlement:

Settlement at center

M = L' / B' =	1.500		
N = H / B' =	1.607		
I_1 =	0.237		
I_2 =	0.094		
$I_s = I_1 + \{(1-2\mu) / (1-\mu)\} I_2$ =		0.281	
Immediate settlement S_i =		0.895	cm
$[q_o \times B' \times (1-\mu^2) \times m \times I_s] / E_s$			

Settlement at center

M = L' / B' =	1.277		
N = H / B' =	1.327		
I_1 =	0.195		
I_2 =	0.091		
$I_s = I_1 + \{(1-2\mu) / (1-\mu)\} I_2$ =		0.255	
Immediate settlement S_i =		0.312	cm
$[q_o \times B' \times (1-\mu^2) \times m \times I_s] / E_s$			

Settlement at corner

M = L' / B' =	1.50		
N = H / B' =	0.803		
I_1 =	0.095122		
I_2 =	0.096872		
$I_s = I_1 + \{(1-2\mu) / (1-\mu)\} I_2$ =		0.140	
Immediate settlement S_i =		0.223	cm

Settlement at corner

M = L' / B' =	1.28		
N = H / B' =	0.664		
I_1 =	0.073		
I_2 =	0.088		
$I_s = I_1 + \{(1-2\mu) / (1-\mu)\} I_2$ =		0.132	
Immediate settlement S_i =		0.080	cm

Average S_i for Stratum III= 5.59 mm

Total immediate settlement = 7.55 mm

Average S_i for Stratum V= 1.96 mm

(for both the layer)

D) Calculation of Consolidation Settlement:

Strata	From (M)	To (M)	Thickness (M)	Mid depth (M)	Δ P (kg/sqcm)	m_{vc}, sqcm/kg	G	S_c (cm)
Layer - III	1.50	3.11	1.61	0.80	1.84	0.0075	0.60	1.33
	3.11	4.71	1.61	2.41	1.11	0.0075	0.60	0.80
Layer - V	4.71	7.11	2.39	4.41	0.69	0.0000	1.00	0.00
	7.11	9.50	2.39	6.80	0.43	0.0000	1.00	0.00

Hence, Total Consolidation Settlement = 21.32 mm

So, Total Settlement = 28.87 mm

Foxe's Depth correction Factor = 0.92

Applying Rigidity correction Factor = 0.80

Corrected total settlement = 21.22 mm

With reference to the above and considering the subsoil condition around each bore hole, the following bearing capacity values may be used.

Name of Structure	Foundation Location	Depth of Foundation below FGL (m)	Net Allowable Bearing Capacity (t/sqm)	
			Isolated / Strip	Raft
NDCT (FGL = 101.50M)	BH-19, 25, 26	1.50	25	22
		4.00	40	40
		5.50	45	45
ESP (FGL = 99.00M)	BH-32, 57, 58, 66	4.00	25	25
		5.00	40	40
		6.00	45	45
Power House (FGL = 99.00M)	BH-34 & 37	1.00	20	20
		2.00	22	22
		3.50	30	30
		4.00	40	40
		5.50	45	45
Boiler & Mill Bunker Bay Area (FGL = 99.00M)	BH-42, 48	5.50	40	40
		6.50	45	45
Chimney (FGL = 99.00M)	BH-62 & 63	6.00	40	40
		7.00	45	45

Note: Limiting settlement in soil is considered as 25mm for Isolated / Strip and 40mm for Raft foundation.

3. SUMMARY & RECOMMENDATIONS

Based on the field tests and the foregoing discussion the following are summarised.

1. The subsoil is characterised by stiff to very stiff clayey silt / silty clay followed by a layer of hard clayey silt / silty clay or very dense silty sand layer. After that weathered rock layer was struck and continues upto the terminating depth of all the boreholes.
2. The standing water level was found from 0.60m to a maximum depth of 5.50m during the time of investigation. So, construction of open foundation, placed at a depth of 1.00m or more, may create a problem. However, ordinary surface operated pump will be able to tackle the situation for dewatering.
3. The determination of bearing capacity is discussed in the previous section. However, this is further presented below.

Name of Structure	Foundation Location	Depth of Foundation below FGL (m)	Net Allowable Bearing Capacity (t/sqm)	
			Isolated / Strip	Raft
NDCT (FGL = 101.50M)	BH-19, 25, 26	1.50	25	22
		4.00	40	40
		5.50	45	45
ESP (FGL = 99.00M)	BH-32, 57, 58, 66	4.00	25	25
		5.00	40	40
		6.00	45	45
Power House (FGL = 99.00M)	BH-34 & 37	1.00	20	20
		2.00	22	22
		3.50	30	30
		4.00	40	40
		5.50	45	45
Boiler & Mill Bunker Bay Area (FGL = 99.00M)	BH-42, 48	5.50	40	40
		6.50	45	45
Chimney (FGL = 99.00M)	BH-62 & 63	6.00	40	40
		7.00	45	45

Note: Limiting settlement in soil is considered as 25mm for Isolated / Strip and 40mm for Raft foundation.

For C. E. Testing Company Private Limited,

Prepared By	Checked By	Approved By
(S. SARKAR)	(S. NATH)	(DR. M. NAYAK)

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421 | Created by : Chandrani | Created on : 12/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 19

Co-ordinates E=467900.081 N=1946824.434

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	14	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	14
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 24/01/15
Completion Date : 29/01/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 100.967 m.
Water Struck At :
Standing Water Level : 3.6 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m				
			DS-1	0.50
		4 5 5 8 33 (9 11)	SPT-1	1.00-1.45
Hard, brownish grey, silty clay. Obs. whitish grey, moorum.			UDS-1	2.00-2.45
		5 9 19 34 >100 (50) 4.0 cm Penetn.	SPT-2	3.00-3.34
4.18m		19 33 >100 (50) 3.0 cm Penetn.	SPT-3	4.00-4.18
			R1	CR=09% RQD=NIL
Completley weathered, whitish grey, medium grained, highly fractured rock. (Decomposed & disintegrated rock particle collected as sludge on R2 & R3).		15 27 >100 (50) 4.0 cm Penetn.	SPT-4	4.75-4.94
			R2	CR=NIL RQD=NIL
		22 38 >100 (50) 3.0 cm Penetn.	SPT-5	5.50-5.68
			R3	CR=NIL RQD=NIL
		24 45 >100 (50) 4.0 cm Penetn.	SPT-6	6.25-6.44
			R4	CR=11% RQD=NIL
		39 50 >100 (50) 2.5 cm Penetn.	SPT-7	7.00-7.10
			R5	CR=07% RQD=NIL
		40 50 >100 (50) 3.5 cm Penetn.	SPT-8	7.25-7.36
			R6	CR=09% RQD=NIL
		Refusal 50 4.0 cm Penetn.	SPT-9	8.50-8.54
			R7	CR=09% RQD=NIL
9.25m		Refusal 50 5.0 cm Penetn.	SPT-10	9.25-9.30
			R8	CR=20% RQD=NIL
		NX rotary drilling from 4.18m to 25.00m	R9	CR=23% RQD=NIL
			R10	CR=16% RQD=NIL
Highly weathered, light grey, medium grained, highly fractured rock.		Refusal 50 3.0 cm Penetn. Refusal 50 4.0 cm Penetn.	SPT-11	11.50-11.53
			R11	CR=17% RQD=NIL
			SPT-12	12.25-12.29
			R12	CR=15% RQD=NIL
13.00m				

4.18 4.75 5.50 6.25 7.00 7.25 8.50 9.25 10.00 10.75 11.50 12.25 13.00

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421 | Created by : Chandrani | Created on : 12/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 19

Co-ordinates E=467900.081 N=1946824.434

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	14	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	14
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	0

Commencement Date : 24/01/15
Completion Date : 29/01/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 100.967 m.
Water Struck At :
Standing Water Level : 3.6 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
13.00m. Highly weathered, light grey, medium grained, highly fractured rock.		50 Refusal 3.0 cm Penth. Refusal	SPT-13	13.00-13.03
			R13	CR=16% RQD=NIL
13.75m.		50	SPT-14	13.75-13.79
		4.0 cm Penth.	R14	CR=33% RQD=NIL
Highly to moderately weathered, steel grey, medium grained, highly to moderately fractured rock.			R15	CR=40% RQD=NIL
			R16	CR=49% RQD=NIL
16.00m.			R17	CR=57% RQD=32%
			R18	CR=80% RQD=14%
			R19	CR=62% RQD=10%
Moderately weathered, steel grey, medium grained, moderately fractured rock.			R20	CR=57% RQD=NIL
			R21	CR=62% RQD=32%
			R22	CR=64% RQD=NIL
			R23	CR=64% RQD=NIL
23.00m.			R24	CR=28% RQD=NIL
Highly weathered, steel grey, medium grained, highly fractured rock.			R25	CR=29% RQD=NIL
25.00m.				

13.00 13.75 14.50 15.25 16.00 16.75 17.75 19.00 20.00 21.00 22.00 23.00 24.00 25.00

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421	Created by : Chandrani	Created on : 12/02/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 25

Co-ordinates E=467956.000 N=1046821.000

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 : 11/01/15
Completion Date : 02/02/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 101.631 m.
Water Struck At :
Standing Water Level : 4.4 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Very stiff to hard, deep yellowish brown, silty clay with kankars & calcareous nodules.		5 5 5 5 22 (6 6)	DS-1	0.50
			SPT-1	1.00-1.45
			UDS-1	2.00-2.45
		6 5 6 9 51 (18 18)	SPT-2	3.00-3.45
		24 38 50 >100 5.0 cm Penth.	SPT-3	4.50-4.70
4.99m.		29 52 50 >100 4.0 cm Penth.	SPT-4	4.80-4.99
			R1	CR=NIL RQD=NIL
Compleely weathered, whitish grey, medium grained, decomposed & disintegrated rock particle collected as sludge.		54 50 >100 4.5 cm Penth.	SPT-5	5.99-6.11
			R2	CR=NIL RQD=NIL
		50 50 >100 3.5 cm Penth.	SPT-6	6.99-7.10
			R3	CR=NIL RQD=NIL
7.99m.		17 45 50 >100 4.0 cm Penth.	SPT-7	7.99-8.18
			R4	CR=NIL RQD=NIL
Completely weathered, whitish grey with blackish spot, medium grained, decomposed & dinintegrated rock particle colected as sludge.		23 39 50 >100 3.0 cm Penth.	SPT-8	8.99-9.17
			R5	CR=NIL RQD=NIL
		37 42 50 >100 4.0 cm Penth.	SPT-9	9.99-10.18
			R6	CR=NIL RQD=NIL
		50 50 Refusal 4.5 cm Penth.	SPT-10	10.99-11.11
			R7	CR=07% RQD=NIL
12.00m.		50 4.0 cm Penth.	SPT-11	12.00-12.04
			R8	CR=47% RQD=NIL
Highly to moderately weathered, light grey with whitish spot, medium grained, highly fractured rock.		NX rotary drilling from 4.99m to 30.00m	R9	CR=38% RQD=NIL
			R10	CR=39% RQD=NIL
			R11	CR=31% RQD=NIL
16.00m.				

4.99 5.99 6.99 7.99 8.99 9.99 10.99 12.00 13.00 14.00 15.00 16.00

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421 | Created by : Chandrani | Created on : 12/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 25

Co-ordinates E=467956.000 N=1046821.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	11	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	11
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	0

Commencement Date : 11/01/15
Completion Date : 02/02/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 101.631 m.
Water Struck At :
Standing Water Level : 4.4 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 7.5cm.	SAMPLES Ref. No	SAMPLES Depth (m)
16.00m Highly to moderately weathered, light grey with whitish spot, medium grained, highly fractured rock. 17.00m			R12	CR=45% RQD=NIL 17.00
			R13	CR=56% RQD=NIL 18.00
			R14	CR=43% RQD=11% 19.00
			R15	CR=32% RQD=14% 20.00
			R16	CR=26% RQD=NIL 20.60
			R17	CR=38% RQD=NIL 22.00
			R18	CR=45% RQD=NIL 23.00
Highly to moderately weathered, light grey with whitish spot, medium grained, highly fractured rock.			R19	CR=28% RQD=11% 24.00
			R20	CR=36% RQD=NIL 25.00
			R21	CR=42% RQD=NIL 26.00
			R22	CR=42% RQD=NIL 27.00
			R23	CR=37% RQD=NIL 28.00
			R24	CR=46% RQD=12% 29.00
			R25	CR=44% RQD=17% 30.00
30.00m				

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421 | Created by : Chandrani | Created on : 12/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 26

Co-ordinates E=468028.000 N=1946800.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	16	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	16
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 20/01/15
Completion Date : 23/01/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 102.499 m.
Water Struck At :
Standing Water Level : 5.5 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Very stiff to hard, brownish grey to whitish grey, silty clay with calcareous nodules. Obs. gravels.		5 7 4 4 26/8 10	DS-1	0.50
			SPT-1	1.00-1.45
			UDS-1	2.00-2.45
3.00m.		>100/19 16 18 21 30 35	SPT-2	3.00-3.45
Very dense, light grey, sandy silt with decomposed rock. Obs. calcareous nodules.		>100/21 16 50 5.0 cm Penth.	SPT-3 / R1	3.80-4.00 CR=NIL RQD=NIL
4.00m.		>100/21 18 16 31 50 4.0 cm Pentn.	SPT-4 / R2	4.75-5.09 CR=NIL RQD=NIL
Completely weathered, light grey, medium grained, decomposed & disintegrated rock particle collected as sludge.		>100/27 31 50 5.0 cm Penth.	SPT-5 / R3	5.50-5.70 CR=NIL RQD=NIL
		>100/26 34 50 4.0 cm Penth.	SPT-6 / R4	6.25-6.44 CR=NIL RQD=NIL
		>100/27 35 50 5.0 cm Penth.	SPT-7 / R5	7.00-7.20 CR=NIL RQD=NIL
		>100/21 31 50 4.0 cm Penth.	SPT-8 / R6	7.75-7.94 CR=NIL RQD=NIL
		>100/22 33 50 4.0 cm Penth.	SPT-9 / R7	8.50-8.69 CR=NIL RQD=NIL
		>100/24 37 50 5.0 cm Penth.	SPT-10 / R8	9.25-9.45 CR=NIL RQD=NIL
10.00m.		>100/25 35 50 3.0 cm Penth.	SPT-11 / R9	10.00-10.18 CR=12% RQD=NIL
Highly weathered, light grey with whitish spot, medium grained highly fractured rock.		>100/87 50 4.5 cm Penth. Refusal	SPT-12 / R10	10.75-10.87 CR=15% RQD=NIL
		50 3.0 cm Penth. Refusal	*SPT-13 / R11	11.50-11.53 CR=16% RQD=NIL
12.25m.		50 4.0 cm Penth.	*SPT-14 / R12	12.25-12.29 CR=22% RQD=NIL
Highly weathered, light grey, with whitish spot, medium grained highly fractured rock. 13.00m.		NX rotary drilling from 4.00m to 25.00m		13.00

4.00 4.75 5.50 6.25 7.00 7.75 8.50 9.25 10.00 10.75 11.50 12.25

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421 | Created by : Chandrani | Created on : 12/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 26

Co-ordinates E=468028.000 N=1946800.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	16	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	16
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	0

Commencement Date : 20/01/15
Completion Date : 23/01/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 102.499 m.
Water Struck At :
Standing Water Level : 5.5 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
13.00m.			R13	CR=28% RQD=NIL
				13.75
			R14	CR=21% RQD=NIL
				14.50
Highly weathered, light grey, with whitish spot, medium grained highly fractured rock.			R15	CR=25% RQD=NIL
				15.25
			R16	CR=11% RQD=NIL
		Refusal		
		50	*SPT-15	16.00-16.03 16.00
		3.0 cm Penth.	R17	CR=15% RQD=NIL
		Refusal		
16.75m.		50	*SPT-16	16.75-16.78 16.75
		3.0 cm Penth.	R18	CR=28% RQD=NIL
				17.50
			R19	CR=37% RQD=NIL
				18.50
			R20	CR=25% RQD=NIL
				19.00
			R21	CR=21% RQD=NIL
				19.15
Highly weathered, steel grey, medium to fine grained, highly fractured rock.			R22	CR=30% RQD=NIL
				20.50
			R23	CR=25% RQD=NIL
				21.25
			R24	CR=23% RQD=NIL
				22.00
			R25	CR=25% RQD=NIL
				22.75
			R26	CR=23% RQD=NIL
				23.50
			R27	CR=25% RQD=NIL
24.25m.				24.25
Highly weathered, steel grey, medium to fine grained, highly fractured rock			R28	CR=27% RQD=NIL
25.00m.				25.00

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

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana.			CETEST
Job No : 3421	Created by : Chandrani	Created on : 19/02/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 32

Co-ordinates E=468067.294 N=1947143.217

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	14	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	14
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 12/02/15
Completion Date : 13/02/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 97.997 m.
Water Struck At :
Standing Water Level : 1.3 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	Depth (m)
0.00m				
Hard, deep grey, yellowish brown, silty clay. Obs. calcareous nodules.		7 8 10 12 50/13 15	DS-1	0.50
			SPT-1	1.00-1.45
			UDS-1	2.00-2.45
3.00m		4 5 6 15 92/27 44	SPT-2	3.00-3.45
Very dense, light grey, sandy silt with decomposed rock. Obs. calcareous nodules.		17 18 29 34 >100/50 5.0 cm Penetn.	SPT-3	4.00-4.35
4.50m		50 Refusal	*SPT-4	4.50-4.54 4.50
		4.0 cm Penetn. Refusal	R1	CR=NIL RQD=NIL
Completely weathered, light grey to whitish grey, medium grained, decomposed & disintegrated rock particle collected as sludge.		50 3.0 cm Penetn. Refusal	*SPT-5	5.25-5.28 5.25
			R2	CR=NIL RQD=NIL
		50 4.0 cm Penetn. Refusal	*SPT-6	6.00-6.04 6.00
			R3	CR=NIL RQD=NIL
		50 3.0 cm Penetn. Refusal	*SPT-7	6.75-6.78 6.75
			R4	CR=NIL RQD=NIL
7.50m		50 3.0 cm Penetn. Refusal	*SPT-8	7.50-7.53 7.50
Completely weathered, light grey to whitish grey, medium grained, highly fractured decomposed & disintegrated rock particle collected as sludge.			R5	CR=21% RQD=NIL
				8.25
			R6	CR=NIL RQD=NIL
		50 3.0 cm Penetn. Refusal	*SPT-9	9.50-9.53 9.50
			R7	CR=NIL RQD=NIL
		50 3.0 cm Penetn. Refusal	*SPT-10	9.75-9.78 9.75
			R8	CR=NIL RQD=NIL
		50 3.0 cm Penetn. Refusal	*SPT-11	10.50-10.53 10.50
			R9	CR=NIL RQD=NIL
11.25m		50 4.0 cm Penetn.	*SPT-12	11.25-11.29 11.25
Completely weathered, light grey, yellowish brown, medium grained, highly fractured rock.			R10	CR=23% RQD=NIL
				12.00
		Refusal	R11	CR=17% RQD=NIL
		50 3.0 cm Penetn. Refusal	*SPT-13	12.75-12.78 12.75
			R12	CR=19% RQD=NIL
		50 3.0 cm Penetn.	*SPT-14	13.50-13.53 13.50
			R13	CR=20% RQD=NIL
14.25m				14.25
Highly weathered, light grey, yellowish brown, medium grained, highly fractured rock. 15.00m		NX rotary drilling from 4.50m to 15.00m	R14	CR=35% RQD=NIL
				15.00

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

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421 | Created by : Chandrani | Created on : 12/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 34

Co-ordinates E=467928.846 N=1947032.886

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	12	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	12
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 03/02/15
Completion Date : 07/02/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 98.945 m.
Water Struck At :
Standing Water Level : 2.1 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
Very stiff, blackish grey, silty clay.		4 3 5 6 23 (6 6)	DS-1	0.50
			SPT-1	1.00-1.45
			UDS-1	2.00-2.45
3.00m.		6 6 7 13 52 (15 17)	SPT-2	3.00-3.45
Very dense, light grey to yellowish brown, sandy silt with decomposed rock.		5 6 26 39 >100 (50) 5.0 cm Penth.	SPT-3	4.00-4.35
4.80m.		4 20 35 52 >100 (50) 5.0 cm Penth.	SPT-4	4.45-4.80
			R1	CR=NIL RQD=NIL
		58 52 >100 4.5 cm Penth.	SPT-5	5.55-5.67
			R2	CR=13% RQD=NIL
		56 50 >100 2.5 cm Penth.	SPT-6	6.30-6.40
			R3	CR=21% RQD=NIL
Completely to highly weathered, deep brownish grey, medium to fine grained, highly fractured rock. (Decomposed & disintegrated rock particle collected as sludge on R1, R9).		NX rotary drilling from 4.80m to 30.05m	R4	CR=24% RQD=NIL
			R5	CR=21% RQD=NIL
		Refusal	R6	CR=16% RQD=NIL
		50 2.0 cm Penth.	*SPT-7	9.30-9.32
			R7	CR=20% RQD=NIL
			R8	CR=20% RQD=NIL
		Refusal	R9	CR=NIL RQD=NIL
11.55m.		50 4.0 cm Penth.	*SPT-8	11.55-11.59
			R10	CR=32% RQD=NIL
			R11	CR=28% RQD=NIL
Completely to highly weathered, light grey, medium to fine grained, highly fractured rock with mica.			R12	CR=24% RQD=NIL
			R13	CR=25% RQD=NIL
		Refusal	R14	CR=NIL RQD=NIL
		50 3.0 cm Penth.	*SPT-9	15.30-15.33
			R15	CR=NIL RQD=NIL
16.00m.				

4.80 5.55 6.30 7.05 7.80 8.55 9.30 10.05 10.80 11.55 12.30 13.05 13.80 14.55 15.30 16.05

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421 | Created by : Chandrani | Created on : 12/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 34

Co-ordinates E=467928.846 N=1947032.886

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	12	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	12
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	0

Commencement Date : 03/02/15
Completion Date : 07/02/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 98.945 m.
Water Struck At :
Standing Water Level : 2.1 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
16.00m		50 Refusal 4.0 cm Penth.	*SPT-10	16.05-16.09
Completely to highly weathered, light grey, medium to fine grained, highly fractured rock with mica.			R16	16.05 CR=25% RQD=NIL 16.80
			R17	CR=24% RQD=NIL 17.55
		Refusal	R18	CR=NIL RQD=NIL
18.30m		50 3.0 cm Penth.	*SPT-11	18.30-18.33
			R19	18.30 CR=27% RQD=NIL 19.05
			R20	CR=29% RQD=NIL 19.80
			R21	CR=32% RQD=NIL 20.55
Highly weathered, light grey, medium to fine grained, highly fractured rock.			R22	CR=24% RQD=NIL 21.30
			R23	CR=28% RQD=NIL 22.05
		Refusal	R24	CR=NIL RQD=NIL
		50 4.0 cm Penth.	*SPT-12	22.80-22.84
			R25	22.80 CR=32% RQD=NIL 23.55
23.55m			R26	CR=24% RQD=NIL 24.30
Highly weathered, greyish brown to steel grey, medium to fine grained, fractured rock with mica.			R27	CR=21% RQD=NIL 25.05
			R28	CR=23% RQD=NIL 25.80
25.80m			R29	CR=39% RQD=NIL 26.55
			R30	CR=41% RQD=NIL 27.30
Moderately weathered, steel grey, medium to fine grained, highly fractured rock.			R31	CR=44% RQD=NIL 28.05
			R32	CR=57% RQD=NIL 28.80
			R33	CR=43% RQD=NIL
29.55m			R34	CR=60% RQD=NIL 29.55
Moderately weathered, steel grey, medium to fine grained, highly fractured rock. 30.00m				30.05

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

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421 | Created by : Chandrani | Created on : 19/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 37

Co-ordinates E=467894.003 N=1947174.015

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	13	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	13
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 13/02/15
Completion Date : 15/02/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 99.003 m.
Water Struck At :
Standing Water Level : 1.9 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Brownish grey, silty clay with high % of calcareous nodules.			DS-1	0.50
0.80m. Hard, brownish grey, silty clay with calcareous nodules & gravels.		8 10 12 15 63 (17 19)	SPT-1	1.00-1.45
2.00m.			*UDS-1	2.00-2.15
Very dense, brownish grey, silty sand. Obs. decomposed rock.		10 18 29 38 >100 (50) 5.0 cm Penth.	SPT-2	2.50-2.85
3.50m. Completely weathered, brownish grey, medium to fine graiined, decomposed to disintegrated rock collected as sludge.		Refusal 52 4.0 cm Penth.	*SPT-3	3.50-3.54 3.50
		Refusal	R1	CR=NIL RQD=NIL
		50	*SPT-4	4.25-4.27 4.25
		2.0 cm Penth.	R2	CR=NIL RQD=NIL
		Refusal 52	*SPT-5	5.00-5.03 5.00
		3.0 cm Penth.	R3	CR=NIL RQD=NIL
		Refusal		
		51	*SPT-6	5.75-5.77 5.75
		2.0 cm Penth.	R4	CR=NIL RQD=NIL
		Refusal		
		50	*SPT-7	6.50-6.53 6.50
		3.0 cm Penth.	R5	CR=NIL RQD=NIL
		Refusal		
		52	*SPT-8	7.25-7.28 7.25
		3.0 cm Penth.	R6	CR=NIL RQD=NIL
		Refusal		
8.00m. Completely to highly weathered, light brown to whitish brown, medium grained, highly fractured rock.		50	*SPT-9	8.00-8.02 8.00
		2.0 cm Penth.	R7	CR=18% RQD=NIL
		Refusal		
		50	*SPT-10	8.75-8.76 8.75
		1.0 cm Penth.	R8	CR=NIL RQD=NIL
		Refusal		
9.50m. Highly weathered, light brown to whitish brown, medium grained, highly fractured rock.		52	*SPT-11	9.50-9.52 9.50
		2.0 cm Penth.	R9	CR=29% RQD=NIL
		NX rotary drilling from 3.50m to 20.00m		10.25
10.50m.				

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421 | Created by : Chandrani | Created on : 19/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 37

Co-ordinates E=467894.003 N=1947174.015

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	13	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	13
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 13/02/15
Completion Date : 15/02/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 99.003 m.
Water Struck At :
Standing Water Level : 1.9 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
			R10	CR=30% RQD=NIL
10.50m				11.00
Highly weathered, light brown to whitish brown, medium grained, highly fractured rock.			R11	CR=20% RQD=NIL
11.00m				11.75
			R12	CR=20% RQD=NIL
Completely to highly weathered, light brown to whitish brown, medium grained, highly fractured rock. Obs. decomposed & disintegrated rock particle collected as sludge on R13.		Refusal 50 1.0 cm Penetn.	*SPT-12	12.50-12.51 12.50
			R13	CR=NIL RQD=NIL
		Refusal 51 1.0 cm Penetn.	*SPT-13	13.25-13.26 13.25
			R14	CR=22% RQD=NIL
14.00m				14.00
			R15	CR=35% RQD=NIL
				14.75
			R16	CR=48% RQD=NIL
				15.50
			R17	CR=37% RQD=NIL
				16.25
			R18	CR=29% RQD=NIL
Highly to moderately weathered, light grey, medium grained, highly fractured rock.				17.00
			R19	CR=31% RQD=NIL
				17.75
			R20	CR=46% RQD=NIL
				18.50
			R21	CR=37% RQD=NIL
				19.25
			R22	CR=62% RQD=NIL
20.00m				20.00

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

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421 | Created by : Chandrani | Created on : 13/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 42

Co-ordinates E=467990.000 N=1947089.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	12	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	12
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 08/02/15
Completion Date : 10/02/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 98.545 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m				
Very stiff, deep brownish grey, silty clay with gravels. Obs. kankars.		3 3 3 4 20/4 9	DS-1	0.50
			SPT-1	1.00-1.45
2.00m				
Very dense, yellowish brown, clayey sandy silt with decomposed rock. Obs. kankars.		10 7 7 8 52/12 25	UDS-1	2.00-2.45
			SPT-2	3.00-3.45
4.00m				
Very dense, light grey to yellowish brown, clayey sandy silt with decomposed rock.		7 12 30 20 >100/50 5.0 cm Penth.	SPT-3	4.00-4.35
4.90m		52 50 >100/2.5 cm Penth.	SPT-4	4.80-4.90
		NX rotary drilling from 4.80m to 20.00m	R1	CR=20% RQD=NIL
Completely weathered, light grey to light brownish grey, medium grained, highly fractured rock. # decomposed & disintegrated rock particale collected as sludge on R2 & R3.		50 Refusal 5.0 cm Penth.	*SPT-5	6.40-6.45
			R3	CR=NIL RQD=NIL
		10 20 27 50 >100/4.5 cm Penth.	SPT-6	7.15-7.42
			R4	CR=17% RQD=NIL
		50 Refusal 3.0 cm Penth.	*SPT-7	7.90-7.93
			R5	CR=13% RQD=NIL
8.65m		50 Refusal 4.0 cm Penth.	*SPT-8	8.65-8.69
			R6	CR=23% RQD=NIL
Completely weathered, light grey, medium grained, highly fractured rock. # decomposed & disintegrated rock particle collected as sludge on R8 & R9.			R7	CR=36% RQD=NIL
			R8	CR=NIL RQD=NIL
10.75m				

4.90 5.65 6.40 7.15 7.90 8.65 9.40 10.15

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421 | Created by : Chandrani | Created on : 13/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 42

Co-ordinates E=467990.000 N=1947089.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	12	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	12
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 08/02/15
Completion Date : 10/02/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 98.545 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
10.75m		50 Refusal 4.0 cm Penth.	*SPT-9	10.90-10.94
			R9	CR=NIL RQD=NIL
Completely weathered, light grey, medium grained, highly fractured rock. # decomposed & disintegrated rock particle collected as sludge on R8 & R9.		50 Refusal 3.0 cm Penth.	*SPT-10	11.65-11.68
			R10	CR=15% RQD=NIL
		50 Refusal 5.0 cm Penth.	*SPT-11	12.40-12.45
			R11	CR=16% RQD=NIL
13.15m		50 Refusal 4.0 cm Penth.	*SPT-12	13.15-13.19
			R12	CR=31% RQD=NIL
			R13	CR=30% RQD=NIL
			R14	CR=28% RQD=NIL
			R15	CR=35% RQD=NIL
Highly weathered, light grey to yellowish grey, medium grained, highly fractured rock.			R16	CR=34% RQD=17%
			R17	CR=30% RQD=NIL
			R18	CR=42% RQD=17%
			R19	CR=25% RQD=NIL
			R20	CR=26% RQD=NIL
20.00m				

10.90 | 11.65 | 12.40 | 13.15 | 13.90 | 14.65 | 15.40 | 16.15 | 16.90 | 17.65 | 18.40 | 19.15 | 20.00

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

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana.			CETEST
Job No : 3421	Created by : Chandrani	Created on : 12/02/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 48

Co-ordinates E=467993.369 N=1947141.669

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	14	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	14
Vane (V)		Disturbed (DS)	4
		Water Sample (WS)	0

Commencement Date : 03/02/15
Completion Date : 08/02/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 97.977 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m		NX rotary drilling from 4.80m to 20.00m		
Medium, brownish grey to dark grey, silty clay.			DS-1	0.50
		1 1 1 1 6/2 2	SPT-1	1.00-1.45
1.45m			UDS-1	2.00-2.40
Medium dense, brownish grey, silty sand with clay binder. Obs. decomposed rock.		1 3 5 6 29/8 10	SPT-2	3.00-3.45
		10 18 29 35 >100/50 5.0 cm Penth. Refusal	SPT-3	4.00-4.35
4.80m		51 4.0 cm Penth. Refusal	*SPT-4	4.80-4.84 4.80
			R1	CR=NIL RQD=NIL
Completley weathered, light grey, fine grained, decomposed rock.		50 3.0 cm Penth. Refusal	DS-2 *SPT-5	5.55-5.58 5.55
			R2	CR=NIL RQD=NIL
		52 2.0 cm Penth. Refusal	DS-3 *SPT-6	6.30-6.32 6.30
			R3	CR=NIL RQD=NIL
7.05m		50 2.0 cm Penth. Refusal	DS-4 *SPT-7	7.05-7.07 7.05
			R4	CR=14% RQD=NIL
Highly weathered, light grey, fine grained, highly fractured rock.		50 1.0 cm Penth. Refusal	*SPT-8	7.80-7.81 7.80
			R5	CR=16% RQD=NIL
8.55m		50 1.0 cm Penth. Refusal	*SPT-9	8.55-8.56 8.55
Completely weathered, light grey, fine grained, decomposed rock.			R6	CR=NIL RQD=NIL
9.30m		51 4.0 cm Penth. Refusal	*SPT-10	9.30-9.34 9.30
			R7	CR=18% RQD=NIL
Highly weathered, light grey, fine grained, highly fractured rock.		50 1.0 cm Penth.	SPT-11	10.05-10.06 10.05
10.50m			R8	CR=16% RQD=NIL

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421 | Created by : Chandrani | Created on : 12/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 48

Co-ordinates E=467993.369 N=1947141.669

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	14	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	14
Vane (V)		Disturbed (DS)	4
		Water Sample (WS)	0

Commencement Date : 03/02/15
Completion Date : 08/02/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 97.977 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
10.50m.		Refusal		
		50 2.0 cm Penth.	*SPT-12	10.80-10.82
Highly weathered, light grey, fine grained, highly fractured rock.		Refusal	R9	CR=17% RQD=NIL
		50 1.0 cm Penth.	*SPT-13	11.55-11.56
		Refusal	R10	CR=14% RQD=NIL
12.30m.		50 2.0 cm Penth.	*SPT-14	12.30-12.32
			R11	CR=50% RQD=28%
Highly to moderately weathered, light grey, fine grained, highly fractured rock. Obs. water stain.			R12	CR=38% RQD=NIL
			R13	CR=37% RQD=NIL
			R14	CR=49% RQD=NIL
15.30m.			R15	CR=62% RQD=NIL
			R16	CR=85% RQD=18%
			R17	CR=82% RQD=NIL
Fresh, light grey, fine grained, highly fractured rock. Obs. water stain.			R18	CR=75% RQD=NIL
			R19	CR=46% RQD=NIL
20.00m.				

13.05 13.80 14.55 15.30 16.05 16.80 17.55 19.05 20.00

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

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana.			CETEST
Job No : 3421	Created by : Chandrani	Created on : 12/02/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 57

Co-ordinates E=468074.000 N=1947191.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	11	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	11
Vane (V)		Disturbed (DS)	9
		Water Sample (WS)	0

Commencement Date : 03/02/15
Completion Date : 06/02/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 97.212 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m				
Top soil consists of deep grey, silty clay. Obs. gravels & sand mixture.			DS-1	0.50
1.20m		2 2 3 4 16/4 5	SPT-1	1.00-1.45
Medium dense, light grey / brownish grey, clayey sandy silt / silty sand. OBs. calcareous nodules.			UDS-1	2.00-2.45
3.00m		>100	SPT-2	3.00-3.19
Very dense, light grey / brownish grey, silty sand with decomposed rock. 3.40m		23 47 50 Refusal	*SPT-3	3.40-3.43
		52 4.0 cm Penth.	R1	CR=NIL RQD=NIL
		3.0 cm Penth. Refusal	DS-2	
		53	*SPT-4	4.15-4.19
		4.0 cm Penth. Refusal	R2	CR=NIL RQD=NIL
			DS-3	
Completely weathered, light grey with brownish grey, medium to fine grained, decomposed & disintegrated rock collected as sludge.		52	*SPT-5	4.90-4.93
		3.0 cm Penth. Refusal	R3	CR=NIL RQD=NIL
			DS-4	
		54	*SPT-6	5.65-5.68
		3.0 cm Penth. Refusal	R4	CR=NIL RQD=NIL
			DS-5	
6.40m		52	*SPT-7	6.40-6.42
		2.0 cm Penth.	R5	CR=31% RQD=NIL
Highly weathered, whitish grey, medium to fine grained, highly fractured rock.		NX rotary drilling from 3.40m to 25.00m	R6	CR=37% RQD=NIL
7.90m			R7	CR=NIL RQD=NIL
		Refusal	DS-6	
		52	*SPT-8	8.65-8.68
		3.0 cm Penth. Refusal	R8	CR=NIL RQD=NIL
Completley weathered, light brownish grey to whitish grey, medium to fine grained, decomposed & disintegrated rock collected as sludge.			DS-7	
		53	*SPT-9	9.40-9.44
		4.0 cm Penth. Refusal	R9	CR=NIL RQD=NIL
			DS-8	
		52	*SPT-10	10.15-10.18
		3.0 cm Penth. Refusal	R10	CR=NIL RQD=NIL
			DS-9	
10.90m		51	*SPT-11	10.90-10.92
		2.0 cm Penth.	R11	CR=24% RQD=NIL
Highly weathered, whitish grey, medium grained, highly fractured rock.			R12	CR=23% RQD=NIL
			R13	CR=20% RQD=NIL
13.00m				

3.40 4.15 4.90 5.65 7.15 7.90 8.65 9.40 10.15 10.90 11.65 12.40

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421 | Created by : Chandrani | Created on : 12/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 57

Co-ordinates E=468074.000 N=1947191.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	11	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	11
Vane (V)		Disturbed (DS)	8
		Water Sample (WS)	0

Commencement Date : 03/02/15
Completion Date : 06/02/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 97.212 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
Highly weathered, whitish grey, medium grained, highly fractured rock.	13.00m / 13.15m			13.15
			R14	CR=21% RQD=NIL
Highly weathered, light grey to brownish grey, coarse to fine grained, highly fractured rock.	13.90m			13.90
			R15	CR=34% RQD=NIL
Highly weathered, light grey to brownish grey, coarse to fine grained, highly fractured rock.	14.65m			14.65
			R16	CR=61% RQD=NIL
				15.40
			R17	CR=57% RQD=21%
				16.15
			R18	CR=50% RQD=NIL
				16.90
			R19	CR=55% RQD=15%
Moderately to slightly weathered, light brownish grey to steel grey, medium to fine grained, moderately fractured rock.				17.65
			R20	CR=89% RQD=58%
				18.40
			R21	CR=84% RQD=51%
				19.15
			R22	CR=80% RQD=NIL
				20.00
			R23	CR=87% RQD=15%
	21.00m			21.50
			R24	CR=82% RQD=NIL
				22.00
Slightly weathered, steel grey to yellowish brown, medium to fine grained, highly fractured rock.			R25	CR=80% RQD=NIL
				23.50
			R26	CR=78% RQD=18%
	25.00m			25.00

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

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421 | Created by : Chandrani | Created on : 19/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 58

Co-ordinates E=468123.336 N=1947180.259

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	6	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	6
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 07/02/15
Completion Date : 11/02/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 97.738 m.
Water Struck At :
Standing Water Level : 2.4 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m				
Very stiff, deep grey, silty clay with fine sand. Obs. gravels & kankars.		2 2 3 4 22 (6 9)	DS-1	0.50
			SPT-1	1.00-1.45
			UDS-1	2.00-2.45
3.00m		3 4 6 14 61 (14 27)	SPT-2	3.00-3.45
Hard, light grey to yellowish brown, silty clay. Obs. calcareous nodules.		42 49 50 >100 (5.0 cm Penth.)	SPT-3	4.00-4.20
4.30m		50 Refusal (4.0 cm Penth.)	*SPT-4	4.30-4.34
Highly weathered, blackish grey, coarse to fine grained, highly fractured rock.		NX rotary drilling from 4.30m to 20.00m	R1	CR=21% RQD=NIL (4.30 - 5.00)
			R2	CR=22% RQD=NIL (5.00 - 5.75)
			R3	CR=12% RQD=NIL (5.75 - 6.50)
6.50m		50 Refusal (3.0 cm Penth.)	*SPT-5	6.50-6.53
			R4	CR=13% RQD=NIL
Highly weathered, light grey, medium grained, moderately fractured rock.		50 Refusal (4.0 cm Penth.)	*SPT-6	7.25-7.29
			R5	CR=25% RQD=NIL (7.25 - 8.00)
8.00m			R6	CR=51% RQD=NIL (8.00 - 8.75)
Moderately weathered, light grey, medium grained, moderately fractured rock.			R7	CR=60% RQD=32% (8.75 - 9.50)
			R8	CR=62% RQD=16% (9.50 - 10.25)
10.25m			R9	CR=81% RQD=20% (10.25 - 11.00)
Slightly weathered, light grey, fine grained, moderately fractured rock.				
11.00m				

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421 | Created by : Chandrani | Created on : 19/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 58

Co-ordinates E=468123.336 N=1947180.259

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	6	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	6
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 07/02/15
Completion Date : 11/02/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 97.738 m.
Water Struck At :
Standing Water Level : 2.4 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
11.00m				
			R10	CR=84% RQD=20%
				11.75
			R11	CR=82% RQD=NIL
				13.00
			R12	CR=87% RQD=25%
				14.50
Slightly weathered, light grey, fine grained, moderately fractured rock.			R13	CR=89% RQD=47%
				16.00
			R14	CR=88% RQD=40%
				17.50
			R15	CR=88% RQD=41%
				19.00
			R16	CR=76% RQD=18%
20.00m				20.00

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

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421	Created by : Chandrani	Created on : 13/02/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 62

Co-ordinates E=468147.467 N=1947259.150

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	16	Undisturbed (UDS)	0
Cone (Pc)		Penetrometer (SPT)	16
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 31/01/15
Completion Date : 05/02/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 96.743 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	Depth (m)
0.00m. Top soil consists of deep greyish brown, silty clay with gravels & kankars. 0.90m.			DS-1	0.50
Very dense, light grey, silty sand / sandy silt. 2.00m.		19 17 13 15 14 13 (55)	SPT-1	1.00-1.45
Very dense, light grey to yellowish brown, silty sand with calcareous nodules & clay binders. 4.40m.		7 8 14 14 26 22 (76)	SPT-2	2.00-2.45
		9 13 14 16 23 34 (87)	SPT-3	3.00-3.45
		37 42 50 (>100) 5.0 cm Penth. Refusal	SPT-4	4.00-4.20
Completely weathered, light grey to brownish grey, coarse to fine grained, highly fractured rock. 12.50m.		52 4.0 cm Penth. Refusal	*SPT-5 R1	4.40-4.44 CR=18% RQD=NIL 4.40
		50 4.0 cm Penth. Refusal	*SPT-6 R2	5.00-5.04 CR=12% RQD=NIL 5.00
		50 3.0 cm Penth. Refusal	*SPT-7 R3	5.75-5.78 CR=16% RQD=NIL 5.75
		50 3.0 cm Penth. Refusal	*SPT-8 R4	6.50-6.53 CR=15% RQD=NIL 6.50
		50 4.0 cm Penth. Refusal	*SPT-9 R5	7.25-7.29 CR=19% RQD=NIL 7.25
		50 4.0 cm Penth. Refusal	*SPT-10 R6	8.00-8.04 CR=17% RQD=NIL 8.00
		50 3.0 cm Penth. Refusal	*SPT-11 R7	8.75-8.78 CR=17% RQD=NIL 8.75
		50 4.0 cm Penth. Refusal	*SPT-12 R8	9.50-9.54 CR=15% RQD=NIL 9.50
		50 4.0 cm Penth. Refusal	*SPT-13 R9	10.25-10.29 CR=17% RQD=NIL 10.25
		50 3.0 cm Penth. Refusal	*SPT-14 R10	11.00-11.03 CR=15% RQD=NIL 11.00
		50 4.0 cm Penth. Refusal	*SPT-15 R11	11.75-11.79 CR=17% RQD=NIL 11.75
		50 3.0 cm Penth.	*SPT-16 R12	12.50-12.53 CR=20% RQD=NIL 12.50
Highly weathered, light grey, medium grained, highly fractured rock. 14.00m.		NX rotary drilling from 4.40m to 30.00m	R13	CR=24% RQD=NIL 13.25
Moderately weathered, light grey, medium grained, highly fracturd rock. 14.75m.			R14	CR=47% RQD=NIL 14.00
Moderately to slightly weathered, light grey, medium grained, highly to moderately fracturd rock. 16.00m.			R15	CR=58% RQD=NIL 14.75
			R16	CR=55% RQD=NIL 15.50

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421 | Created by : Chandrani | Created on : 13/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 62

Co-ordinates E=468147.467 N=1947259.150

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	16	Undisturbed (UDS)	0
Cone (Pc)		Penetrometer (SPT)	16
Vane (V)		Disturbed (DS)	2
		Water Sample (WS)	0

Commencement Date : 31/01/15
Completion Date : 05/02/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 9.743 m.
Water Struck At :
Standing Water Level :

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
16.00m				16.25
			R17	CR=67% RQD=NIL
				17.00
			R18	CR=72% RQD=NIL
				17.75
Moderately to slightly weathered, light grey, medium grained, highly to moderately fracturd rock.			R19	CR=85% RQD=15%
				18.50
			R20	CR=80% RQD=NIL
				20.00
			R21	CR=78% RQD=08%
21.00m				21.50
			R22	CR=87% RQD=NIL
Slightly weathered, steel grey, medium grained, moderately fractured rock.				23.00
			R23	CR=88% RQD=25%
24.50m				24.50
			R24	CR=47% RQD=NIL
				26.00
			R25	CR=53% RQD=NIL
Moderately to slightly weathered, light grey, medium grained, moderately fractured rock.				27.00
			R26	CR=73% RQD=18%
				28.00
			R27	CR=54% RQD=NIL
				29.00
			R28	CR=85% RQD=NIL
30.00m				30.00

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

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421 | Created by : Chandrani | Created on : 13/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 63

Co-ordinates E=468159.000 N=1947239.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	10	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	10
Vane (V)		Disturbed (DS)	3
		Water Sample (WS)	0

Commencement Date : 07/02/15
Completion Date : 09/02/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground :
Water Struck At :
Standing Water Level : 1.4 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m.				
			DS-1	0.50
Stiff, deep grey, silty clay with gravels. Obs. calcareous nodules.		2 2 3 4 15/4 4	SPT-1	1.00-1.45
			UDS-1	2.00-2.45
3.00m.				
Very dense, steel grey with yellowish brown, sandy silt with decomposed rock.		5 8 10 9 77/21 37	SPT-2	3.00-3.45
		>100 27 38 52/5.0 cm Penth. Refusal	SPT-3	4.00-4.20
4.30m.		53/4.0 cm Penth. Refusal	*SPT-4	4.30-4.34 4.30
			R1	CR=NIL RQD=NIL
Completely weathered, steel grey, medium to fine grained, decomposed & disintegrated rock collected as sludge.		52/3.0 cm Penth. Refusal	*SPT-5	5.05-5.08 5.05
			R2	CR=NIL RQD=NIL
			DS-2	
		53/2.0 cm Penth. Refusal	*SPT-6	5.80-5.82 5.80
			R3	CR=NIL RQD=NIL
6.50m.			DS-3	
		52/1.0 cm Penth. Refusal	*SPT-7	6.50-6.51 6.50
			R4	CR=17% RQD=NIL
		51/2.0 cm Penth. Refusal	*SPT-8	7.25-7.27 7.25
			R5	CR=20% RQD=NIL
Hightly weathered, brownishgrey, medium to fine grained, highly fractured rock.				8.00
			R6	CR=13% RQD=NIL
		53/2.0 cm Penth. Refusal	*SPT-9	8.75-8.77 8.75
			R7	CR=15% RQD=NIL
		52/3.0 cm Penth. Refusal	*SPT-10	9.50-9.53 9.50
			R8	CR=24% RQD=NIL
10.25m.				10.25
Highly to moderately weathered, light grey to brownish grey, medium to fine grained, moderately fractured rock.		NX rotary drilling from 4.30m to 20.00m	R9	CR=30% RQD=NIL
11.00m.				11.00

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana.			CETEST
Job No : 3421	Created by : Chandrani	Created on : 13/02/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 63

Co-ordinates E=468159.000 N=1947239.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	10	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	10
Vane (V)		Disturbed (DS)	5
		Water Sample (WS)	0

Commencement Date : 07/02/15
Completion Date : 09/02/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground :
Water Struck At :
Standing Water Level : 1.4 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 7.5cm.	SAMPLES Ref. No	SAMPLES Depth (m)
11.00m.			R10	CR=35% RQD=NIL
				11.75
			R11	CR=43% RQD=NIL
				12.50
			R12	CR=39% RQD=NIL
				13.25
			R13	CR=33% RQD=NIL
Highly to moderately weathered, light grey to brownish grey, medium to fine grained, moderately fractured rock.				14.00
			R14	CR=37% RQD=NIL
				14.75
			R15	CR=34% RQD=NIL
				15.50
			R16	CR=39% RQD=NIL
				16.25
			R17	CR=48% RQD=NIL
17.00m.				17.00
			R18	CR=57% RQD=NIL
				17.75
			R19	CR=58% RQD=NIL
Moderately weathered, light grey to brownish grey, medium to fine grained, moderately fractured rock.				18.50
			R20	CR=53% RQD=NIL
				19.25
			R21	CR=52% RQD=NIL
20.00m.				20.00

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

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana.			CETEST
Job No : 3421	Created by : Chandrani	Created on : 18/02/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 66

Co-ordinates E=468081.000 N=1947238.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	10	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	10
Vane (V)		Disturbed (DS)	6
		Water Sample (WS)	0

Commencement Date : 10/02/15
Completion Date : 12/02/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 97.324 m.
Water Struck At :
Standing Water Level : 0.8 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Top soil consists of deep grey, silty clay with gravels, calcareous nodules.			DS-1	0.50
0.80m. Very stiff to hard, yellowish brown, silty clay with sand mixture, gravels & kankars.		5 5 7 7 22/4 4	SPT-1	1.00-1.45
			UDS-1	2.00-2.45
3.00m. Very dense, light brownish grey, sandy silt (decomposed rock).		>100 25 34 42 52 2.5 cm Penth. Refusal	SPT-2	3.00-3.25
3.50m. Completely weathered, pinkish grey, fine grained, highly fractured rock.		53 3.0 cm Penth. Refusal	*SPT-3	3.50-3.53
			R1	CR=NIL RQD=NIL
4.25m. Completely weathered, light brownish grey, medium to fine grained, decomposed & disintegrated rock, collected as sludge.		52 3.0 cm Penth. Refusal	*SPT-4	4.25-4.28
			R2	CR=NIL RQD=NIL
			DS-2	
		53 4.0 cm Penth. Refusal	*SPT-5	5.00-5.04
			R3	CR=NIL RQD=NIL
			DS-3	
		52 3.0 cm Penth. Refusal	*SPT-6	5.75-5.78
			R4	CR=NIL RQD=NIL
6.50m. Completely weathered, pinkish grey, medium to fine grained, highly fractured rock.		51 3.0 cm Penth. NX rotary drilling from 3.50m to 20.00m Refusal	DS-4 *SPT-7	6.50-6.53
			R5	CR=23% RQD=NIL
			R6	CR=10% RQD=NIL
8.00m. Completely weathered, deep brownish grey, medium to fine grained, decomposed & disintegrated rock collected as sludge.		50 3.0 cm Penth. Refusal	*SPT-8	8.00-8.03
			R7	CR=NIL RQD=NIL
			DS-5	
		52 2.0 cm Penth. Refusal	*SPT-9	8.75-8.77
			R8	CR=NIL RQD=NIL
9.50m. Highly to moderately weathered, light brownish grey, medium to fine grained, moderately fractured rock.		51 4.0 cm Penth.	DS-6 *SPT-10	9.50-9.54
			R9	CR=28% RQD=NIL
10.50m.				

3.50 4.25 5.00 5.75 6.50 7.25 8.00 8.75 9.50 10.25

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421 | Created by : Chandrani | Created on : 18/02/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 66

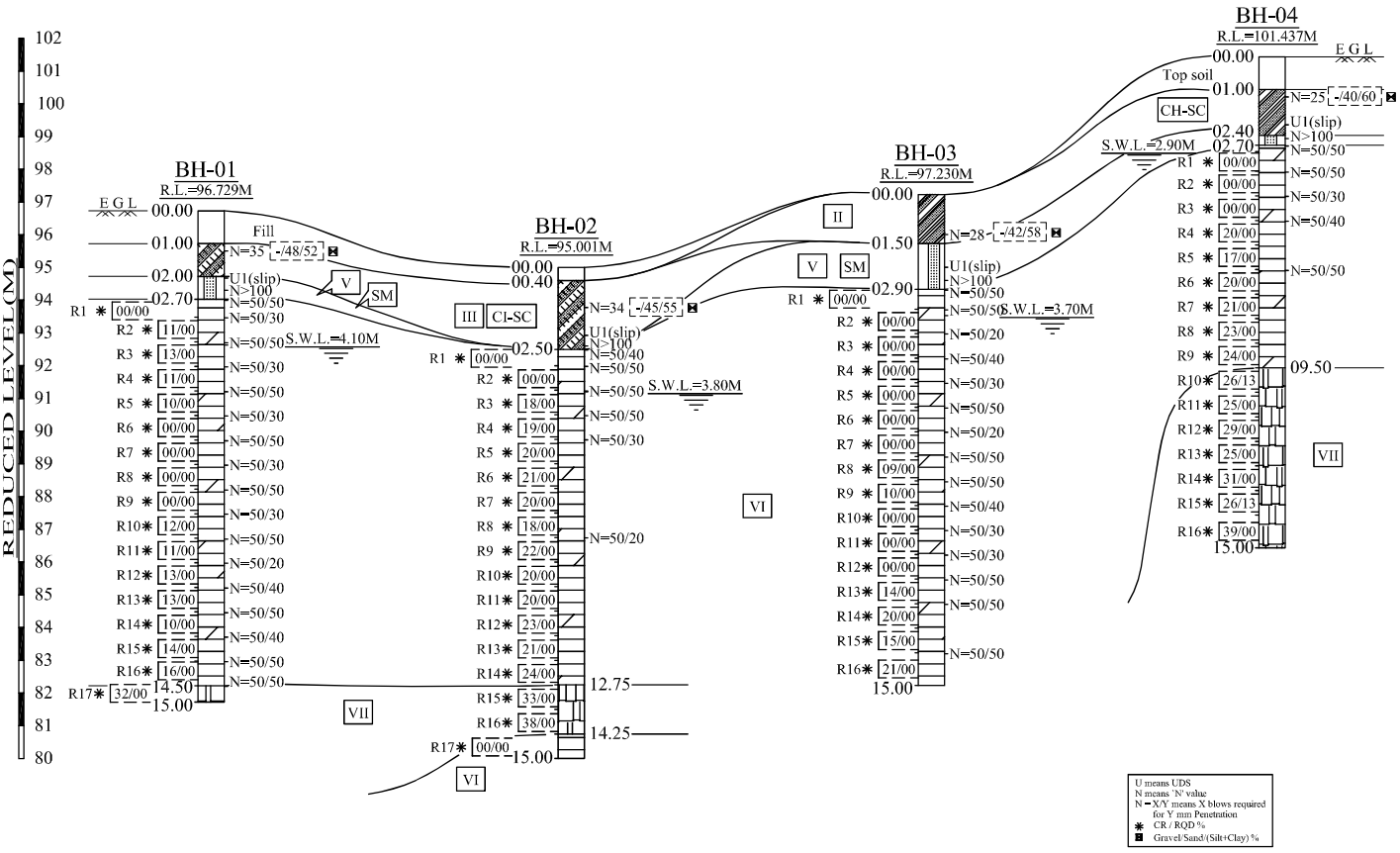
Co-ordinates E=468081.000 N=1947238.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	10	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	10
Vane (V)		Disturbed (DS)	6
		Water Sample (WS)	0

Commencement Date : 10/02/15
Completion Date : 12/02/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 97.324 m.
Water Struck At :
Standing Water Level : 0.8 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
			R10	CR=51% RQD=13%
				11.00
			R11	CR=56% RQD=NIL
				11.75
Highly to moderately weathered, light brownish grey, medium to fine grained, moderately fractured rock.			R12	CR=48% RQD=NIL
				12.50
			R13	CR=45% RQD=15%
				13.25
			R14	CR=37% RQD=NIL
10.50m.				14.00
			R15	CR=21% RQD=NIL
				14.75
			R16	CR=29% RQD=NIL
				15.50
Highly weathered, light brownish grey, medium to fine grained, highly fractured rock.			R17	CR=27% RQD=NIL
				16.25
			R18	CR=29% RQD=NIL
				17.00
			R19	CR=32% RQD=NIL
14.00m.				17.75
			R20	CR=21% RQD=NIL
				18.50
Highly weathered, light brownish grey, medium to fine grained, highly fractured rock.			R21	CR=23% RQD=NIL
				19.25
			R22	CR=24% RQD=NIL
17.75m.				20.00
20.00m.				

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



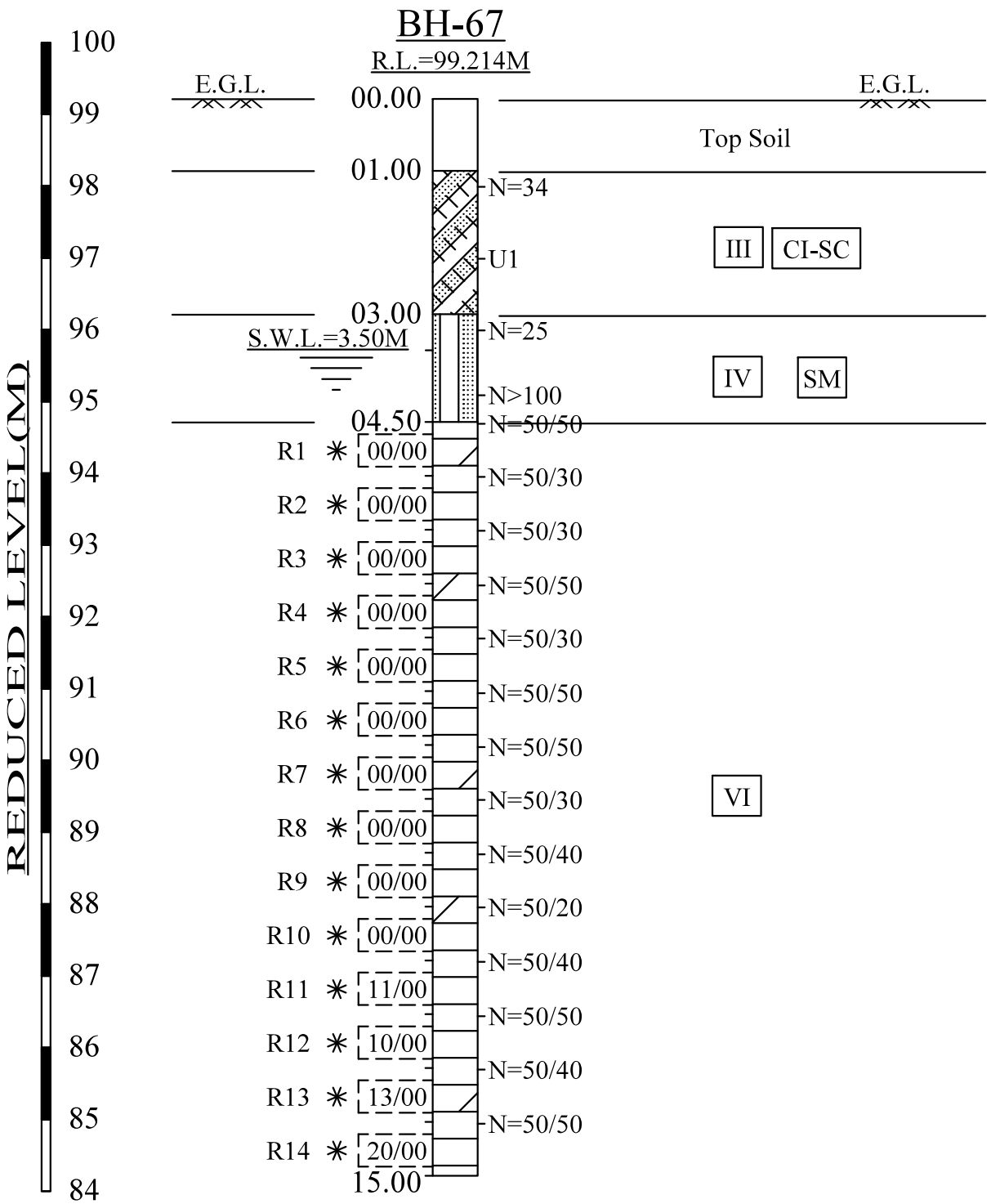
(Raw Water Storage Reservoir)

FIG. 2.01 : GENERALISED SOIL PROFILE

Project : Geotech Inv. Work for 4x800MW KTPS at Khammam Dist. Telangana

Job No : 3421 | Created by : CHANDRAN | Created on : 21/03/2015 | Sheet No:

CETEST



(Raw Water Pump House)

FIG. 2.34 : GENERALISED SOIL PROFILE

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana.			CETEST
Job No : 3421	Created by : Chandrani	Created on : 04/04/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 1

Co-ordinates E=466078.000 N=1948555.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	19	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	19
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 24/03/15
Completion Date : 25/03/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 96.729 m.
Water Struck At :
Standing Water Level : 4.1 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of light grey fly ash.			DS-1	0.50
1.00m. Hard, light yellowish grey, silty clay. Obs. gravel & kankars.		5 5 6 8 35/10 11	SPT-1	1.00-1.45
		NX rotary drilling from 2.70m to 15.00m		
2.00m. Very dense, whitish grey, sandy silt. Obs moorum.		>100 11 19 35 50 2.5 cm Penth. Refusal	*UDS-1	2.00-2.10
			SPT-2	2.30-2.55
2.70m.		56 5.0 cm Penth. Refusal	*SPT-3	2.70-2.75 2.70
			R1	CR=NIL RQD=NIL
		52 3.0 cm Penth. Refusal	*SPT-4	3.25-3.28 3.25
			R2	CR=11% RQD=NIL
		50 5.0 cm Penth. Refusal	*SPT-5	4.00-4.05 4.00
			R3	CR=13% RQD=NIL
		50 3.0 cm Penth. Refusal	*SPT-6	4.75-4.78 4.75
			R4	CR=11% RQD=NIL
Completely to highly weathered, light yellowish grey, medium grained, highly fractured rock. Obs. decomposed & disintegrated rock partilce collected as sludge R1, R6, R7, R8 & R9.		50 5.0 cm Penth. Refusal	*SPT-7	5.50-5.55 5.50
			R5	CR=10% RQD=NIL
		51 3.0 cm Penth. Refusal	*SPT-8	6.25-6.28 6.25
			R6	CR=NIL RQD=NIL
		50 5.0 cm Penth. Refusal	*SPT-9	7.00-7.05 7.00
			R7	CR=NIL RQD=NIL
		52 3.0 cm Penth. Refusal	*SPT-10	7.75-7.78 7.75
			R8	CR=NIL RQD=NIL
		50 5.0 cm Penth. Refusal	*SPT-11	8.50-8.55 8.50
			R9	CR=NIL RQD=NIL
9.25m. Highly weathered, light yellowish grey, medium grained, highy fractured rock.		50 3.0 cm Penth.	*SPT-12	9.25-9.28 9.25
			R10	CR=12% RQD=NIL
10.00m.				

BH-1/Sheet-1

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana.			CETEST
Job No : 3421	Created by : Chandrani	Created on : 04/04/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 1

Co-ordinates E=466078.000 N=1948555.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	19	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	19
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 24/03/15
Completion Date : 25/03/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 96.729 m.
Water Struck At :
Standing Water Level : 4.1 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
10.00m.		50 Refusal 5.0 cm Penth.	*SPT-13	10.00-10.05 10.00
		Refusal	R11	CR=11% RQD=NIL
		51 Refusal 2.0 cm Penth.	*SPT-14	10.75-10.77 10.75
		Refusal	R12	CR=13% RQD=NIL
		50 Refusal 4.0 cm Penth.	*SPT-15	11.50-11.54 11.50
		Refusal	R13	CR=13% RQD=NIL
Highly weathered, light yellowish grey, medium grained, highy fractured rock.		50 Refusal 5.0 cm Penth.	*SPT-16	12.25-12.30 12.25
		Refusal	R14	CR=10% RQD=NIL
		51 Refusal 4.0 cm Penth.	*SPT-17	13.00-13.04 13.00
		Refusal	R15	CR=14% RQD=NIL
		50 Refusal 5.0 cm Penth.	*SPT-18	13.75-13.80 13.75
		Refusal	R16	CR=16% RQD=NIL
14.50m.		52 Refusal 5.0 cm Penth.	*SPT-19	14.50-14.55 14.50
Highly weathered, light yellowish grey, medium grained, highy fractured rock. 15.00m.			R17	CR=32% RQD=NIL 15.00

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

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421 | **Created by : Chandrani** | **Created on : 04/04/2015** | **Sheet No:**

BORE LOG DATA SHEET

BORE HOLE NO. 2

Co-ordinates E=466214.000 N=1948533.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	8	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	8
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 27/03/15
Completion Date : 28/03/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 95.001 m.
Water Struck At :
Standing Water Level : 3.8 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Filled up soil consists of light grey fly ash.				
0.40m.			DS-1	0.50
Hard, reddish brown, silty clay with kankars & moorum mixture.		2 3 5 7 34/10 12	SPT-1	1.00-1.45
			*UDS-1	2.00-2.15
		12 31/50 >100 5.0 cm Pentn.	SPT-2	2.30-2.50
2.50m.		50 Refusal 4.0 cm Pentn.	*SPT-3	2.50-2.54
			R1	CR=NIL RQD=NIL
Completely weathered, yellowish brown, medium graied, decomposed & disintegrated rock particle collected as sludge.		50 Refusal 5.0 cm Pentn.	*SPT-4	3.00-3.05
			R2	CR=NIL RQD=NIL
3.75m.		51 Refusal 5.0 cm Pentn.	*SPT-5	3.75-3.80
			R3	CR=18% RQD=NIL
		52 Refusal 5.0 cm Pentn.	*SPT-6	4.50-4.55
			R4	CR=19% RQD=NIL
		50 Refusal 3.0 cm Pentn.	*SPT-7	5.25-5.28
			R5	CR=20% RQD=NIL
Highly weathered, yellowish brown, medium graied, highly fractured rock.				6.00
			R6	CR=21% RQD=NIL
		NX rotary drilling from 2.50m to 15.00m		6.75
			R7	CR=20% RQD=NIL
				7.50
			R8	CR=18% RQD=NIL
8.25m.		50 Refusal 2.0 cm Pentn.	*SPT-8	8.25-8.27
			R9	CR=22% RQD=NIL
Highly weathered, light grey, medium grained, moderately fractured rock.				9.00
			R10	CR=20% RQD=NIL
10.00m.				9.75

BH-2/Sheet-1

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana.			CETEST
Job No : 3421	Created by : Chandrani	Created on : 04/04/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 2

Co-ordinates E=466214.000 N=1948533.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	8	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	8
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 27/03/15
Completion Date : 28/03/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 95.001 m.
Water Struck At :
Standing Water Level : 3.8 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 7.5cm.	SAMPLES Ref. No	SAMPLES Depth (m)
10.00m.			R11	CR=20% RQD=NIL
				10.50
			R12	CR=23% RQD=NIL
Highly weathered, light grey, medium grained, moderately fractured rock.				11.25
			R13	CR=21% RQD=NIL
				12.00
			R14	CR=24% RQD=NIL
12.75m.				12.75
			R15	CR=33% RQD=NIL
Highly weathered, light grey, medium grained, moderately fractured rock.				13.50
			R16	CR=38% RQD=NIL
14.25m.				14.25
Completely weathered, light grey, medium grained, decomposed & disintegrated rock particle collected as sludge.			R17	CR=NIL RQD=NIL
15.00m.				15.00

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

BH-2/Sheet-2

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421 | Created by : Chandrani | Created on : 01/04/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 3

Co-ordinates E=466124.000 N=1948465.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	17	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	17
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 22/03/15
Completion Date : 23/03/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 97.23 m.
Water Struck At :
Standing Water Level : 3.7 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	Depth (m)
0.00m. Very stiff, light grey, silty clay with kankars.			DS-1	0.50
		3 4 5 6 28/8 9	SPT-1	1.00-1.45
1.50m. Very dense, yellowish grey, sandy silt with decomposed rock.		NX rotary drilling from 2.90m to 15.00m	*UDS-1	2.00-2.45
		10 15 27 >100/50	SPT-2	2.50-2.75
2.90m. Completely weathered, light grey, medium grained, decomposed & disintegrated rock particle collected as sludge.		2.5 cm Pentn. Refusal	*SPT-3	2.90-2.95 2.90
		56 5.0 cm Pentn. Refusal	R1	CR=NIL RQD=NIL
		51 5.0 cm Pentn. Refusal	*SPT-4	3.50-3.55 3.50
			R2	CR=NIL RQD=NIL
		50 2.0 cm Pentn. Refusal	*SPT-5	4.25-4.27 4.25
			R3	CR=NIL RQD=NIL
		50 4.0 cm Pentn. Refusal	*SPT-6	5.00-5.04 5.00
			R4	CR=NIL RQD=NIL
		51 3.0 cm Pentn. Refusal	*SPT-7	5.75-5.78 5.75
			R5	CR=NIL RQD=NIL
		50 5.0 cm Pentn. Refusal	*SPT-8	6.50-6.55 6.50
			R6	CR=NIL RQD=NIL
		50 2.0 cm Pentn. Refusal	*SPT-9	7.25-7.27 7.25
			R7	CR=NIL RQD=NIL
		50 5.0 cm Pentn. Refusal	*SPT-10	8.00-8.05 8.00
			R8	CR=09% RQD=NIL
		50 5.0 cm Pentn. Refusal	*SPT-11	8.75-8.80 8.75
			R9	CR=10% RQD=NIL
10.00m.		50 4.0 cm Pentn.	*SPT-12	9.50-9.54 9.50
			R10	CR=NIL RQD=NIL

BH-3/Sheet-1

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana.			CETEST
Job No : 3421	Created by : Chandrani	Created on : 01/04/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 3

Co-ordinates E=466124.000 N=1948465.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	17	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	17
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 22/03/15
Completion Date : 23/03/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 97.23 m.
Water Struck At :
Standing Water Level : 3.7 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 7.5cm.	SAMPLES Ref. No	SAMPLES Depth (m)
10.00m.		Refusal		
		50 3.0 cm Pentn.	*SPT-13	10.25-10.28
Completely weathered, light grey, medium grained, decomposed & disintegrated particle collected as sludge.		Refusal	R11	CR=NIL RQD=NIL
		50 3.0 cm Pentn.	*SPT-14	11.00-11.03
		Refusal	R12	CR=NIL RQD=NIL
11.75m.		51 5.0 cm Pentn.	*SPT-15	11.75-11.80
		Refusal	R13	CR=14% RQD=NIL
		50 5.0 cm Pentn.	*SPT-16	12.50-12.55
Highly weathered, light grey to whitish grey, medium grained, highly fractured rock			R14	CR=20% RQD=NIL
				13.25
			R15	CR=15% RQD=NIL
		Refusal		
		50 5.0 cm Pentn.	*SPT-17	14.00-14.05
			R16	CR=21% RQD=NIL
15.00m.				15.00

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

BH-3/Sheet-2

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana. CETEST

Job No : 3421 | Created by : Chandrani | Created on : 01/04/2015 | Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 4

Co-ordinates E=466077.000 N=1948318.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	7	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	7
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 20/03/15
Completion Date : 21/03/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 101.437 m.
Water Struck At :
Standing Water Level : 2.9 m.

DESCRIPTION	SYMBOL	N-VALUE (EACH DIVN. = 7.5cm.)	SAMPLES Ref. No	SAMPLES Depth (m)
0.00m. Top soil consists of light grey, silty clay with kankars. Obs. moorum.			DS-1	0.50
1.00m. Very stiff, deep grey, silty clay with kankars.		4 4 5 5 25/7 8	SPT-1	1.00-1.45
			*UDS-1	2.00-2.15
2.40m. Very dense, whitish grey, sandy silt with decomposed rock.		>100 15 36 50 5.0 cm Penetn.	SPT-2	2.40-2.60
2.70m.		Refusal 58 5.0 cm Penetn.	*SPT-3	2.70-2.75
		Refusal 51 5.0 cm Penetn.	R1	CR=NIL RQD=NIL
		Refusal 50 3.0 cm Penetn.	*SPT-4	3.50-3.55
		Refusal 51 4.0 cm Penetn.	R2	CR=NIL RQD=NIL
		NX rotary drilling from 2.70m to 15.00m	*SPT-5	4.25-4.28
Completely to highly weathered, light browish grey, medium grained, highly fractured rock. Obs. decomposed & disintegrated rock particle collected as sludge R1, R2, R3.		Refusal 52 5.0 cm Penetn.	R3	CR=NIL RQD=NIL
			*SPT-6	5.00-5.04
			R4	CR=20% RQD=NIL
			R5	CR=17% RQD=NIL
			*SPT-7	6.50-6.55
			R6	CR=20% RQD=NIL
			R7	CR=21% RQD=NIL
			R8	CR=23% RQD=NIL
			R9	CR=24% RQD=NIL
9.50m. Highly weathered, light yellowish grey, medium to fine grained, highly fractured rock. 10.00m.			R10	CR=26% RQD=13%

2.70 3.50 4.25 5.00 5.75 6.50 7.25 8.00 8.75 9.50

BH-4/Sheet-1

Project : Geotech. Inv. Work for 1x800MW KTPS at Khammam Dist. Telangana.			CETEST
Job No : 3421	Created by : Chandrani	Created on : 01/04/2015	Sheet No:

BORE LOG DATA SHEET

BORE HOLE NO. 4

Co-ordinates E=466077.000 N=1948318.000

Field Test	Nos	Samples	Nos
Penetrometer (SPT)	7	Undisturbed (UDS)	1
Cone (Pc)		Penetrometer (SPT)	7
Vane (V)		Disturbed (DS)	1
		Water Sample (WS)	0

Commencement Date : 20/03/15
Completion Date : 21/03/15
Bore Hole Diameter : 150 mm. / N.X.
Level Of Ground : 101.437 m.
Water Struck At :
Standing Water Level : 2.9 m.

DESCRIPTION	SYMBOL	N-VALUE EACH DIVN. = 7.5cm.	SAMPLES Ref. No	SAMPLES Depth (m)
10.00m.				10.25
			R11	CR=25% RQD=NIL
				11.00
			R12	CR=29% RQD=NIL
				11.75
			R13	CR=25% RQD=NIL
Highly weathered, light yellowish grey, medium to fine grained, highly fractured rock.				12.50
			R14	CR=31% RQD=NIL
				13.25
			R15	CR=26% RQD=13%
				14.00
			R16	CR=39% RQD=NIL
15.00m.				15.00

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