भारत हेवी इलेक्ट्रिकल्स लिमिटेड
(भारत सरकार का उपक्रम)
BHARAT HEAVY ELECTRICALS LIMITED
(A Govt. of India Undertaking)

TCN – 04

Ref: PSER:SCT:MIS-C1106:TCN-04 Date: 08-07-2010

Sub	Tender change notice (TCN) 04.	
Job	Rate contract (1 year) for geo-technical investigation & topographical survey for upcoming projects in different states under Eastern Region, namely West Bengal, Bihar, Jharkhand, Orissa, Chattisgarh and North-Eastern region (ie Sikkim, Assam, Meghalaya, Arunachal Pradesh, Mizoram, Nagaland & Tripura).	
Ref	1.0	Tender no PSER:SCT:MIS-C1106:10.
	2.0	BHEL's NIT vide reference no PSER:SCT:MIS-C1106:2272, dated 10-06-10.
	3.0	BHEL's TCN-01, vide reference no PSER:SCT:MIS-C1106:TCN-01, dated 25-06-10.
	4.0	BHEL's TCN-02, vide reference no PSER:SCT:MIS-C1106:TCN-02, dated 01-07-10.
	5.0	BHEL's TCN-03, vide reference no PSER:SCT:MIS-C1106:TCN-03, dated 07-07-10.
	6.0	All other pertinent issues till date.

With reference to above, following points along with the attached documents, forming part of the tender, may please be noted and complied with while submitting offer.

1.0 Revised Volume-IIIA, Price Schedule, Rev-1, superseding earlier versions, for all 4 schedule/ categories, ie SCH-1, SCH-2, SCH-3 & SCH-4. Bidder shall submit offer as per attached revised price schedule. Bidder may submit offer for any or all schedule/ category, ie SCH-1, SCH-2, SCH-3 & SCH-4.
2.0 Revised `No deviation certificate' as per attached Annexure-2. Bidder to submit `No deviation certificate' as per revised format.
3.0 The state of Andhra Pradesh has been included in SCH-3. Pertinent clauses of different volumes of tender stand modified accordingly.
4.0 All other terms & conditions shall remain unchanged.

Bidders who have already send/ submitted offer may take back earlier offer and submit fresh offer or submit supplementary offer in conjunction with already submitted offer.

Thanking you,

Yours faithfully,
for BHARAT HYEAVY ELECTRICALS LTD

SDGM (SCT)

Encl
1.0 As above.

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)
POWER SECTOR EASTERN REGION, DJ-9/1, SECTOR-II, SALT LAKE CITY, KOLKATA - 700 091
फैक्स/Fax : (033) 23211960 फोन/Phone : बोर्ड/EPABX : 23211691/ 23211798

FORMAT FOR NO DEVIATION CERTIFICATE
(To be submitted in the bidder's letter head)

BHARAT HEAVY ELECTRICALS LIMITED,
Power Sector - Eastern Region,
Plot no 9/1, DJ Block, Sector – II, Salt Lake City,
Kolkata – 700 091

Sub	No Deviation Certificate.	
Job	Rate contract (1 year) for geo-technical investigation & topographical survey for upcoming projects in different states under Eastern Region, namely West Bengal, Bihar, Jharkhand, Orissa, Chattisgarh and North-Eastern region (ie Sikkim, Assam, Meghalaya, Arunachal Pradesh, Mizoram, Nagaland & Tripura).	
Ref	1.0	Tender no PSER:SCT:MIS-C1106:10.
	2.0	BHEL's NIT vide reference no PSER:SCT:MIS-C1106:2272, dated 10-06-10.
	3.0	BHEL's TCN-01, vide reference no PSER:SCT:MIS-C1106:TCN-01, dated 25-06-2010.
	4.0	BHEL's TCN-02, vide reference no PSER:SCT:MIS-C1106:TCN-02, dated 01-07-2010.
	5.0	BHEL's TCN-03, vide reference no PSER:SCT:MIS-C1106:TCN-03, dated 07-07-2010.
	6.0	BHEL's TCN-04, vide reference no PSER:SCT:MIS-C1106:TCN-04, dated 08-07-2010.
	7.0	All other pertinent issues till date.

Dear Sirs,

With reference to above, this is to confirm that as per tender conditions, we have visited site before submission of our offer and noted the job content & site conditions etc. We also confirm that we have not changed/ modified the tender documents as appeared in the website/ issued by you and in case of such observance at any stage, it shall be treated as null and void.

We hereby confirm that we have not taken any deviation from tender clauses together with other references as enumerated in the above referred NIT. We hereby confirm our unqualified acceptance to all terms & conditions, unqualified compliance to technical specification, integrity pact (if applicable) and acceptance to reverse auctioning process.

In the event of observance of any deviation in any part of our offer at a later date whether implicit or explicit, the deviations shall stand null & void.

We confirm to have submitted offer in accordance with tender instructions and as per aforesaid references.

Thanking you,

Yours

faithfully,

(Signature, date & seal of authorized
representative of the bidder)

TENDER NO	**PSER:SCT:MIS-C1106:10**	
VOLUME	**IIIA, REV-1**	**PRICE SCHEDULE (ABSOLUTE VALUE) SCH-1 (FOR WEST BENGAL PROJECTS)**

JOB	**RATE CONTRACT FOR GEOTECHNICAL INVESTIGATION & TOPOGRAPHICAL SURVEY FOR UPCOMING PROJECTS OF DIFFERENT STATES UNDER EASTERN REGION**
CAPACITY	**DIFFERENT**
PROJECT	**WEST BENGAL, JHARKHAND, BIHAR, ORISSA, CHATTISGARH AND NORTH-EASTERN REGION**

BHARAT HEAVY ELECTRICALS LIMITED
(A Govt Of India Undertaking)
POWER SECTOR – EASTERN REGION
PLOT – DJ 9/1, SECTOR II, SALT LAKE
KOLKATA – 700 091

VOLUME-IIIA **PRICE SCHEDULE, REV-1** **(APPLICABLE FOR SCH-1 (WEST BENGAL) PROJECTS)**	
Rate contract (1 year) for geotechnical investigation & topographical survey for upcoming projects of various capacities under different states of Eastern Region, namely West Bengal, Jharkhand, Bihar, Orissa, Chattisgarh and North-Eastern region.	
TENDER NO - PSER:SCT:MIS-C1106:10	
SCH-1.1 - PREAMBLE	
1.0	This preamble forms part of tender document and schedule of items. The tenderer should read this preamble carefully in rates for various items. Clauses under this preamble shall be read in conjunction with other volumes of tender as applicable.
2.0	The work shall be carried out strictly as per specifications, description of the items in these schedule and / or engineer's instructions.
3.0	Items of work provided in this schedule but not covered in this specification shall be executed strictly as per instruction of the engineer.
4.0	Unless specifically mentioned otherwise in the tender document, the tenderer shall quote for the finished items and shall provide for the complete cost towards power, fuel, tools, tackles, equipment, constructional plants, temporary works, labour, dismantling of all temporary piping, structures, valves, pumps, tanks & other misc. equipment, strengthening of roads/culverts/bridges etc. including arranging all clearances etc. required for carrying out different activities & tests, materials, levies, taxes, transport, layout, repairs, rectification, maintenance till handing over, supervisions, colonies, shops, establishments, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the work according to the tender document and this schedule.
5.0	The quantities of the various items mentioned in this schedule of items are approximate, based on very preliminary information and may vary to any extent or be deleted altogether. The quoted rates of each item will remain firm throughout the period of execution including extension, for reasons whatsoever, as long as variation in the total value of work executed under any part of this contract including extra items, if any but excluding any price variation remains within thirty percent (± 30 %) of the contract price.
6.0	The rates quoted shall be inclusive of cleaning of site of any vegetation, dressing and leveling etc including fixing of grid pillars, benchmarks etc required for commencement of site activities. No separate payment will be made towards the same.
7.0	Rates shall be quoted in figures and in words in clear legible writing. No overwriting is allowed. All scoring and cancellations should be countersigned and in case of illegibility the interpretation of engineer shall be final. All entries shall be in English language.
8.0	All works item wise shall be measured upon completion and paid for at the rates quoted and accepted.
9.0	The tender shall be deemed to have studied the specifications, details of work to the done within the time schedule attached and to have acquainted himself of the conditions prevailing at site.
10.0	Engineer's decision shall be final and binding on the contractor regarding clarification of items in the schedule with respect to the other sections/volumes of the contract.

VOLUME-IIIA
PRICE SCHEDULE, REV-1
(APPLICABLE FOR SCH-1 (WEST BENGAL) PROJECTS)

Rate contract (1 year) for geotechnical investigation & topographical survey for upcoming projects of various capacities under different states of Eastern Region, namely West Bengal, Jharkhand, Bihar, Orissa, Chattisgarh and North-Eastern region.

TENDER NO - PSER:SCT:MIS-C1106:10

SCH-1.2 - MAIN SCHEDULE

SL NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.0	**GEOTECHNICAL INVESTIGATION**				
1.1	Mobilisation of necessary equipments, men and materials to the project site for carrying out the geotechnical investigation and demobilisation of the same after completion of all the field works etc all complete as per specification, drawings and as directed by the engineer. 1 (One set) comprising of minimum indicative list of equipment to be deployed as per Annexure-D of Volume-II of tender. Any additional equipments if required shall be mobilized as per the directions of the BHEL engineer to match the work schedule without extra cost.	1	LS		
1.2	Making 150mm nominal diameter bore hole at various locations upto a maximum depth of 10m below ground level in all types of soil including laterite using suitable approved method of boring including chiselling, cleaning, providing casing pipes as required or as directed; performing standard penetration test at every 2m interval down to 10m depth below ground level and at every 3m interval beyond 10m depth, at change of strata and at depths wherever undisturbed soil samples could not be collected; collection of undisturbed soil samples at every 2m interval down to 10m depth below ground level and at every 3m interval beyond 10m depth and at change of strata; collection of disturbed soil samples and water samples, sealing and packing of samples, observation such as ground water table etc; transportation of all the collected samples to the laboratory and back filling of boreholes with sand on completion of the same etc all complete as per specification and as directed by the engineer.	300	RM		
1.3	Making 150mm nominal diameter bore hole up to a maximum depth of 40 m below ground level at various locations in all types of soil including laterite using suitable approved method of boring including chiselling, cleaning, providing casing pipes as required or as directed; performing standard penetration test at every 1 m interval alternate to collection of undisturbed soil samples up to 10 m depth below ground level and at every 1.5 m interval alternate to collection of undisturbed soil samples beyond 10 m depth, at change of strata and at depths wherever undisturbed soil samples could not be collected; collection of undisturbed sample (UDS) at every 1 m interval alternate to conducting standard penetration test up to 10 m depth below ground level and at every 1.5 m interval alternate to conducting standard penetration test beyond 10 m depth; collection of disturbed soil samples and water samples, sealing and packing of samples, observation such as ground water table etc; transportation of all the collected samples to the laboratory and back filling of boreholes with sand on completion of the same etc all complete as per specification and as directed by the engineer-in-charge for depth below ground level.	2580	RM		

SL NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.4	Core drilling (Nx size) in rock up to a maximum of 25m depth below ground level using hydraulic feed rotary drill and double tube core barrel with diamond bit including collection of core samples, performing SPT at locations where core recovery is less than 20%, maintaining continuous record of core recovery and RQD, keeping the cores in wooden core boxes, transporting the cores to laboratory, back filling the holes with 1 part of cement : 3 part of sand grout on completion of the same etc all complete as per specification, drawings and as directed by the engineer.	450	RM		
1.5	Excavating trial pit (TP) of size 3m x 3m at various locations upto 4m depth below ground level in all types of soil and weathered rock which can be excavated with pick axe/ crow bar etc including sheeting or shoring the sides for the purpose of stability, dewatering and maintaining the pit dry at all times, collecting disturbed/ undisturbed samples at 1m interval and at final depth and transporting all the collected samples to the laboratory; backfilling of the pit with excavated material etc all complete as per specification and as directed by the engineer.	144	CUM		
1.6	Conducting plate load test (PLT) in various locations at specified depth complete as per specification, drawings and as directed by the engineer. Payment for making the pit of suitable size, maintaining it dry and backfilling etc shall be paid separately as per above item.	3	EACH		
1.7	Conducting cyclic plate load test (CPLT) in various locations at specified depth complete as per specification, drawings and as directed by the engineer. Payment for making the pit of suitable size, maintaining it dry and backfilling etc shall be paid separately as per above item.	4	EACH		
1.8	Conducting cross hole shear wave test (CHSWT) in bore hole in all types of strata at all depths such as 2m, 4m, 6m, 8m, 10m, 13m, 16m, 19m, 22m, 25m, 28m, 31m, 34m, 37m & 40m below ground level including preparation of borehole, providing PVC liner, grouting and backfilling with sand after completion of the test etc all complete as per specification, drawings and as directed by the engineer. Cost of the borehole and backfilling etc shall be paid separately as per above item.	6	EACH		
1.9	Conducting cross hole shear wave test (CHSWT) in bore hole in all types of strata at 2m, 4m, 6m, 8m, 10m, 12m, 15m, 18m, 20m, 25m and 30m depth below ground level including drilling and preparation of required number of bore holes, providing PVC liner, grouting and backfilling with sand after completion of the test etc all complete as per specification, drawings and as directed by the engineer.	3	EACH		
1.10	Performing dynamic cone penetration test (DCPT) at various locations using 65mm cone with circulation of bentonite slurry etc all complete as per specification, drawings and as directed by the engineer.	10	EACH		
1.11	Performing static cone penetration test (SPT) at various locations complete as per specification, drawings and as directed by the engineer.	10	EACH		
1.12	Conducting field vane shear test (FVST) in various locations at specified depth including collection of disturbed soil sample etc all complete as per specification, drawings and as directed by the engineer.	5	EACH		
1.13	Conducting electrical resistivity test (ERT) at various locations complete as per specification, drawings and as directed by the engineer.	35	EACH		

SL NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.13.1	Conducting pump in type field permeability test (FPT) by constant head or falling head method (suitability of type of test shall be as per site conditions) in various boreholes at specified depth including providing packers as required etc all complete as per specification, drawings and as directed by the engineer. Cost of the borehole and backfilling etc shall be paid separately as per above item.	2	EACH		
1.13.2	Conducting field permeability test in boreholes for rocky stratum at specified depth by double packer method complete as per specification, drawings and as directed by the engineer. Cost of the borehole and backfilling etc shall be paid separately as per rate of above item.				
1.13.2.1	Double packer method.	2	EACH		
1.14	Conducting pressuremeter test (PMT) in various bore holes in all types of strata at all depths such as 2m, 5m, 8m, 11m, 14m, 17m, 20m, 23m, 26m, 29m, 32m, 35m, 38m & 40m below ground level including preparation of bore hole of required size etc all complete as per specification, drawings and as directed by the engineer. Cost of the borehole and backfilling etc shall be paid separately as per above item.	5	EACH		
1.15	Conducting pressuremeter test (PMT) in various bore holes at all depth such as 3m, 5m, 7m, 9m, 11m, 13m, 15m, 18m, 20m, 23m, 26m, 30m & 35m depth below ground level in all types of strata including preparation of bore hole of required size etc all complete as per specification, drawings and as directed by the engineer.	4	EACH		
1.16	Conducting seismic refraction test (SRT) at various locations complete as per specification, drawings and as directed by the engineer.	1000	RM		
1.17	Conducting laboratory test on soil samples at an approved laboratory including preparation of soil samples to determine the following properties etc all complete as per specification.				
1.17.1	Bulk density and moisture content.	50	EACH		
1.17.2	Sieve analysis.	100	EACH		
1.17.3	Hydrometer analysis.	30	EACH		
1.17.4	Liquid limit and plastic limit.	100	EACH		
1.17.5	Shrinkage limit.	30	EACH		
1.17.6	Specific gravity.	30	EACH		
1.17.7	Swell pressure.	30	EACH		
1.17.8	Free swell index.	30	EACH		
1.17.9	Relative density.	30	EACH		
1.17.10	Unconfined compressive strength.	50	EACH		
1.17.11	Direct shear test.	100	EACH		
1.17.12	Box shear test.	50	EACH		
1.17.13	Triaxial shear test.				
1.17.13.1	Unconsolidated undrained test.	50	EACH		
1.17.13.2	Consolidated undrained test with the measurement of pore water pressure.	50	EACH		
1.17.13.3	Consolidated drained.	50	EACH		
1.17.14	One dimensional consolidation test.	50	EACH		

SL NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.17.15	Standard Proctor compaction test.	10	EACH		
1.17.16	CBR test at following.				
1.17.16.1	Soaked condition.	10	EACH		
1.17.16.2	Un-soaked conditions.	10	EACH		
1.17.17	Chemical analysis.	10	EACH		
1.18	Conducting Laboratory Test on rock samples including preparation of the samples to determine the following properties etc all complete as per specification.				
1.18.1	Moisture content, porosity & density.	50	EACH		
1.18.2	Specific gravity, hardness.	30	EACH		
1.18.3	Slake durability index.	30	EACH		
1.18.4	Unconfined compressive strength (both at saturated and in–situ water content).	75	EACH		
1.18.5	Point load strength.	30	EACH		
1.18.6	Deformability test (Saturated & dry sample).	30	EACH		
1.19	Conducting chemical test on water samples to determine the carbonate, sulphate, chloride and nitrate contents, pH value, turbidity, organic matter and any other chemicals harmful to foundation material etc all complete as per specification.	10	EACH		
1.20	Conducting chemical test on 2:1 water : soil extract to determine the carbonate, sulphate, chloride and nitrate contents, pH value, turbidity, organic matter and any other chemicals harmful to foundation material etc all complete as per specification.	10	EACH		
1.21	Preparation & submission of draft report in 3 copies and final report in 5 hard copies & 2 soft copies on 3½" floppies after the approval of draft report including all field records, laboratory test results, graphs, analysis of test results and recommendation etc all complete as per specification.	1	LS		
SUB-TOTAL-1 (GEOTECHNICAL INVESTIGATION)					
2.0	**TOPOGRAPHICAL SURVEY**				
2.1	Carrying out bench mark from the nearest GTS bench mark or any other available source as approved by the engineer-in-charge to different locations in the project area including clearing of jungles and/or cutting trees and any other works required for completion of the said item etc all complete as per specification and instructions of the engineer-in-charge. (Construction of bench mark pillar to be paid separately)	3	KM		
2.2	Carrying out topographical survey of plant and allied areas showing all permanent & general features and detailed contour survey by taking spot levels at 25m interval, carrying out cross section of canal/nallah by taking spot levels at 5m interval or less including clearance of jungles and cutting of trees etc which are interfering with the survey works and any other field works necessary for the completion of the said item, preparation and submission of all plans (maps), reports, floppy and originals etc all complete as per specification and instructions of the engineer-in- charge.	9	HCTR		

SL NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
2.3	Carrying out topographical survey of plant and allied areas showing all permanent & general features and detailed contour survey by taking spot levels at 15m interval, carrying out cross section of canal/nallah by taking spot levels at 5m interval or less including clearance of jungles and cutting of trees etc which are interfering with the survey works and any other field works necessary for the completion of the said item, preparation and submission of all plans (maps), reports, CDs and originals etc all complete as per specification and instructions of the engineer-in- charge.	350	HCTR		
2.4	Construction of bench mark pillar/reference pillar/grid pillar at different locations including clearing of jungles, excavation, supply of materials, pillar marking, backfilling, white washing, painting on MS plate etc all complete as per specification, drawings and instructions of the engineer-in- charge.				
2.4.1	Bench mark pillar.	2	NO		
2.4.2	Grid/ reference pillar.	20	NO		
SUB-TOTAL-2 (TOPOGRAPHICAL SURVEY)					
3.0	**TOTAL-1+2 (GEOTECHNICAL INVESTIGATION AND TOPOGRAPHICAL SURVEY)**				
NOTE					
1.0	Bidder shall quote their rates/ price complete in all respects in the respective schedules as per provision of tender and technical specification.				
2.0	Bidder's total price at sl no 3.0 above will be shall be considered for evaluation.				
3.0	Bidder shall quote their rates for non-schedule items (items not covered in either geotechnical investigation schedule and topographical survey schedule) in the respective schedule.				

VOLUME-IIIA
PRICE SCHEDULE, REV-1
(APPLICABLE FOR SCH-1 (WEST BENGAL) PROJECTS)

Rate contract (1 year) for geotechnical investigation & topographical survey for upcoming projects of various capacities under different states of Eastern Region, namely West Bengal, Jharkhand, Bihar, Orissa, Chattisgarh and North-Eastern region.

TENDER NO - PSER:SCT:MIS-C1106:10

SCH-1.3 - NON-SCHEDULE ITEMS

SL NO	DESCRIPTION	QUOTE `BELOW'/ `AT PAR'/ `ABOVE' RATE	
For items not covered in SCH-1.2 (Main schedule), bidder shall quote `below'/ `at par'/ `above' the Delhi Schedule of Rate (DSR) 2007 for following categories.			
1.0	Rate of complete item.		
2.0	Rate of supply of material at site only.		
3.0	Rate for execution complete excluding supply of materials.		

VOLUME-IIIA **PRICE SCHEDULE, REV-1** **(APPLICABLE FOR SCH-2 (BIHAR AND JHARKHAND) PROJECTS)**	
Rate contract (1 year) for geotechnical investigation & topographical survey for upcoming projects of various capacities under different states of Eastern Region, namely West Bengal, Jharkhand, Bihar, Orissa, Chattisgarh and North-Eastern region.	
TENDER NO - PSER:SCT:MIS-C1106:10	
SCH-2.1 - PREAMBLE	
1.0	This preamble forms part of tender document and schedule of items. The tenderer should read this preamble carefully in rates for various items. Clauses under this preamble shall be read in conjunction with other volumes of tender as applicable.
2.0	The work shall be carried out strictly as per specifications, description of the items in these schedule and / or engineer's instructions.
3.0	Items of work provided in this schedule but not covered in this specification shall be executed strictly as per instruction of the engineer.
4.0	Unless specifically mentioned otherwise in the tender document, the tenderer shall quote for the finished items and shall provide for the complete cost towards power, fuel, tools, tackles, equipment, constructional plants, temporary works, labour, dismantling of all temporary piping, structures, valves, pumps, tanks & other misc. equipment, strengthening of roads/culverts/bridges etc. including arranging all clearances etc. required for carrying out different activities & tests, materials, levies, taxes, transport, layout, repairs, rectification, maintenance till handing over, supervisions, colonies, shops, establishments, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the work according to the tender document and this schedule.
5.0	The quantities of the various items mentioned in this schedule of items are approximate, based on very preliminary information and may vary to any extent or be deleted altogether. The quoted rates of each item will remain firm throughout the period of execution including extension, for reasons whatsoever, as long as variation in the total value of work executed under any part of this contract including extra items, if any but excluding any price variation remains within thirty percent (± 30 %) of the contract price.
6.0	The rates quoted shall be inclusive of cleaning of site of any vegetation, dressing and leveling etc including fixing of grid pillars, benchmarks etc required for commencement of site activities. No separate payment will be made towards the same.
7.0	Rates shall be quoted in figures and in words in clear legible writing. No overwriting is allowed. All scoring and cancellations should be countersigned and in case of illegibility the interpretation of engineer shall be final. All entries shall be in English language.
8.0	All works item wise shall be measured upon completion and paid for at the rates quoted and accepted.
9.0	The tender shall be deemed to have studied the specifications, details of work to the done within the time schedule attached and to have acquainted himself of the conditions prevailing at site.
10.0	Engineer's decision shall be final and binding on the contractor regarding clarification of items in the schedule with respect to the other sections/volumes of the contract.

VOLUME-IIIA
PRICE SCHEDULE, REV-1
(APPLICABLE FOR SCH-2 (BIHAR AND JHARKHND) PROJECTS)

Rate contract (1 year) for geotechnical investigation & topographical survey for upcoming projects of various capacities under different states of Eastern Region, namely West Bengal, Jharkhand, Bihar, Orissa, Chattisgarh and North-Eastern region.

TENDER NO - PSER:SCT:MIS-C1106:10

SCH-2.2 - MAIN SCHEDULE

SL NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.0	**GEOTECHNICAL INVESTIGATION**				
1.1	Mobilisation of necessary equipments, men and materials to the project site for carrying out the geotechnical investigation and demobilisation of the same after completion of all the field works etc all complete as per specification, drawings and as directed by the engineer. 1 (One set) comprising of minimum indicative list of equipment to be deployed as per Annexure-D of Volume-II of tender. Any additional equipments if required shall be mobilized as per the directions of the BHEL engineer to match the work schedule without extra cost.	1	LS		
1.2	Making 150mm nominal diameter bore hole at various locations upto a maximum depth of 10m below ground level in all types of soil including laterite using suitable approved method of boring including chiselling, cleaning, providing casing pipes as required or as directed; performing standard penetration test at every 2m interval down to 10m depth below ground level and at every 3m interval beyond 10m depth, at change of strata and at depths wherever undisturbed soil samples could not be collected; collection of undisturbed soil samples at every 2m interval down to 10m depth below ground level and at every 3m interval beyond 10m depth and at change of strata; collection of disturbed soil samples and water samples, sealing and packing of samples, observation such as ground water table etc; transportation of all the collected samples to the laboratory and back filling of boreholes with sand on completion of the same etc all complete as per specification and as directed by the engineer.	300	RM		
1.3	Making 150mm nominal diameter bore hole up to a maximum depth of 40 m below ground level at various locations in all types of soil including laterite using suitable approved method of boring including chiselling, cleaning, providing casing pipes as required or as directed; performing standard penetration test at every 1 m interval alternate to collection of undisturbed soil samples up to 10 m depth below ground level and at every 1.5 m interval alternate to collection of undisturbed soil samples beyond 10 m depth, at change of strata and at depths wherever undisturbed soil samples could not be collected; collection of undisturbed sample (UDS) at every 1 m interval alternate to conducting standard penetration test up to 10 m depth below ground level and at every 1.5 m interval alternate to conducting standard penetration test beyond 10 m depth; collection of disturbed soil samples and water samples, sealing and packing of samples, observation such as ground water table etc; transportation of all the collected samples to the laboratory and back filling of boreholes with sand on completion of the same etc all complete as per specification and as directed by the engineer-in-charge for depth below	2580	RM		

SL NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.4	Core drilling (Nx size) in rock up to a maximum of 25m depth below ground level using hydraulic feed rotary drill and double tube core barrel with diamond bit including collection of core samples, performing SPT at locations where core recovery is less than 20%, maintaining continuous record of core recovery and RQD, keeping the cores in wooden core boxes, transporting the cores to laboratory, back filling the holes with 1 part of cement : 3 part of sand grout on completion of the same etc all complete as per specification, drawings and as directed by the engineer.	450	RM		
1.5	Excavating trial pit (TP) of size 3m x 3m at various locations upto 4m depth below ground level in all types of soil and weathered rock which can be excavated with pick axe/ crow bar etc including sheeting or shoring the sides for the purpose of stability, dewatering and maintaining the pit dry at all times, collecting disturbed/ undisturbed samples at 1m interval and at final depth and transporting all the collected samples to the laboratory; backfilling of the pit with excavated material etc all complete as per specification and as directed by the engineer.	144	CUM		
1.6	Conducting plate load test (PLT) in various locations at specified depth complete as per specification, drawings and as directed by the engineer. Payment for making the pit of suitable size, maintaining it dry and backfilling etc shall be paid separately as per above item.	3	EACH		
1.7	Conducting cyclic plate load test (CPLT) in various locations at specified depth complete as per specification, drawings and as directed by the engineer. Payment for making the pit of suitable size, maintaining it dry and backfilling etc shall be paid separately as per above item.	4	EACH		
1.8	Conducting cross hole shear wave test (CHSWT) in bore hole in all types of strata at all depths such as 2m, 4m, 6m, 8m, 10m, 13m, 16m, 19m, 22m, 25m, 28m, 31m, 34m, 37m & 40m below ground level including preparation of borehole, providing PVC liner, grouting and backfilling with sand after completion of the test etc all complete as per specification, drawings and as directed by the engineer. Cost of the borehole and backfilling etc shall be paid separately as per above item.	6	EACH		
1.9	Conducting cross hole shear wave test (CHSWT) in bore hole in all types of strata at 2m, 4m, 6m, 8m, 10m, 12m, 15m, 18m, 20m, 25m and 30m depth below ground level including drilling and preparation of required number of bore holes, providing PVC liner, grouting and backfilling with sand after completion of the test etc all complete as per specification, drawings and as directed by the engineer.	3	EACH		
1.10	Performing dynamic cone penetration test (DCPT) at various locations using 65mm cone with circulation of bentonite slurry etc all complete as per specification, drawings and as directed by the engineer.	10	EACH		
1.11	Performing static cone penetration test (SPT) at various locations complete as per specification, drawings and as directed by the engineer.	10	EACH		
1.12	Conducting field vane shear test (FVST) in various locations at specified depth including collection of disturbed soil sample etc all complete as per specification, drawings and as directed by the engineer.	5	EACH		
1.13	Conducting electrical resistivity test (ERT) at various locations complete as per specification, drawings and as directed by the engineer.	35	EACH		

SL NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.13.1	Conducting pump in type field permeability test (FPT) by constant head or falling head method (suitability of type of test shall be as per site conditions) in various boreholes at specified depth including providing packers as required etc all complete as per specification, drawings and as directed by the engineer. Cost of the borehole and backfilling etc shall be paid separately as per above item.	2	EACH		
1.13.2	Conducting field permeability test in boreholes for rocky stratum at specified depth by double packer method complete as per specification, drawings and as directed by the engineer. Cost of the borehole and backfilling etc shall be paid separately as per above item.				
1.13.2.1	Double packer method.	2	EACH		
1.14	Conducting pressuremeter test (PMT) in various bore holes in all types of strata at all depths such as 2m, 5m, 8m, 11m, 14m, 17m, 20m, 23m, 26m, 29m, 32m, 35m, 38m & 40m below ground level including preparation of bore hole of required size etc all complete as per specification, drawings and as directed by the engineer. Cost of the borehole and backfilling etc shall be paid separately as per above item.	5	EACH		
1.15	Conducting pressuremeter test (PMT) in various bore holes at all depth such as 3m, 5m, 7m, 9m, 11m, 13m, 15m, 18m, 20m, 23m, 26m, 30m & 35m depth below ground level in all types of strata including preparation of bore hole of required size etc all complete as per specification, drawings and as directed by the engineer.	4	EACH		
1.16	Conducting seismic refraction test (SRT) at various locations complete as per specification, drawings and as directed by the engineer.	1000	RM		
1.17	Conducting Laboratory Test on soil samples at an approved laboratory including preparation of soil samples to determine the following properties etc all complete as per specification.				
1.17.1	Bulk density and moisture content.	50	EACH		
1.17.2	Sieve analysis.	100	EACH		
1.17.3	Hydrometer analysis.	30	EACH		
1.17.4	Liquid limit and plastic limit.	100	EACH		
1.17.5	Shrinkage limit.	30	EACH		
1.17.6	Specific gravity.	30	EACH		
1.17.7	Swell pressure.	30	EACH		
1.17.8	Free swell index.	30	EACH		
1.17.9	Relative density.	30	EACH		
1.17.10	Unconfined compressive strength.	50	EACH		
1.17.11	Direct shear test.	100	EACH		
1.17.12	Box shear test.	50	EACH		
1.17.13	Triaxial shear test.				
1.17.13.1	Unconsolidated undrained test.	50	EACH		
1.17.13.2	Consolidated undrained test with the measurement of pore water pressure.	50	EACH		
1.17.13.3	Consolidated drained.	50	EACH		
1.17.14	One dimensional consolidation test.	50	EACH		

SL NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.17.15	Standard Proctor compaction test.	10	EACH		
1.17.16	CBR test at following.				
1.17.16.1	Soaked condition.	10	EACH		
1.17.16.2	Un-soaked conditions.	10	EACH		
1.17.17	Chemical analysis.	10	EACH		
1.18	Conducting Laboratory Test on rock samples including preparation of the samples to determine the following properties etc all complete as per specification.				
1.18.1	Moisture content, porosity & density.	50	EACH		
1.18.2	Specific gravity, hardness.	30	EACH		
1.18.3	Slake durability index.	30	EACH		
1.18.4	Unconfined compressive strength (both at saturated and in–situ water content).	75	EACH		
1.18.5	Point load strength.	30	EACH		
1.18.6	Deformability test (Saturated & dry sample).	30	EACH		
1.19	Conducting chemical test on water samples to determine the carbonate, sulphate, chloride and nitrate contents, pH value, turbidity, organic matter and any other chemicals harmful to foundation material etc all complete as per specification.	10	EACH		
1.20	Conducting chemical test on 2:1 water : soil extract to determine the carbonate, sulphate, chloride and nitrate contents, pH value, turbidity, organic matter and any other chemicals harmful to foundation material etc all complete as per specification.	10	EACH		
1.21	Preparation and submission of draft report in 3 copies and final report in 5 hard copies and 2 soft copies on 3½" floppies after the approval of draft report including all field records, laboratory test results, graphs, analysis of test results and recommendation etc all complete as per specification.	1	LS		
SUB-TOTAL-1 (GEOTECHNICAL INVESTIGATION)					
2.0	**TOPOGRAPHICAL SURVEY**				
2.1	Carrying out bench mark from the nearest GTS bench mark or any other available source as approved by the engineer-in-charge to different locations in the project area including clearing of jungles and/or cutting trees and any other works required for completion of the said item etc all complete as per specification and instructions of the engineer-in-charge. (Construction of bench mark pillar to be paid separately)	3	KM		
2.2	Carrying out topographical survey of plant and allied areas showing all permanent & general features and detailed contour survey by taking spot levels at 25m interval, carrying out cross section of canal/nallah by taking spot levels at 5m interval or less including clearance of jungles and cutting of trees etc which are interfering with the survey works and any other field works necessary for the completion of the said item, preparation and submission of all plans (maps), reports, floppy and originals etc all complete as per specification and instructions of the engineer-in- charge.	9	HCTR		

SL NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
2.3	Carrying out topographical survey of plant and allied areas showing all permanent & general features and detailed contour survey by taking spot levels at 15m interval, carrying out cross section of canal/nallah by taking spot levels at 5m interval or less including clearance of jungles and cutting of trees etc which are interfering with the survey works and any other field works necessary for the completion of the said item, preparation and submission of all plans (maps), reports, CDs and originals etc all complete as per specification and instructions of the engineer-in- charge.	350	HCTR		
2.4	Construction of bench mark pillar/ reference pillar/ grid pillar at different locations including clearing of jungles, excavation, supply of materials, pillar marking, backfilling, white washing, painting on MS plate etc all complete as per specification, drawings and instructions of the engineer.				
2.4.1	Bench mark pillar.	2	NO		
2.4.2	Grid/ reference pillar.	20	NO		
SUB-TOTAL-2 (TOPOGRAPHICAL SURVEY)					
3.0	**TOTAL-1+2 (GEOTECHNICAL INVESTIGATION AND TOPOGRAPHICAL SURVEY)**				
NOTE					
1.0	Bidder shall quote their rates/ price complete in all respects in the respective schedules as per provision of tender and technical specification.				
2.0	Bidder's total price at sl no 3.0 above will be shall be considered for evaluation.				
3.0	Bidder shall quote their rates for non-schedule items (items not covered in either geotechnical investigation schedule and topographical survey schedule) in the respective schedule.				

VOLUME-IIIA
PRICE SCHEDULE, REV-1
(APPLICABLE FOR SCH-2 (BIHAR AND JHARKHAND) PROJECTS)

Rate contract (1 year) for geotechnical investigation & topographical survey for upcoming projects of various capacities under different states of Eastern Region, namely West Bengal, Jharkhand, Bihar, Orissa, Chattisgarh and North-Eastern region.

TENDER NO - PSER:SCT:MIS-C1106:10

SCH-2.3 - NON-SCHEDULE ITEMS

SL NO	DESCRIPTION	QUOTE `BELOW'/ `AT PAR'/ `ABOVE' RATE	
For items not covered in SCH-2.2 (Main schedule), bidder shall quote `below'/ `at par'/ `above' the Delhi Schedule of Rate (DSR) 2007 for following categories.			
1.0	Rate of complete item.		
2.0	Rate of supply of material at site only.		
3.0	Rate for execution complete excluding supply of materials.		

VOLUME-IIIA **PRICE SCHEDULE, REV-1** **(APPLICABLE FOR SCH-3 (ORISSA, CHATTISGRH & ANDHRA PRADESH) PROJECTS)**	
Rate contract (1 year) for geotechnical investigation & topographical survey for upcoming projects of various capacities under different states of Eastern Region, namely West Bengal, Jharkhand, Bihar, Orissa, Chattisgarh and North-Eastern region.	
TENDER NO - PSER:SCT:MIS-C1106:10	
SCH-3.1 - PREAMBLE	
1.0	This preamble forms part of tender document and schedule of items. The tenderer should read this preamble carefully in rates for various items. Clauses under this preamble shall be read in conjunction with other volumes of tender as applicable.
2.0	The work shall be carried out strictly as per specifications, description of the items in these schedule and / or engineer's instructions.
3.0	Items of work provided in this schedule but not covered in this specification shall be executed strictly as per instruction of the engineer.
4.0	Unless specifically mentioned otherwise in the tender document, the tenderer shall quote for the finished items and shall provide for the complete cost towards power, fuel, tools, tackles, equipment, constructional plants, temporary works, labour, dismantling of all temporary piping, structures, valves, pumps, tanks & other misc. equipment, strengthening of roads/culverts/bridges etc. including arranging all clearances etc. required for carrying out different activities & tests, materials, levies, taxes, transport, layout, repairs, rectification, maintenance till handing over, supervisions, colonies, shops, establishments, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the work according to the tender document and this schedule.
5.0	The quantities of the various items mentioned in this schedule of items are approximate, based on very preliminary information and may vary to any extent or be deleted altogether. The quoted rates of each item will remain firm throughout the period of execution including extension, for reasons whatsoever, as long as variation in the total value of work executed under any part of this contract including extra items, if any but excluding any price variation remains within thirty percent (± 30 %) of the contract price.
6.0	The rates quoted shall be inclusive of cleaning of site of any vegetation, dressing and leveling etc including fixing of grid pillars, benchmarks etc required for commencement of site activities. No separate payment will be made towards the same.
7.0	Rates shall be quoted in figures and in words in clear legible writing. No overwriting is allowed. All scoring and cancellations should be countersigned and in case of illegibility the interpretation of engineer shall be final. All entries shall be in English language.
8.0	All works item wise shall be measured upon completion and paid for at the rates quoted and accepted.
9.0	The tender shall be deemed to have studied the specifications, details of work to the done within the time schedule attached and to have acquainted himself of the conditions prevailing at site.
10.0	Engineer's decision shall be final and binding on the contractor regarding clarification of items in the schedule with respect to the other sections/volumes of the contract.

VOLUME-IIIA

PRICE SCHEDULE, REV-1

(APPLICABLE FOR SCH-3 (ORISSA, CHATTISGARH AND ANDHRA PRADESH) PROJECTS)

Rate contract (1 year) for geotechnical investigation & topographical survey for upcoming projects of various capacities under different states of Eastern Region, namely West Bengal, Jharkhand, Bihar, Orissa, Chattisgarh and North-Eastern region.

TENDER NO - PSER:SCT:MIS-C1106:10

SCH-3.2 - MAIN SCHEDULE

SL NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.0	**GEOTECHNICAL INVESTIGATION**				
1.1	Mobilisation of necessary equipments, men and materials to the project site for carrying out the geotechnical investigation and demobilisation of the same after completion of all the field works etc all complete as per specification, drawings and as directed by the engineer. 1 (One set) comprising of minimum indicative list of equipment to be deployed as per Annexure-D of Volume-II of tender. Any additional equipments if required shall be mobilized as per the directions of the BHEL engineer to match the work schedule without extra cost.	1	LS		
1.2	Making 150mm nominal diameter bore hole at various locations upto a maximum depth of 10m below ground level in all types of soil including laterite using suitable approved method of boring including chiselling, cleaning, providing casing pipes as required or as directed; performing standard penetration test at every 2m interval down to 10m depth below ground level and at every 3m interval beyond 10m depth, at change of strata and at depths wherever undisturbed soil samples could not be collected; collection of undisturbed soil samples at every 2m interval down to 10m depth below ground level and at every 3m interval beyond 10m depth and at change of strata; collection of disturbed soil samples and water samples, sealing and packing of samples, observation such as ground water table etc; transportation of all the collected samples to the laboratory and back filling of boreholes with sand on completion of the same etc all complete as per specification and as directed by the engineer.	300	RM		
1.3	Making 150mm nominal diameter bore hole up to a maximum depth of 40 m below ground level at various locations in all types of soil including laterite using suitable approved method of boring including chiselling, cleaning, providing casing pipes as required or as directed; performing standard penetration test at every 1 m interval alternate to collection of undisturbed soil samples up to 10 m depth below ground level and at every 1.5 m interval alternate to collection of undisturbed soil samples beyond 10 m depth, at change of strata and at depths wherever undisturbed soil samples could not be collected; collection of undisturbed sample (UDS) at every 1 m interval alternate to conducting standard penetration test up to 10 m depth below ground level and at every 1.5 m interval alternate to conducting standard penetration test beyond 10 m depth; collection of disturbed soil samples and water samples, sealing and packing of samples, observation such as ground water table etc; transportation of all the collected samples to the laboratory and back filling of boreholes with sand on completion of the same etc all complete as per specification and as directed by the engineer-in-charge for depth below ground level.	2580	RM		

SL NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.4	Core drilling (Nx size) in rock up to a maximum of 25m depth below ground level using hydraulic feed rotary drill and double tube core barrel with diamond bit including collection of core samples, performing SPT at locations where core recovery is less than 20%, maintaining continuous record of core recovery and RQD, keeping the cores in wooden core boxes, transporting the cores to laboratory, back filling the holes with 1 part of cement : 3 part of sand grout on completion of the same etc all complete as per specification, drawings and as directed by the engineer.	450	RM		
1.5	Excavating trial pit (TP) of size 3m x 3m at various locations upto 4m depth below ground level in all types of soil and weathered rock which can be excavated with pick axe/ crow bar etc including sheeting or shoring the sides for the purpose of stability, dewatering and maintaining the pit dry at all times, collecting disturbed/ undisturbed samples at 1m interval and at final depth and transporting all the collected samples to the laboratory; backfilling of the pit with excavated material etc all complete as per specification and as directed by the engineer.	144	CUM		
1.6	Conducting plate load test (PLT) in various locations at specified depth complete as per specification, drawings and as directed by the engineer. Payment for making the pit of suitable size, maintaining it dry and backfilling etc shall be paid separately as per above item.	3	EACH		
1.7	Conducting cyclic plate load test (CPLT) in various locations at specified depth complete as per specification, drawings and as directed by the engineer. Payment for making the pit of suitable size, maintaining it dry and backfilling etc shall be paid separately as per above item.	4	EACH		
1.8	Conducting cross hole shear wave test (CHSWT) in bore hole in all types of strata at all depths such as 2m, 4m, 6m, 8m, 10m, 13m, 16m, 19m, 22m, 25m, 28m, 31m, 34m, 37m & 40m below ground level including preparation of borehole, providing PVC liner, grouting and backfilling with sand after completion of the test etc all complete as per specification, drawings and as directed by the engineer. Cost of the borehole and backfilling etc shall be paid separately as per above item.	6	EACH		
1.9	Conducting cross hole shear wave test (CHSWT) in bore hole in all types of strata at 2m, 4m, 6m, 8m, 10m, 12m, 15m, 18m, 20m, 25m and 30m depth below ground level including drilling and preparation of required number of bore holes, providing PVC liner, grouting and backfilling with sand after completion of the test etc all complete as per specification, drawings and as directed by the engineer.	3	EACH		
1.10	Performing dynamic cone penetration test (DCPT) at various locations using 65mm cone with circulation of bentonite slurry etc all complete as per specification, drawings and as directed by the engineer.	10	EACH		
1.11	Performing static cone penetration test (SPT) at various locations complete as per specification, drawings and as directed by the engineer.	10	EACH		
1.12	Conducting field vane shear test (FVST) in various locations at specified depth including collection of disturbed soil sample etc all complete as per specification, drawings and as directed by the engineer.	5	EACH		
1.13	Conducting electrical resistivity test (ERT) at various locations complete as per specification, drawings and as directed by the engineer.	35	EACH		

SL NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.13.1	Conducting pump in type field permeability test (FPT) by constant head or falling head method (suitability of type of test shall be as per site conditions) in various boreholes at specified depth including providing packers as required etc all complete as per specification, drawings and as directed by the engineer. Cost of the borehole and backfilling etc shall be paid separately as per above item.	2	EACH		
1.13.2	Conducting field permeability test in boreholes for rocky stratum at specified depth by double packer method complete as per specification, drawings and as directed by the engineer. Cost of the borehole and backfilling etc shall be paid separately as per above item.				
1.13.2.1	Double packer method.	2	EACH		
1.14	Conducting pressuremeter test (PMT) in various bore holes in all types of strata at all depths such as 2m, 5m, 8m, 11m, 14m, 17m, 20m, 23m, 26m, 29m, 32m, 35m, 38m & 40m below ground level including preparation of bore hole of required size etc all complete as per specification, drawings and as directed by the engineer. Cost of the borehole and backfilling etc shall be paid separately as per above item.	5	EACH		
1.15	Conducting pressuremeter test (PMT) in various bore holes at all depth such as 3m, 5m, 7m, 9m, 11m, 13m, 15m, 18m, 20m, 23m, 26m, 30m & 35m depth below ground level in all types of strata including preparation of bore hole of required size etc all complete as per specification, drawings and as directed by the engineer.	4	EACH		
1.16	Conducting seismic refraction test (SRT) at various locations complete as per specification, drawings and as directed by the engineer.	1000	RM		
1.17	Conducting laboratory test on soil samples at an approved laboratory including preparation of soil samples to determine the following properties etc all complete as per specification.				
1.17.1	Bulk density and moisture content.	50	EACH		
1.17.2	Sieve analysis.	100	EACH		
1.17.3	Hydrometer analysis.	30	EACH		
1.17.4	Liquid limit and plastic limit.	100	EACH		
1.17.5	Shrinkage limit.	30	EACH		
1.17.6	Specific gravity.	30	EACH		
1.17.7	Swell pressure.	30	EACH		
1.17.8	Free swell index.	30	EACH		
1.17.9	Relative density.	30	EACH		
1.17.10	Unconfined compressive strength.	50	EACH		
1.17.11	Direct shear test.	100	EACH		
1.17.12	Box shear test.	50	EACH		
1.17.13	Triaxial shear test.				
1.17.13.1	Unconsolidated undrained test.	50	EACH		
1.17.13.2	Consolidated undrained test with the measurement of pore water pressure.	50	EACH		
1.17.13.3	Consolidated drained.	50	EACH		

SL NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.17.14	One dimensional consolidation test.	50	EACH		
1.17.15	Standard Proctor compaction test.	10	EACH		
1.17.16	CBR test at following.				
1.17.16.1	Soaked condition.	10	EACH		
1.17.16.2	Un-soaked conditions.	10	EACH		
1.17.17	Chemical analysis.	10	EACH		
1.18	Conducting laboratory test on rock samples including preparation of the samples to determine the following properties etc all complete as per specification.				
1.18.1	Moisture content, porosity & density.	50	EACH		
1.18.2	Specific gravity, hardness.	30	EACH		
1.18.3	Slake durability index.	30	EACH		
1.18.4	Unconfined compressive strength (both at saturated and in–situ water content).	75	EACH		
1.18.5	Point load strength.	30	EACH		
1.18.6	Deformability test (Saturated & dry sample).	30	EACH		
1.19	Conducting chemical test on water samples to determine the carbonate, sulphate, chloride and nitrate contents, pH value, turbidity, organic matter and any other chemicals harmful to foundation material etc all complete as per specification.	10	EACH		
1.20	Conducting chemical test on 2:1 water : soil extract to determine the carbonate, sulphate, chloride and nitrate contents, pH value, turbidity, organic matter and any other chemicals harmful to foundation material etc all complete as per specification.	10	EACH		
1.21	Preparation and submission of draft report in 3 copies and final report in 5 hard copies and 2 soft copies on 3½" floppies after the approval of draft report including all field records, laboratory test results, graphs, analysis of test results and recommendation etc all complete as per specification.	1	LS		
SUB-TOTAL-1 (GEOTECHNICAL INVESTIGATION)					
2.0	**TOPOGRAPHICAL SURVEY**				
2.1	Carrying out bench mark from the nearest GTS bench mark or any other available source as approved by the engineer-in-charge to different locations in the project area including clearing of jungles and/or cutting trees and any other works required for completion of the said item etc all complete as per specification and instructions of the engineer-in-charge. (Construction of bench mark pillar to be paid separately)	3	KM		
2.2	Carrying out topographical survey of plant and allied areas showing all permanent & general features and detailed contour survey by taking spot levels at 25m interval, carrying out cross section of canal/nallah by taking spot levels at 5m interval or less including clearance of jungles and cutting of trees etc which are interfering with the survey works and any other field works necessary for the completion of the said item, preparation and submission of all plans (maps), reports, floppy and originals etc all complete as per specification and instructions of the engineer-in- charge.	9	HCTR		

SL NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
2.3	Carrying out topographical survey of plant and allied areas showing all permanent & general features and detailed contour survey by taking spot levels at 15m interval, carrying out cross section of canal/nallah by taking spot levels at 5m interval or less including clearance of jungles and cutting of trees etc which are interfering with the survey works and any other field works necessary for the completion of the said item, preparation and submission of all plans (maps), reports, CDs and originals etc all complete as per specification and instructions of the engineer-in- charge.	350	HCTR		
2.4	Construction of bench mark pillar/reference pillar/grid pillar at different locations including clearing of jungles, excavation, supply of materials, pillar marking, backfilling, white washing, painting on MS plate etc all complete as per specification, drawings and instructions of the engineer-in- charge.				
2.4.1	Bench mark pillar.	2	NO		
2.4.2	Grid/ reference pillar.	20	NO		
SUB-TOTAL-2 (TOPOGRAPHICAL SURVEY)					
3.0	**TOTAL-1+2 (GEOTECHNICAL INVESTIGATION AND TOPOGRAPHICAL SURVEY)**				
NOTE					
1.0	Bidder shall quote their rates/ price complete in all respects in the respective schedules as per provision of tender and technical specification.				
2.0	Bidder's total price at sl no 3.0 above will be shall be considered for evaluation.				
3.0	Bidder shall quote their rates for non-schedule items (items not covered in either geotechnical investigation schedule and topographical survey schedule) in the respective schedule.				

VOLUME-IIIA
PRICE SCHEDULE, REV-1
(APPLICABLE FOR SCH-3 (ORISSA, CHATTISGARH AND ANDHRA PRADESH) PROJECTS)

Rate contract (1 year) for geotechnical investigation & topographical survey for upcoming projects of various capacities under different states of Eastern Region, namely West Bengal, Jharkhand, Bihar, Orissa, Chattisgarh and North-Eastern region.

TENDER NO - PSER:SCT:MIS-C1106:10

SCH-3.3 - NON-SCHEDULE ITEMS

SL NO	DESCRIPTION	QUOTE `BELOW'/ `AT PAR'/ `ABOVE' RATE	
For items not covered in SCH-3.2 (Main schedule), bidder shall quote `below'/ `at par'/ `above' the Delhi Schedule of Rate (DSR) 2007 for following categories.			
1.0	Rate of complete item.		
2.0	Rate of supply of material at site only.		
3.0	Rate for execution complete excluding supply of materials.		

VOLUME-IIIA **PRICE SCHEDULE, REV-1** **(APPLICABLE FOR SCH-4 (NORTH-EASTERN, IE SIKKIM, ASSAM, MEGHALAY, ARUNACHAL PRADESH, MIZORAM, NAGALAND AND TRIPURA) PROJECTS)**	
Rate contract (1 year) for geotechnical investigation & topographical survey for upcoming projects of various capacities under different states of Eastern Region, namely West Bengal, Jharkhand, Bihar, Orissa, Chattisgarh and North-Eastern region.	
TENDER NO - PSER:SCT:MIS-C1106:10	
SCH-4.1 - PREAMBLE	
1.0	This preamble forms part of tender document and schedule of items. The tenderer should read this preamble carefully in rates for various items. Clauses under this preamble shall be read in conjunction with other volumes of tender as applicable.
2.0	The work shall be carried out strictly as per specifications, description of the items in these schedule and / or engineer's instructions.
3.0	Items of work provided in this schedule but not covered in this specification shall be executed strictly as per instruction of the engineer.
4.0	Unless specifically mentioned otherwise in the tender document, the tenderer shall quote for the finished items and shall provide for the complete cost towards power, fuel, tools, tackles, equipment, constructional plants, temporary works, labour, dismantling of all temporary piping, structures, valves, pumps, tanks & other misc. equipment, strengthening of roads/culverts/bridges etc. including arranging all clearances etc. required for carrying out different activities & tests, materials, levies, taxes, transport, layout, repairs, rectification, maintenance till handing over, supervisions, colonies, shops, establishments, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the work according to the tender document and this schedule.
5.0	The quantities of the various items mentioned in this schedule of items are approximate, based on very preliminary information and may vary to any extent or be deleted altogether. The quoted rates of each item will remain firm throughout the period of execution including extension, for reasons whatsoever, as long as variation in the total value of work executed under any part of this contract including extra items, if any but excluding any price variation remains within thirty percent (± 30 %) of the contract price.
6.0	The rates quoted shall be inclusive of cleaning of site of any vegetation, dressing and leveling etc including fixing of grid pillars, benchmarks etc required for commencement of site activities. No separate payment will be made towards the same.
7.0	Rates shall be quoted in figures and in words in clear legible writing. No overwriting is allowed. All scoring and cancellations should be countersigned and in case of illegibility the interpretation of engineer shall be final. All entries shall be in English language.
8.0	All works item wise shall be measured upon completion and paid for at the rates quoted and accepted.
9.0	The tender shall be deemed to have studied the specifications, details of work to the done within the time schedule attached and to have acquainted himself of the conditions prevailing at site.
10.0	Engineer's decision shall be final and binding on the contractor regarding clarification of items in the schedule with respect to the other sections/volumes of the contract.

VOLUME-IIIA

PRICE SCHEDULE, REV-1

(APPLICABLE FOR SCH-4 (NORTH-EASTERN, IE SIKKIM, ASSAM, MEGHALAY, ARUNACHAL PRADESH, MIZORAM, NAGALAND AND TRIPURA) PROJECTS)

Rate contract (1 year) for geotechnical investigation & topographical survey for upcoming projects of various capacities under different states of Eastern Region, namely West Bengal, Jharkhand, Bihar, Orissa, Chattisgarh and North-Eastern region.

TENDER NO - PSER:SCT:MIS-C1106:10

SCH-4.2 - MAIN SCHEDULE

SL NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.0	**GEOTECHNICAL INVESTIGATION**				
1.1	Mobilisation of necessary equipments, men and materials to the project site for carrying out the geotechnical investigation and demobilisation of the same after completion of all the field works etc all complete as per specification, drawings and as directed by the engineer. 1 (One set) comprising of minimum indicative list of equipment to be deployed as per Annexure-D of Volume-II of tender. Any additional equipments if required shall be mobilized as per the directions of the BHEL engineer to match the work schedule without extra cost.	1	LS		
1.2	Making 150mm nominal diameter bore hole at various locations upto a maximum depth of 10m below ground level in all types of soil including laterite using suitable approved method of boring including chiselling, cleaning, providing casing pipes as required or as directed; performing standard penetration test at every 2m interval down to 10m depth below ground level and at every 3m interval beyond 10m depth, at change of strata and at depths wherever undisturbed soil samples could not be collected; collection of undisturbed soil samples at every 2m interval down to 10m depth below ground level and at every 3m interval beyond 10m depth and at change of strata; collection of disturbed soil samples and water samples, sealing and packing of samples, observation such as ground water table etc; transportation of all the collected samples to the laboratory and back filling of boreholes with sand on completion of the same etc all complete as per specification and as directed by the engineer.	300	RM		

SL NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.3	Making 150mm nominal diameter bore hole up to a maximum depth of 40 m below ground level at various locations in all types of soil including laterite using suitable approved method of boring including chiselling, cleaning, providing casing pipes as required or as directed; performing standard penetration test at every 1 m interval alternate to collection of undisturbed soil samples up to 10 m depth below ground level and at every 1.5 m interval alternate to collection of undisturbed soil samples beyond 10 m depth, at change of strata and at depths wherever undisturbed soil samples could not be collected; collection of undisturbed sample (UDS) at every 1 m interval alternate to conducting standard penetration test up to 10 m depth below ground level and at every 1.5 m interval alternate to conducting standard penetration test beyond 10 m depth; collection of disturbed soil samples and water samples, sealing and packing of samples, observation such as ground water table etc; transportation of all the collected samples to the laboratory and back filling of boreholes with sand on completion of the same etc all complete as per specification and as directed by the engineer-in-charge for depth below ground level.	2580	RM		
1.4	Core drilling (Nx size) in rock up to a maximum of 25m depth below ground level using hydraulic feed rotary drill and double tube core barrel with diamond bit including collection of core samples, performing SPT at locations where core recovery is less than 20%, maintaining continuous record of core recovery and RQD, keeping the cores in wooden core boxes, transporting the cores to laboratory, back filling the holes with 1 part of cement : 3 part of sand grout on completion of the same etc all complete as per specification, drawings and as directed by the engineer.	450	RM		
1.5	Excavating trial pit (TP) of size 3m x 3m at various locations upto 4m depth below ground level in all types of soil and weathered rock which can be excavated with pick axe/ crow bar etc including sheeting or shoring the sides for the purpose of stability, dewatering and maintaining the pit dry at all times, collecting disturbed/ undisturbed samples at 1m interval and at final depth and transporting all the collected samples to the laboratory; backfilling of the pit with excavated material etc all complete as per specification and as directed by the engineer.	144	CUM		
1.6	Conducting plate load test (PLT) in various locations at specified depth complete as per specification, drawings and as directed by the engineer. Payment for making the pit of suitable size, maintaining it dry and backfilling etc shall be paid separately as per above item.	3	EACH		
1.7	Conducting cyclic plate load test (CPLT) in various locations at specified depth complete as per specification, drawings and as directed by the engineer. Payment for making the pit of suitable size, maintaining it dry and backfilling etc shall be paid separately as per above item.	4	EACH		
1.8	Conducting cross hole shear wave test (CHSWT) in bore hole in all types of strata at all depths such as 2m, 4m, 6m, 8m, 10m, 13m, 16m, 19m, 22m, 25m, 28m, 31m, 34m, 37m & 40m below ground level including preparation of borehole, providing PVC liner, grouting and backfilling with sand after completion of the test etc all complete as per specification, drawings and as directed by the engineer. Cost of the borehole and backfilling etc shall be paid separately as per above item.	6	EACH		

SL NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.9	Conducting cross hole shear wave test (CHSWT) in bore hole in all types of strata at 2m, 4m, 6m, 8m, 10m, 12m, 15m, 18m, 20m, 25m and 30m depth below ground level including drilling and preparation of required number of bore holes, providing PVC liner, grouting and backfilling with sand after completion of the test etc all complete as per specification, drawings and as directed by the engineer.	3	EACH		
1.10	Performing dynamic cone penetration test (DCPT) at various locations using 65mm cone with circulation of bentonite slurry etc all complete as per specification, drawings and as directed by the engineer.	10	EACH		
1.11	Performing static cone penetration test (SPT) at various locations complete as per specification, drawings and as directed by the engineer.	10	EACH		
1.12	Conducting field vane shear test (FVST) in various locations at specified depth including collection of disturbed soil sample etc all complete as per specification, drawings and as directed by the engineer.	5	EACH		
1.13	Conducting electrical resistivity test (ERT) at various locations complete as per specification, drawings and as directed by the engineer.	35	EACH		
1.13.1	Conducting pump in type field permeability test (FPT) by constant head or falling head method (suitability of type of test shall be as per site conditions) in various boreholes at specified depth including providing packers as required etc all complete as per specification, drawings and as directed by the engineer. Cost of the borehole and backfilling etc shall be paid separately as per above item.	2	EACH		
1.13.2	Conducting field permeability test in boreholes for rocky stratum at specified depth by double packer method complete as per specification, drawings and as directed by the engineer. Cost of the borehole and backfilling etc shall be paid separately as per above item.				
1.13.2.1	Double packer method.	2	EACH		
1.14	Conducting pressuremeter test (PMT) in various bore holes in all types of strata at all depths such as 2m, 5m, 8m, 11m, 14m, 17m, 20m, 23m, 26m, 29m, 32m, 35m, 38m & 40m below ground level including preparation of bore hole of required size etc all complete as per specification, drawings and as directed by the engineer. Cost of the borehole and backfilling etc shall be paid separately as per above item.	5	EACH		
1.15	Conducting pressuremeter test (PMT) in various bore holes at all depth such as 3m, 5m, 7m, 9m, 11m, 13m, 15m, 18m, 20m, 23m, 26m, 30m & 35m depth below ground level in all types of strata including preparation of bore hole of required size etc all complete as per specification, drawings and as directed by the engineer.	4	EACH		
1.16	Conducting seismic refraction test (SRT) at various locations complete as per specification, drawings and as directed by the engineer.	1000	RM		
1.17	Conducting Laboratory Test on soil samples at an approved laboratory including preparation of soil samples to determine the following properties etc all complete as per specification.				
1.17.1	Bulk density and moisture content.	50	EACH		
1.17.2	Sieve analysis.	100	EACH		
1.17.3	Hydrometer analysis.	30	EACH		
1.17.4	Liquid limit and plastic limit.	100	EACH		

SL NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
1.17.5	Shrinkage limit.	30	EACH		
1.17.6	Specific gravity.	30	EACH		
1.17.7	Swell pressure.	30	EACH		
1.17.8	Free swell index.	30	EACH		
1.17.9	Relative density.	30	EACH		
1.17.10	Unconfined compressive strength.	50	EACH		
1.17.11	Direct shear test.	100	EACH		
1.17.12	Box shear test.	50	EACH		
1.17.13	Triaxial shear test.				
1.17.13.1	Unconsolidated undrained test.	50	EACH		
1.17.13.2	Consolidated undrained test with the measurement of pore water pressure.	50	EACH		
1.17.13.3	Consolidated drained.	50	EACH		
1.17.14	One dimensional consolidation test.	50	EACH		
1.17.15	Standard Proctor compaction test.	10	EACH		
1.17.16	CBR test at following.				
1.17.16.1	Soaked condition.	10	EACH		
1.17.16.2	Un-soaked conditions.	10	EACH		
1.17.17	Chemical analysis.	10	EACH		
1.18	Conducting Laboratory Test on rock samples including preparation of the samples to determine the following properties etc all complete as per specification.				
1.18.1	Moisture content, porosity & density.	50	EACH		
1.18.2	Specific gravity, hardness.	30	EACH		
1.18.3	Slake durability index.	30	EACH		
1.18.4	Unconfined compressive strength (both at saturated and in–situ water content).	75	EACH		
1.18.5	Point load strength.	30	EACH		
1.18.6	Deformability test (Saturated & dry sample).	30	EACH		
1.19	Conducting chemical test on water samples to determine the carbonate, sulphate, chloride and nitrate contents, pH value, turbidity, organic matter and any other chemicals harmful to foundation material etc all complete as per specification.	10	EACH		
1.20	Conducting chemical test on 2:1 water : soil extract to determine the carbonate, sulphate, chloride and nitrate contents, pH value, turbidity, organic matter and any other chemicals harmful to foundation material etc all complete as per specification.	10	EACH		
1.21	Preparation and submission of draft report in 3 copies and final report in 5 hard copies and 2 soft copies on 3½" floppies after the approval of draft report including all field records, laboratory test results, graphs, analysis of test results and recommendation etc all complete as per specification.	1	LS		
SUB-TOTAL-1 (GEOTECHNICAL INVESTIGATION)					
2.0	**TOPOGRAPHICAL SURVEY**				

SL NO	DESCRIPTION	QUANTITY		RATE (Rs)	AMOUNT (Rs)
2.1	Carrying out bench mark from the nearest GTS bench mark or any other available source as approved by the engineer-in-charge to different locations in the project area including clearing of jungles and/or cutting trees and any other works required for completion of the said item etc all complete as per specification and instructions of the engineer-in-charge. (Construction of bench mark pillar to be paid separately)	3	KM		
2.2	Carrying out topographical survey of plant and allied areas showing all permanent & general features and detailed contour survey by taking spot levels at 25m interval, carrying out cross section of canal/nallah by taking spot levels at 5m interval or less including clearance of jungles and cutting of trees etc which are interfering with the survey works and any other field works necessary for the completion of the said item, preparation and submission of all plans (maps), reports, floppy and originals etc all complete as per specification and instructions of the engineer-in- charge.	9	HCTR		
2.3	Carrying out topographical survey of plant and allied areas showing all permanent & general features and detailed contour survey by taking spot levels at 15m interval, carrying out cross section of canal/nallah by taking spot levels at 5m interval or less including clearance of jungles and cutting of trees etc which are interfering with the survey works and any other field works necessary for the completion of the said item, preparation and submission of all plans (maps), reports, CDs and originals etc all complete as per specification and instructions of the engineer-in- charge.	350	HCTR		
2.4	Construction of bench mark pillar/reference pillar/grid pillar at different locations including clearing of jungles, excavation, supply of materials, pillar marking, backfilling, white washing, painting on MS plate etc all complete as per specification, drawings and instructions of the engineer-in- charge.				
2.4.1	Bench mark pillar.	2	NO		
2.4.2	Grid/ reference pillar.	20	NO		
SUB-TOTAL-2 (TOPOGRAPHICAL SURVEY)					
3.0	**TOTAL-1+2 (GEOTECHNICAL INVESTIGATION AND TOPOGRAPHICAL SURVEY)**				
NOTE					
1.0	Bidder shall quote their rates/ price complete in all respects in the respective schedules as per provision of tender and technical specification.				
2.0	Bidder's total price at sl no 3.0 above will be shall be considered for evaluation.				
3.0	Bidder shall quote their rates for non-schedule items (items not covered in either geotechnical investigation schedule and topographical survey schedule) in the respective schedule.				

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SCH-4.3 - NON-SCHEDULE ITEMS

SL NO	DESCRIPTION	QUOTE `BELOW'/ `AT PAR'/ `ABOVE' RATE	
For items not covered in SCH-4.2 (Main schedule), bidder shall quote `below'/ `at par'/ `above' the Delhi Schedule of Rate (DSR) 2007 for following categories.			
1.0	Rate of complete item.		
2.0	Rate of supply of material at site only.		
3.0	Rate for execution complete excluding supply of materials.		