



भारत हेवी इलेक्ट्रिकल्स लिमिटेड
Bharat Heavy Electricals Limited
(A Govt. of India Undertaking)
Power Sector, Western Region,
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By FAX (PCC by COURIER/ SPEEDPOST)

Ref. No. BHE/PW/PUR/PARST-ELE/433-Amendment-01

Date 03/07/2006

To,
The Bidder

Dear Sir,

Sub: Amendment –01 of Tender Specification No. BHE/PW/PUR/PARST-ELE/433

Job: Erection, Testing, Assistance for Commissioning and Handing Over of Main Plant Electrical packages comprising of Transformer, Bus Duct, Electrostatic precipitator, VFD, Generator Control & Protection Panels, 6.6kv / 0.415 kv Switchgear Board, MCC, Soot Blower System, Excitation System, 220 volt Battery System, Electrical Hoist and associated items for unit #1 of 250 MW Paras TPS, Akola, Maharashtra..

Please refer Part–I Technical Bid Specification. We would like to amend some of the existing clauses of the tender specifications. The existing clauses shall now stand superceded by the amended clauses as described below:

I. Clause 4.6.4 Power Transformer (SN. 5)

The Generator Transformer (GT) main assembly will be made available at about **50-meter** distance away from its foundation. Main Assemblies Unit Auxiliary Transformer (UAT) and Station Transformer (ST) will be made available at about 85 meters away from the respective foundations. The Contractor shall have to transport the GT, UAT and ST from these locations to the respective foundations by making suitable necessary arrangement without any additional price to BHEL. There is a provision of permanent rail track between the points at which the transformers will be made available by BHEL and transformer foundations. BHEL's client will make such rail track available, which can be used for shifting of transformer up to foundation. Shifting operation shall include dragging, fixing of wheels, rollers and turning of transformer to a suitable location enroute to suit the layout. However accessories shall have to be shifted from stores. Contractors price for these three items shall include all costs including the aforesaid shifting.

II. SECTION-12: Terms of Payment

Section-12 (Terms of Payment) is being revised and superceded by the enclosed **"Section–12 (Revision-01 dated 03/07/2006)"**.

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BHEL:PSWR:Nagpur

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Ref. No. BHE/PW/PUR/PARST-ELE/433-Amendment-01

Date 03/07/2006

Sub: Amendment –01 of Tender Specification No. BHE/PW/PUR/PARST-ELE/433

In view of the above, the last date of tender submission of offer and date of Technical Bid opening are being rescheduled as under:

Last Date and Time for offer submission: **by 17:00 hrs of 10/07/2006**

Date and Time of Technical Bid Opening: **At 11:00 hrs on 11/07/2006**

You are requested to enclose as a part of your Technical Bid copy of this amendment along with enclosures duly countersigned on all pages by your authorized signatory and stamped with official seal as a token of your unqualified acceptance of this amendment.

Bidders may also obtain all updated information from the web page <http://www.bhel.com>
→ Tender Notification → View Corrigendums.

Thanking you,
Yours faithfully,
For Bharat Heavy Electricals Limited

DGM (Purchase)

Encl: Section-12 (Revision-01 dated 03/07/2006) – 7 pages

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TERMS OF PAYMENT

12.0.1

The contractor shall submit his monthly on account bills with all the details required by BHEL on specified date every month covering progress of work in all respects and areas from the 25th of previous calendar month to 24th of the current month.

12.0.2

Clause 2.6 of general conditions of contract shall be referred to as regards mode of payment, and measurement of the work completed.

12.0.3

Release of payment in each running bill will be restricted to 95% of the value of work admitted, as per the percentage break-up for the stage of work completion stipulated vide clauses hereinafter.

The 5% thus remaining shall be on account of workmanship guarantee of work executed. The same will be released after completion of the guarantee period of 12 months from the date of completion of entire work as certified by BHEL engineer. However, this amount may be released earlier on receipt and acceptance of bank guarantee of equal amount in prescribed format and the bg shall be kept valid till completion of such guarantee period and an additional six months claim period.

12.0.4

The payment for running bills will normally be released within around 30 days of submission of running bill with measurement sheets. Contractor shall make his own arrangement for making payment of impending labour wages and other dues in the meanwhile.

12.1 STAGES OF PROGRESSIVE PRO-RATA PAYMENTS

The progressive pro-rata payment will be released based on accepted item rates in following manner:

12.1.1

- (a) Progressive payment for erection, testing and Assistance for commissioning (94% of the total contract value as per the break up given hereinafter under the clause 12.1.1.1)
- (b) Progressive payment for providing installation (erection, testing & commissioning) supervision services (6% of the total contract value as per the details given hereinafter under the clause 12.1.1.2)

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12.1.1.1 Progressive Payment for Erection, Testing and Assistance for Commissioning:

The agreed rates for each item shall be paid on pro-rata basis progressively as per the break up given hereunder (aggregating 94%), based on the progress of work in each month. The contractor shall submit his running bills with the details of measurement required by BHEL engineer on or before 26th of every month covering progress of work in all respect in the area upto 24th day of the same month.

12.1.1.1.1 TRANSFORMERS (GT, UAT, ST): Item nos A.1, A.2 and A.3 of Rate Schedule		
SN	DESCRIPTION OF ACTIVITY	PERCENTAGE
01	COLLECTION OF MATERIALS, TRANSPORTATION POSITIONING ON FOUNDATION AND ALIGNMENT AS PER LAYOUT DRAWING	15%
02	INTERNAL INSPECTION OF CORE AND WINDING TAPS SWITCH OFF-LOAD/ON-LOAD, H.V./L.V. BUSHING TURRET ASSEMBLY, VACUUM PULLING, OIL FILTERATION AND FITTING OF OIL UPTO CORE AND WINDING LEVEL	13%
03	ASSEMBLY OF ALL ACCESSORIES, PIPES AND FITTINGS, CONSERVATOR TANK, COOLER BANK/RADIATOR BANK, BUSHINGS, MARSHALLING BOX, CABLING FROM MARSHALLING BOX TO FIELD DEVICES, FANS AND PUMPS ETC.	20%
04	OIL FILLING IN COMPLETE ASSEMBLED TRANSFORMERS, COMPLETION OF DRY OUT AND FILTERATION OF OIL OF COOLING BANK, ACCEPTANCE OF DRY OUT.	15%
05	PRE-COMMISSIONING CHECKS, ELECTRICAL TESTS, CALIBRATION AND PROTECTION AND INTER LOCK CHECKS	13%
06	INTEGRATED ELECTRICAL TESTING/ COMMISSIONING WITH ASSOCIATED CONNECTED EQUIPMENT, BACK CHARGING/FORWARD CHARGING	10%
07	FINISH PAINTING	05%
08	TRIAL RUN AND FULL LOADING	02%
09	COMPLETION OF ALL FACILITIES AND HANDING OVER	01%
Total		94%

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12.1.1.1.2 6.6 KV / 415V / DCDB SWITCHGEAR BOARDS, GENERATOR CONTROL/ PROTECTION PANEL & ACCESSORIES: Item nos. D.1 to D.9 of Rate Schedule		
SN	DESCRIPTION OF ACTIVITY	PERCENTAGE
01	COLLECTION OF MATERIAL AND TRANSPORTATION FROM BHEL STORES TO SITE	10%
02	PLACEMENT ON FOUNDATION, ASSEMBLIES ETC.	20%
03	ADJUSTMENT, ALIGNMENT, GROUTING, ELECTRICAL INTER-CONNECTIONS, INTER PANEL WIRING AND BUS BAR, INSTALLATION OF LOOSE ACCESSORIES ETC.	30%
04	PRE-COMMISSIONING AND ELECTRICAL TEST, MECHANICAL/ ELECTRICAL CHECKS INCLUDING PROTECTION, INTERLOCK TESTING AND MAKING THE SYSTEM READY BY ENERGIZATION	12%
05	INTEGRATED ELECTRICAL TESTING/ COMMISSIONING WITH ASSOCIATED CONNECTED EQUIPMENT	08%
05	ENERGIZATION OF SWITCH BOARD AND TRIAL OF INDIVIDUAL FEEDERS ON LOAD	10%
06	COMPLETION OF TRIAL RUN OF MAIN TG SET/FULL LOADING	02%
07	COMPLETION OF ALL FACILITIES AND HANDING OVER	02%
TOTAL		94%

12.1.1.1.3 EXCITATION SYSTEMS & ACCESSORIES, DAVR, GENERATOR, GT & UT PROTECTION & METERING PANELS: Item nos. F.1, G.1 to G.2 of Rate Schedule		
SN	DESCRIPTION OF ACTIVITY	PERCENTAGE
01	COLLECTION OF MATERIAL, TRANSPORTATION FROM BHEL STORE TO SITE	10%
02	PLACEMENT, ALIGNMENT, GROUTING, INTER CONNECTION OF BUS BAR AND WIRING, FIXING OF LOOSE COMPONENTS AND AIR EXHAUST OUTLET DUCT FOR REGULATION, FIELD FLUSHING AND THYRISTOR PANELS	60%
04	PRE-COMMISSIONING TESTS	10%
05	UNIT SYNCHRONIZATION AND STABILIZATION, INTEGRATED ELECTRICAL TESTING/ COMMISSIONING WITH ASSOCIATED CONNECTED EQUIPMENT	10%
06	TRIAL RUN AND FULL LOADING	02%
07	COMPLETION OF ALL FACILITIES AND HANDING OVER	02%
TOTAL		94%

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12.1.1.1.4 VARIABLE FREQUENCY DRIVE FOR I.D. FANS: Item no. E.1 of Rate Schedule		
SN	DESCRIPTION OF ACTIVITY	PERCENTAGE
01	COLLECTION OF MATERIAL, TRANSPORTATION FROM BHEL STORES TO SITE	10%
02	PLACEMENT, ALIGNMENT, GROUTING OF LOAD CONVERTOR/INVERTOR PANELS, COMMON CONTROL PANELS, FIXING OF HOT AIR EXHAUST DUCT ETC.	10%
03	VACUUM BREAKER PLACEMENT, ALIGNMENT, SUB-ASSEMBLIES, GROUTING ETC.	13%
04	PLACEMENT, ALIGNMENT OF POWER TRANSFORMERS, ASSEMBLIES OF LOOSE ACCESSORIES AND OIL FILLING	13%
05	DRYING OUT OF TRANSFORMERS	10%
06	PLACEMENT, ALIGNMENT OF D.C. LINK REACTOR	10%
07	PRE-COMMISSIONING TESTS ON LCI, COMMON CONTROL PANEL, BREAKERS, TRANSFORMERS, REACTOR ETC.	20%
08	NO LOAD TRIAL RUN OF MOTORS	05%
09	FULL LOADING AND TRIAL RUN OF UNIT	02%
10	COMPLETION OF ALL FACILITIES AND HANDING OVER	01%
TOTAL		94%

12.1.1.1.5 ISOLATED PHASE BUS DUCT: Item no. B.1 of Rate Schedule		
SN	DESCRIPTION OF ACTIVITY	PERCENTAGE
01	COLLECTION OF MATERIAL, TRANSPORTATION FROM BHEL STORES TO SITE	10%
02	ERECTION AND ALIGNMENT OF SUPPORTING STRUCTURE	10%
03	PLACEMENT OF BUS DUCT, SUB-ASSEMBLIES, LAVT CUBICLE, NG TRANSFORMER AND RESISTANCE CUBICLE, AIR PRESSURIZATION UNIT AND ITS PIPING AND ACCESSORIES, EXCITATION TRANSFORMER AND ITS TRUNKING CUBICLE, WALL FRAME ASSEMBLY, SEAL AIR BUSHINGS	20%
04	ALIGNMENT OF BUS DUCT ASSEMBLIES, WELDING OF CONDUCTORS, MAKEUP PIECES, SHUNTS, FLEXIBLES, CURRENT TRANSFORMERS AND VOLTAGE TRANSFORMER, SURGE PROTECTOR ETC. INSTALLATION, LINE, NEUTRAL TEE OFF DUCT CTs, WIRING UPTO MARSHALLING BOX, DPD TEST ON CONDUCTOR WELD JOINTS ETC.	20%
05	PRE-COMMISSIONING TESTS, HIGH VOLTAGE TEST	10%

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12.1.1.1.5 ISOLATED PHASE BUS DUCT: Item no. B.1 of Rate Schedule		
06	COMPLETION OF AIR LEAKAGE TEST	03%
07	FINAL BOX-UP AND END TERMINATION AND MAKING READY FOR ENERGIZATION	04%
08	COMPLETION OF SHORT CIRCUIT/OPEN CIRCUIT TEST WHICH INCLUDES FIXING AND REMOVING OF CERTAIN LINK AND NORMALISATION AND SYNCHRONIZATION OF THE UNIT, INTEGRATED ELECTRICAL TESTING/ COMMISSIONING WITH ASSOCIATED CONNECTED EQUIPMENT	10%
09	FINISH PAINTING	04%
10	TRIAL RUN AND FULL LOADING	02%
11	COMPLETION OF ALL FACILITIES AND HANDING OVER	01%
TOTAL		94%

12.1.1.1.6 SEGREGATED PHASE BUS DUCT: Item no. C.1 to C.9 of Rate Schedule		
SN	DESCRIPTION OF ACTIVITY	PERCENTAGE
01	COLLECTION OF MATERIAL, TRANSPORTATION FROM BHEL STORES TO SITE	05%
02	ERECTION, ALIGNMENT, GROUTING SUPPORTING STRUCTURE	13%
03	PLACEMENT, ALIGNMENT, BOLTING OF CONDUCTOR, ENCLOSURE, COPPER FLEXIBLE, WALL FRAME ASSEMBLIES, SEAL OFF BUSHINGS, CONDUIT AND WIRING FOR ANTI-CONTAMINATION HEATERS, EARTHING INTER CONNECTING BRIDGING BUS DUCT BETWEEN THE SWITCH BOARD ETC.	43%
04	PRE-COMMISSIONING AND COMPLETION OF AIR LEAK TEST	10%
05	COMPLETION OF AIR PRESSURIZATION TEST	05%
06	ENERGIZATION OF INDIVIDUAL BUS DUCT AND SWITCH BOARD, INTEGRATED ELECTRICAL TESTING/ COMMISSIONING WITH ASSOCIATED CONNECTED EQUIPMENT	10%
07	FINISH PAINTING	05%
08	TRIAL RUN AND FULL LOADING	02%
09	COMPLETION OF ALL FACILITIES AND HANDING OVER	01%
TOTAL		94%

12.1.1.1.7 OTHERS: Item nos. H.1 to H.4, J.1 to J.12, K.1 to K.7, L.1, M.1 and M.2 of Rate Schedule)

Unit rate payment shall be made for other systems (ESP, Soot Blower, Electrical Hoist, DCDB, & Misc. Items) as per the rate schedule and percentage breakup for erection, testing, commissioning shall be as per detailed breakup given below: -

1. 75% of the agreed unit rates on completion of erection, testing and commissioning.

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2. 12% after completion of the individual system commissioning.
3. 4% after trial operation or unit handing over whichever is earlier.
4. 3% on completion of facilities and handing over.

12.1.1.1.8 Testing and Assistance for Commissioning of Equipment erected by other agencies: Item nos. N.1 to N.5 of Rate Schedule

1. 75% of the agreed unit rates on completion of testing and off-load commissioning.
2. 10% after on-load commissioning of each item.
3. 5% after completion of trial operation of unit.
4. 4% on completion of facilities and handing over

12.1.1.1.9

Cables (Item nos. P.1 to P.4 and Q.1 to Q.4 of Rate Schedule)

1. 65% after laying of cable.
2. 14% after dressing and termination.
3. 10% after testing of cables.
4. 05% after completion of facilities and handing over.

12.1.1.1.10

Cable Tray (Item nos. R.1 to R.3 and S.1 of Rate Schedule)

1. 75% after erection of trays in position
2. 15% after completion of welding/bolting.
3. 04% after completion of facilities and handing over.

12.1.1.1.11 PAYMENT FOR THE WORK COMPLETED

For the items where the payment is to be made against unit of weight, the actual weight of items erected by contractor will be paid after assessing the weight on the basis of shipping list or standard engineering practice. BHEL engineer's decision will be final and binding on contractor in this regard.

12.1.1.2 STAGE-WISE BREAK UP FOR PRO-RATA PROGRESSIVE PAYMENT FOR VARIOUS INSTALLATION (ERECTION, TESTING & COMMISSIONING) SUPERVISION SERVICES

For the purpose of payments to the contractor, 6% of the contract value shall be assigned as the amount payable towards installation (erection, testing & commissioning) supervision services.

For the purpose of release of progressive payments, month-wise break up for each of the above services will be jointly worked out by BHEL and the contractor at site at the time of start of work. This will be dynamically and regularly reviewed every month/quarter or mutually agreed periodicity and shall be re-calculated based on

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expected requirement of services keeping in view relevant aspects. On all the issues as above, BHEL engineer's decision shall be final & binding.

These services are to be rendered even during extended period (the contract extension may be due to any reason) without any additional payment/ compensation. The periodical review of monthly billing/payment break up shall take this aspect in consideration. Progressive payment for the service rendered will be made on certification of BHEL accordingly.

12.2 The bidder shall quote separate unit rates for each item of work listed in the rate schedule.

12.3 Measurement for Payment

12.3.1

In rate schedule, unit rates called for erection, testing and commissioning for various devices and equipment and payment shall be made accordingly.

12.3.2

For all payment purpose, measurement shall be made on the basis of physical measurement. Contractor shall make physical measurement in presence of BHEL engineer. Contractor shall maintain records for utilization of material system-wise.

12.3.3

All the surplus, scrap and serviceable materials shall be returned by the contractor to BHEL's stores as per the instruction of engineer

12.3.4

Wherever additional instrumentation work has to be carried out for performance guarantee test, the same has to be executed by the contractor as per the applicable rates already provided in the rate schedule.