



Bharat Heavy Electricals Limited

(A Government of India Undertaking)

Transmission Business Group, Noida

Sub-Contracts Management,

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AMENDMENT -04 to NIT 24564

Dated 29.10.2015

Ref: Tender Spec No: TBSM/ HVDC-AGRA/ CIVIL & ETC /GES/TENDER, Dated 03.10.2015

With reference to above tender for “ Execution and handing over of civil work, erection, testing and commissioning work of Serab Ground Electrode station associated with +/- 800kV, NE Agra HVDC project” and pre-bid meeting held on 21/10/2015. following changes may be noted.

1. An additional item has been added to the BOQ for civil works of Serab Ground Electrode Station as per ‘Addendum to civil BOQ’ (Annexure-Ia).
2. BOQ for ETC Works of Serab Ground Electrode Station (Annexure-II) has been revised.
3. Bidders are requested to submit their offer as per procedure mentioned below:

Bidders are required to quote as per following document

- (i) BOQ for civil works (Annexure-I). Not changed and shall be as per NIT.
- (ii) Addendum to civil BOQ (Annexure-Ia). Enclosed
- (iii) Revised price schedule format (annexure-A) . Enclosed
- (iv) Revised BOQ for ETC works (Annexure- II) . Enclosed
- (v) Revised summary of prices (Annexure-III). Enclosed

- All other terms & conditions of the tender specifications remain unchanged.
- Please submit copy of this amendment-04 duly signed & stamped along with your technical bid.

Krishna Swaroop Singh
(DGM/ TBSM)

ADDENDUM TO BOQ & SPECIFICATION NO. TB-343-607-003-F

Name of Project : +/- 800kV NE AGRA HVDC PROJECT
Name of Work : CIVIL WORKS FOR EARTH ELECTRODE STATION

S.No.	Description of Item	Unit	Quantity	Unit Rate(Rs)	Amount(Rs)
1	Extra for every additional lift of 1.5m or part thereof in excavation/banking excavated or stacked material				
(a)	All kinds of soil.	cum	6500	34.60	224900.00

**TRANSMISSION BUSINESS GROUP
(SUB- CONTRACTS MANAGEMENT)
TBG - NOIDA**

**PRICE SCHEDULE FORMAT (REVISED)
(ANNEXURE-A)**

**SUB: EXECUTION AND HANDING OVER OF CIVIL WORK,
ERECTION, TESTING AND COMMISSIONING WORK OF SERAB
GROUND ELECTRODE STATION ASSOCIATED WITH ±800KV,
NE-AGRA HVDC PROJECT.**

- (a) I/ We hereby agree to execute the civil work (Annexure-I & AnnexureIa) at -----
% (in figure) -----percentage (in words) Above / Below the rates of
items given in BOQ for civil works (Annexure-I & Annexure 1a)) of subject tender.

NOTE:

1. In case of discrepancy in rates in figure and words, the minimum will be taken into account by BHEL.

Date:
Place

Signature of tenderer
Name & Designation of authorized person(s) with seal



Annexure - 1: BOQ of ETC works for Serab ground electrode for Agra converter station (REVISED)

REV: 01, 26/10/2015

The scope of the work is limited to receipt, un loading, storage, verification, watch & ward during storage, transport from storage area to erection site, erection, pre-commissioning testing, commissioning testing, energization and Handing over of all the equipment

Sl. No.	Name of item	Qty	Unit	Unit Rate	Amount	Typical Drawing/ Reference document (for reference)
Electrical Equipment (refer 1JNL100387-894-REV 01, 1JNL100338-054-REV 00)						
1	ELIS Blocking Filter Reactor (Air-Core type) with Insulators, Arrester, resistor, Connectors etc., complete with connections to nearby equipment as per approved layout.	2	No.			92121027-01-AAA01E1-REV 02.
2	ELIS Blocking Filter Capacitor with support insulators and adapter plates for fastening to the support structure or foundation etc., complete with connections to nearby equipment as per approved layout.	2	No.			C820036891HSN000023 Rev. 0A
3	Surge Arrester with surge monitor complete with connections to nearby equipment as per approved layout.	1	No.			ZAB-912081SM-REV 0
4	Disconnecter with Insulators,MOM Box,terminal connectors, laying of Aux earthmat for MOM box complete with connections to nearby equipment as per approved layout.	10	No.			3C1G968-2663C-REV C
5	36 kV Solidcore Post Insulator complete with connections to nearby equipment as per approved layout.	6	No.			7171-DC-REV 0
Structure Erection complete with fixing of nuts & bolts (refer 1JNL100387-894-REV 01, 1JNL100338-054-REV 00)						
6	Lattice type structure	5	MT			
7	Pipe type structure	5	MT			
Bus Bar equipment with all accessories, fittings, fixture,clamps connectors ,welding, jumper connection etc where ever required (refer 1JNL100387-894, 1JNL100338-054)						
8	160mm Dia Aluminum Tube with 1 welding joint	10	m			
9	32.4 mm Dia, Aluminum conductor	200	m			
Material for burried electrode (refer 1JNL100324-165-REV 01 for layout & 1JNL100324-166-REV 02 for civil design information)						
10	Coke Backfill inside coke trench of cross-section size 0.8m x 0.8m along complete length as specified in document 1JNL100324-166	2250	cubic meter			

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Sl. No.	Name of item	Qty	Unit	Unit Rate	Amount	Typical Drawing/ Reference document (for reference)
11	Laying of Sub-Electrode elements (anodes with pre-fabricated cables of different lengths) in centre of coke trench complete with Cabling* (1Cx10 sq.mm.) as specified in document 1JNL100324-165. Dimension of anodes- 75mm diameter, 1200mm long. *scope of cabling shall be same as item 15.A below.	2560	No			
12	Installation of Junction box- Type 1 (32 cable in, 1 cable out) complete with termination of cables as per document 1JNL100324-165. Junction box dimension and details given in 1JNL100393-207-R0 & 1JNL100393-196-R0.	80	No			
13	Installation of Junction box- Type 2 (8 cable in, 1 cable out) complete with termination of cables as per document 1JNL100324-165. Junction box dimension and details given in 1JNL100393-247-R0 & 1JNL100393-253-R0.	10	No			
14	Supply & Laying of Geo Textile Fabric (1.5m wide, 3600m long) on top of coke bed as specified in document 1JNL100324-165	5400	m ²			1JNL100184-715-REV 01 (Requirement Specification)
15.A.	Cable preparation & laying: includes laying, dressing , glanding and termination of cables - laying can be either on supports, underground (in buried trench), over ground, in conduits, in wall etc. All other erection materials viz. ferrules, lugs, cable ties/ straps, markers etc. to be included ,where ever applicable, in the quoted rates. (Rate for construction of buried trench and supply & laying of conduit to be quoted separately as per BOQ item no. 15B and 15D)					
a.	3kV,1Core, 630 Sq mm Cable	4400	m			
b.	1kV,1Core, 35 Sq mm Cable	7550	m			
15.B.	construction of buried trench: The scope of work includes excavation, preparation of sand bedding including supply of sand, supply and installation of brick, back filling of earth and ramming, supply & installation of route markers.(design document for burried trench section will be provided after PO).					



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Sl. No.	Name of item	Qty	Unit	Unit Rate	Amount	Typical Drawing/ Reference document (for reference)
a.	3kV,1Core, 630 Sq mm Cable (2X2200m, 2 runs in parallel to be laid in trench with min. spacing of 450mm between cables)	4400	m			
b.	1kV,1Core, 35 Sq mm Cable	7550	m			
15.C.	<u>Supply of glands</u>					Refer document TB-343-316-148
a.	for 3kV,1Core, 630 Sq mm Cable	20	Nos.			
b.	for 1kV,1Core, 35 Sq mm Cable	160	Nos.			
c.	for 1kV,1Core, 10 Sq mm Cable (connected with electrode element)	2560	Nos.			
15.D.	supply & laying of PVC/GI pipes. Tentative optional Sizes are given below, payment shall be done as per execution.					
a.	50mm Dia. PVC pipes	500	m			
b.	110mm Dia. PVC pipes	500	m			
c.	160mm Dia. PVC pipes	500	m			
d.	200mm Dia. PVC pipes	500	m			
b.	GI pipe (max. 150 dia.)	500	m			
16	Laying of Soil temperture & moisture sensor in connection pit complete with termination of sensing cables in junction box alongwith pole mounting of Junction box above ground.	20	No			
17	Watering system for Serab ground electrode station minimum consisting of following items. (complete Design, SUPPLY & ETC is in bidder's scope) Any other item for a fully functional watering system needs to be supplied by contractor without any price implication to BHEL. contractor to submit the design document & BOQ for approval.					requirement as per 1JNL375313
a.	pump (min. 2 HP) with deisel engine as prime-mover (from POWERGRID approved make)	2	No			
b.	water tank of 2 KL (complete with mounting stand, supply and installation)	1	No			



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Sl. No.	Name of item	Qty	Unit	Unit Rate	Amount	Typical Drawing/ Reference document (for reference)
c.	Piping for watering from the tank through electrode trench (2x3400m length, pipe dia should be selected by vendor suitably as per design input and to maintain adequate continuous flow of water throuout the electrode trench).	6800	m			
18	Earthing mat					refer document 1JNL376367, rev 00
a.	75x12 GI flat (approx.)	100	m			
b.	40mm dia. MS rod (approx.)	300	m			
c.	40mm dia Rod eletrode for surge arrester	1	No			
19	Construction of indoor store (200 sq. m. as per standard specification)	1	No.			
20	Construction of open store (200 sq. m.)	1	No.			
21	Illumination complete with cabling & conduiting for Guard Hut including supply & fixing of:					
a.	CFL lamp fitting	2	No			
b.	exhaust fan	1	No			
c.	ceiling fan	1	No			
d.	Switchboard with 2 5/15A sockets and 4 switches	1	No			
	Total Amount (Rs.)					



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REV: 01, 26/10/2015

<u>Following also forms the scope of ETC work in addition to above, but not limited to this.</u>	
1	The quantities given in items mentioned above may undergo a change to any extent.
2	Quoted rates are deemed to be inclusive of miscellaneous works viz erection of clamps and connectors.
3	Supply of all paint, welding electrodes, grease for clamps & connectors and other consumable required by ETC contractor shall be part of ETC works. Paint, welding electrode, grease make etc. is subject to BHEL/CUSTOMER site incharge approval.
4	Equipment erection (say Isolator) means complete erection, metallics, post insulator, connectors (expansion/rigid tubular for Al.Tube / single/double/quadruple conductor), connection to the next in line (if connected to overhead busbar or droppers) including PG clamps/Tee connectors etc. This will be clear from the enclosed electrical layout drawings.
5	Equipment and tower erection would include supply and erection of miscellaneous items , viz labels of equipments ,danger plates , device number marking on the equipment etc as per site requirements. Supply & Mounting of Danger plates shall be as per IS-2551, latest ammendment.
6	Welding of Aluminium tubes (supply of welding sleeve excluded) is in ETC contractor's scope and joints shall be tested by radiography. Welding and Bending machines and any other equipment will be in ETC Contractor scope.
7	Cranes and other TNP required to complete the job shall be provided by bidder only.
8	Testing istruments (duly calibrated) have to be arranged by ETC Contractor at it's own cost (List is only provided for information , if any other instrument not mentioned below but required for sucessful completion of ETC work shall be in ETC contractor's scope).
8.1	5kV/1kV Megger
8.2	1Ph Variac
8.3	Multimeters
8.4	Clamp on meter etc.

ANNEXURE-III (Revised)

SUMMARY OF PRICES FOR EXECUTION AND HANDING OVER OF CIVIL WORK, ERECTION, TESTING AND COMMISSIONING WORK OF SERAB GROUND ELECTRODE STATION ASSOCIATED WITH ± 800KV, NE-AGRA HVDC PROJECT.

Tender Spec. No. TBSM/HVDC-AGRA/CIVIL & ETC/GES/TENDER, Date: 03.10.2015

Sl No.	Description	Amount (Rs.)
1	Amount as per the rates in BOQ for civil works of Serab Ground Electrode Station (Annexure-I)	128,51,467.94
2	Amount as per the rates in addendum to BOQ for civil works of Serab Ground Electrode Station (Annexure-Ia)	2,24,900.00
3	Total BOQ amount for civil work (1+2)	130,76,367.94
4	Value of percentage above/below to the total amount for civil works (Annexure-I & Ia) (As indicated in revised Price Schedule Format, Annexure - A).% above/ below
5	Total amount for civil works after consideration of percentage above/below.	
6	Total amount for ETC Works of Serab Ground Electrode Station (Revised, Annexure-II)	
7	Total Cost in Rs. (5+6)	