

# SAGARDIGHI TPS,1X660MW

**CORRIGENDUM  
NO. 3 dt.  
15.10.2024**

**Electrical and C&I Erection & Commissioning  
Works Ash Handling Plant (AHP)**

**Tender Ref. No.  
Enquiry No.  
88/24/6079/JRK Dated  
21.09.2024**

**Please note the following point**

Sl. No.	Event Description	TO NOTE
1	Techno-commercial	Corrigendum issued for the following: 1. <b>Technical Corrigendum attached. Vendors to quote accordingly.</b>
2	All other terms & conditions	<b>Other tender conditions remain unchanged.</b>

**Note:**

Also, please note that the full tender document can be downloaded from the website  
<https://eprocurebhel.co.in/nicgep/app>

<b>Contact Person:</b>	
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All other terms and conditions remain the same as per the original enquiry and it's subsequent amendment / addendum / corrigendum /clarification.

Any further addendum / corrigendum/ clarification/ notice of due date extension such issued shall be part of the bidding documents and this will be available at the web site from where the original documents have been received / downloaded by the bidder.

Hence bidders are requested to visit the web site on regular basis.

Tender No.: 88/24/6079/JRK Dated 21.09.2024

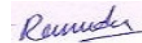
Date: 10.10.2024

Project: 1x660MW Sagardighi

Item: Electrical and C&I Erection & Commissioning Works Ash Handling Plant (AHP)

**TECHNICAL CORRIGENDUM-1**

Sl. No.	Reference Document/ Page/ Clause/Sl. No	Existing BHEL Item Description	BHEL Item Description to be read as
1	Annexure-VI Billing Break Up S. No. A.16	<p>Annexure-VI Billing Break Up S. No. A.16. Cable Termination/ Joints : (1 Run of Termination indicates termination of Cable at both ends for all cores including cable glanding , fixing of lugs &amp; cable tag, continuity checking, drilling of gland plates, supply &amp; fixing of ferrule for all cores as per specification etc).</p> <p>Ferrules/ sleeves shall be from electronic ferrule machine printed and the electronic ferrule machine shall be arranged by contractor. <u>Supply of glands, lugs &amp; termination kits not included in this line item.</u></p> <p>For any straight through joint - 1 run end termination rates shall be considered (Glanding,termination,Continuity check,ferruling - With Protocol-80%,Punch Point rectification - 10%Handing Over-10%)</p>	<p>Annexure-VI Billing Break Up S. No. A.16. Cable Termination/ Joints : (1 Run of Termination indicates termination of Cable at both ends for all cores including cable glanding , fixing of lugs &amp; cable tag, continuity checking, drilling of gland plates, supply &amp; fixing of ferrule for all cores as per specification etc). Ferrules/ sleeves shall be from electronic ferrule machine printed and the electronic ferrule machine shall be arranged by contractor. <u>Supply of glands, lugs &amp; termination kits is included in this line item.</u></p> <p>For any straight through joint - 1 run end termination rates shall be considered (Glanding,termination,Continuity check,ferruling - With Protocol-80%,Punch Point rectification -10%Handing Over-10%)</p>



Dasaratha Ramudu V  
Engineer/Electrical-Engg.



M Veeranjanyulu (Manager/FES & CE)



Raj Kishore Majhi(DGM/Electrical-Engg.)

UN-PRICED BID FORMAT		
(To be submitted along with PART-1 BID with “QUOTED (Yes/ No)” written against Part-B)		
PROJECT: SAGARDIGHI TPS,1X660MW Extn. Unit-5 Stage- III		Rev.00
ENQUIRY NO. : -----		
ITEM/ WORK:Electrical and C&I Erection & Commissioning Works Ash Handling Plant (AHP) for SAGARDIGHI TPS,1X660MW		
Part-A (Instructions to bidders)		
1	Bidders shall only quote ‘Total Amount’ in the price bid as per portal format. Any other entry elsewhere in the price bid shall be treated as Null and Void.	
2	The above mentioned ‘Total amount’ is for the entire Bill of Quantity (BOQ) given in Part -C of the Price Bid as per portal format.	
3	BHEL has pre-fixed the weightages for the amount of individual items of Bill of Quantity with respect to the ‘Total Amount’ in Part-C.	
4	Based on the pre-fixed weightages, the amount for the individual items of the Bill of Quantity shall be arrived at. This amount shall be rounded off to the nearest rupee.	
5	Based on the quantities of individual item and the amount arrived in Sl. No: 4 above, unit rate of individual items shall be derived. This unit rate shall be rounded off to four decimal places.	
6	Bidders to note that this is an item rate contract. Payment shall be made for the actual quantities of work executed at the unit rate arrived at as per Sl. No. 5 above	
Part-B (Format to quote Total Amount)		
Total Amount for the entire Bill of Quantities (BOQ) given in Part C inclusive of Packing, forwarding and Freight charges but excluding GST. GST as applicable shall be payable extra at actuals.		In Figures: Rs. Quoted (Yes/ No)
		In Words: Quoted (Yes/ No)
Note: Bidders to quote Total Amount as per Price format of Portal only, which shall be taken into account for evaluation and awarding and hence, shall be complete in all respect for the full scope defined in tender specifications and in accordance with all terms & conditions of tender. Price evaluation criteria shall be as per clause 19.0 of Commercial Conditions of Contract.		
Part-C (Bill of Quantities)		
Electrical, Control & Instrumentation Equipment Erection, Testing, Commissioning works including handling of materials at site BHEL stores / storage yard, transporting to site of erection & supply of Erection & Commissioning related items		
SPECIFICATION NO : IS-1-18-2006/033		

Annexure-VI				
Sl.No.	Description of BBU Items	UoM	AHP Qty.	% Weightage
A	Equipment Erection/ Installation & Services			
A.1	Civil Works for Installations (Erection & Alignment- With Protocol-80%, Punch Point rectification -10%, Handing Over-10%)			
A.1.1	Underground excavation,backfilling and levelling ( Soft rock in majority )	Cubic Meter	80	0.0002677379
A.1.2	Underground excavation,backfilling and levelling ( Hard rock in majority )	Cubic Meter	40	0.0001338690
A.1.3	Digging & back filling for Treated Earth Pit (dimension as per drawing ) ( Soft rock in Majority areas)	Nos	14	0.0009457229
A.1.4	Digging & back filling the Treated Earth Pit (dimension as per drawing ) ( Hard rock in Majority areas)	Nos	8	0.0010808284
A.1.5	Digging and backfilling the Un-treated Earth Pit (3 m x 400 mm dia ) ( Hard rock in Majority areas)	Nos	33	0.0044584172
A.1.6	Construction of earth Pit Chamber with cover ( complete concrete ) for treated earth pits as per drawing- Supply of concrete,bricks, reinforcement rod and CI cover is included in bidder scope	Nos	22	0.0030961061
A.1.7	Miscellaneous chipping & breaking works or construction works with bricks or concrete.	Cubic Meter	20	0.0014073181
A.1.8	Application of Diamond Core Cutting Work using Hilti make DD200/350 with Hilti System including Machine, Consumable, Labour etc. complete. Size: 100 MM Dia. & 200 MM Depth.	Nos	20	0.0006755106
A.1.9	Preparation of cable trench ( 1meter below) Quantity mentioned is the length x width x depth of trench . Excavation, Backfilling of trench is included here. Supply of bricks/concrete/cements & all items as required for construction of trench and is included in this line item.	Cubic Meter	8	0.0001913933
A.1.10	Construction of Buried cable trench including excavation , riddled soil filling above cables, placing precast concrete slab 300x50(thick)- 4no placed together along 150mm side throughout length of cable trench , soil backfilling above precast concrete slabs & ramming , erection of cable route marker & fixing marker at min 50m interval f Vendor scope involves supply/ preparation of precast concrete slabs of dimension 150x300x50mm(thick) required as per above scope, cable route marker(Galvanised sheet steel 200x100x10mm thick ), along with ISA40x40x5 for fixing the route marker to concrete. Route marker shall have the Voltage grade & cable no embedded as intimated by BHEL Site incharge. Cable laying rates shall be payable separately. REFER BURIED TRENCH CONSTRUCTION AND LAYOUT ATTACHED.	Cu Mtrs	40	0.0009569663
A.2	Installation of Earthing ,Lightning Protection system as per Drawing- (Fabrication, erection, alignment, welding/bolting of earthing/ lightning protection strips; earth pits Completion -80%'Punch Point rectification -10%,Handing Over-10%)			
A.2.1	GS FLAT 75 X 10 mm(approx 6 kg/m)	Mtrs	2140	0.0051015823
A.2.2	GS FLAT 50 X 6 mm(approx 2.5 kg/m)	Mtrs	5264	0.0103721280
A.2.3	GS FLAT 35 X 6 mm(approx 1.2 kg/m)	Mtrs	520	0.0002488468
A.2.4	GS FLAT 25 X 6 mm(approx 1.2 kg/m)	Mtrs	80	0.0000382841
A.2.5	GS FLAT 25 X 3 mm(approx 0.6 kg/m)	Mtrs	7640	0.0036561341
A.2.6	GS WIRE 3.15 DIA 8 SWG (approx 0.131 kg/m)	Mtrs	1320	0.0002785752
A.2.7	40MM DIA, 3 MTR LONG MS ROD (Burying underground) as per drawing	Mtrs	1500	0.0073883173
A.3	Earth Pits Erection			
A.3.1	Untreated Earth Pit- Driving 3m 40 mm dia rods below FGL and its Test Links where ever applicable. Earth electrode & test links supplied by BHEL. Bidder Scope includes measurement of earth resistance using earth resistance kit.	Nos	33	0.0026313780
A.3.2	Treated Earth Pit and its test links - 1no 100 mm dia CI pipe Earth electrode, fixing of funnel &wire mesh , filling pit with bentonite, salt & charcoal and sand as per drawing. Supply of bentonite,salt,charcoal excluded in this line item. Bidder Scope includes measurement of earth resistance using earth resistance kit.	Nos	22	0.0049537634
A.4	Lightning Protection system			
A.4.1	Lightning Protection - VERTICAL AIR TERMINATION RODS-GALVANISED MS ROD VERTICAL CONDUCTOR 20MM DIA, 1M LONG, POINTED AT ONE END WITH 150X150X6 (THK)MM GALVANIZED MS PLATE ALONG WITH HARDWARE	Nos	5	0.0003089068
A.4.2	Lightning Insulator (epoxy conical) suitable for fixing 75x10mm/25x6 GS flat to structure/column/RCC walls etc with necessary mounting bracket, GI clamp, nut, bolt complete with all hardware with minimum 60mm isolation from GS.	Sets	600	0.0008444525
A.4.3	CLAMP FOR FIXING 75X10 MM ALONG WITH NECESSARY HARDWARE ON THE PARAPET WALL AS PER THE ATTACHED DRAWING	Set	560	0.0011821536
A.5	Steel Support Installation works- including Cutting , Fabrication for tray/ equipment erection/base frame for panel erections. Supply of Steel by BHEL (Fabrication/ Pre assembly, Erection, Alignment, welding/bolting and if applicable chipping/grouting/painting-80%; Punch Point rectification -10%;Handing Over-10%)			
A.5.1	ISA 50X50X6 (GALVANISED)	MTons	4	0.0027665666
A.5.2	ISMC -100 (GALVANISED)	MTons	42	0.0290489489
A.5.3	ISMC -150 (GALVANISED)	MTons	11	0.0076080580
A.6	MS/ GI steel structure- Fabrication, Fitting & supply & fixing of all bolts , nuts, washers, clamps,anchor,fastners and hardware accessories ( including full painting) for canopy. Supply of paints in bidders scope. Supply of Steel not included in this line item.	MTons	2	0.0013832833
A.7	Fabrication, Fitting of Cable tray Covers, bends, tees, reducers, crossers of all types etc..with complete set of coupler plates , hardwares, nuts, washers, bolts & accessories at site	MTons	4	0.0027665666
A.8	Installation of Prefabricated items (Trays with Covers / bends, tees, reducers, crossers with complete set of coupler plates , hardwares, nuts, washers, bolts & accessories). (Fabrication and fixing/ welding/ bolting in position -70%;Earthing of cable trays-10%;Tagging of cable trays (including touch up painting & cable tray numbering on sides)-5%,Covering of trays where ever envisaged-5%,Handing Over-10%)			
A.8.1	GI - Ladder Cable trays			
A.8.1.1	150MM Ladder 2MM Thickness (1 no = 2.5 Meter)	Nos	2140	0.0129501704
A.8.1.2	300MM Ladder 2MM Thickness (1 no = 2.5 Meter)	Nos	1136	0.0083774155
A.8.1.3	450MM Ladder 2MM Thickness (1 no = 2.5 Meter)	Nos	16	0.0001463604
A.8.1.4	600MM Ladder 2MM Thickness (1 no = 2.5 Meter)	Nos	1372	0.0125504001
A.8.2	GI - Perforated Cable trays			

Annexure-VI				
Sl.No.	Description of BBU Items	UoM	AHP Qty.	% Weightage
A.8.2.1	50MM Perforated tray 2MM Thickness (1 no = 2.5 Meter)	Nos	96	0.0004863772
A.8.2.2	150MM Perforated 2MM Thickness (1 no = 2.5 Meter)	Nos	1536	0.0113272097
A.8.2.3	300MM Perforated 2MM Thickness (1 no = 2.5 Meter)	Nos	328	0.0028157336
A.8.2.4	600MM Perforated 2MM Thickness (1 no = 2.5 Meter)	Nos	412	0.0043717837
A.8.2.5	50MM Perforated trough 2MM Thickness (1 no = 2.5 Meter)	Nos	80	0.0004053144
A.9	<b>Cable Laying Preparations</b> (Erection & Alignment- With Protocol-80%,Punch Point rectification -10%,Handing Over-10%)			
A.9.1	<b>Laying of Pipes</b>			
A.9.1	Heavy duty PVC pipes - up to 100mm dia	Mtrs	8	0.0000114099
A.9.2	Hume pipe type NP2 - up to 150 mm dia	Mtrs	2	0.0000057055
A.9.3	Hume pipe type NP2 - 151-300 mm dia	Mtrs	8	0.0000228222
A.9.4	HDPE pipes -63mm dia	Mtrs	2	0.0000005248
A.9.5	HDPE pipes -32mm dia	Mtrs	2	0.0000005248
A.9.2	<b>Laying of Conduits &amp; Clamping - scope includes supply of Clamps, couplers and fixing hardware</b>			
A.9.2.1	GS pipes of up to 32 mm nominal bore	Mtrs	20	0.0000684631
A.9.2.2	GS pipes of 33-50 mm nominal bore	Mtrs	4	0.0000136926
A.9.2.3	GS pipes of 51-100 mm nominal bore	Mtrs	4	0.0000136926
A.9.2.4	GS pipes of 101-200 mm nominal bore	Mtrs	4	0.0000136926
A.9.3	<b>Laying of Flexible Conduits &amp; Clamping -scope includes supply of Clamps, couplers and fixing hardware</b>			
A.9.3.1	GS Flexible Pipes of up to 32 mm nominal bore	Mtrs	80	0.0000912841
A.9.3.2	GS Flexible Pipes of 33-50 mm nominal bore	Mtrs	4	0.0000045642
A.10	<b>Erection &amp; Alignment of Electrical, Control &amp; Instrumentation Panels</b> (Erection & Alignment- With Protocol-80%, Punch Point rectification , Completion of Facilities -10%, Handing Over-10%)			
A.10.1	<b>LT MCC Panels</b>			
A.10.2	AHP LT PMCC1-Compressor/VPH Area @+14.0m elevation-Approx.Dimensions of Each Panel:800MM(Width) X 1400MM(Depth) X 2400(Height) and Weight:700 KG/each	Nos	14	0.0031523989
A.10.3	AHP LT PMCC2-Compressor/VPH Area @+14.0m elevation-Approx.Dimensions of Each Panel:800MM(Width) X 1400MM(Depth) X 2400(Height) and Weight:700 KG/each	Nos	18	0.0040530843
A.10.4	AHP LT PMCC3-FA Silo Area @+4.0m elevation-Approx.Dimensions of Each Panel:800MM(Width) X 1400MM(Depth) X 2400(Height) and Weight:700 KG/each	Nos	12	0.0027020562
A.10.2	<b>220V DC Battery Charger(Dual FCB) and 220V DC Distribution boards</b>			
A.10.2.1	220V DC Battery Charger at AHP MCC1-Compressor/VPH Area @+14.00m elevation-Approx.Dimensions of Each Panel:2400MM(W) X 800MM(D) X 2400(H),Weight:750 KG/each	Set	2	0.0010235745
A.10.2.2	220V DC Distribution boards at AHP MCC1-Compressor/VPH Area @+14.00m elevation-Approx.Dimensions of Each Panel:2400MM(W) X 600MM(D) X 2100(H),Weight:200 KG/each	Set	1	0.0005117872
A.10.3	<b>Vibration Monitoring and Analysing System-VMAS</b> (including E&C of VMAS Panel/Vibration Sensor/mounting pad, Phase marker bracket, Shaft vibration sensors/JB/ Cabling/terminations etc.)			
A.10.3.1	VMAS Panel located at AHP LT PMCC1-Compressor/Vaccum PH Area @+14.0m elevation:Approx.(LxBxH)=(2.4Mx0.75Mx2.2M),Approx.Weight=750Kgs	Nos	1.0	0.0002977883
A.10.3.2	VMAS Panel located at EXISTING AWPB PLC RIO @+4.70m elevation:Approx.(LxBxH)=(2.4Mx0.75Mx2.2M),Approx.Weight=750Kgs	Nos	1.0	0.0002977883
A.10.4	Electronic panels - Network panels/Station LAN/Modbus gateway panel/Repeater JB's/LIU/Ethernet switches etc.-Elevation as per site condition	Nos	2	0.0005955765
A.10.5	DC Fuse Boards/Local Panels/ JB/ Welding Sockets ( upto 100 kG) -Elevation as per site conditions	Nos	8	0.0023823062
A.10.6	Tables/ Chairs/ Computer Desks/ Almairah/ Document Shelves , all non equipment type items.	Nos	4	0.0011911531
A.10.7	Data Concentrator/Other Electronic panels.	Nos	3	0.0008933648
A.10.8	<b>Erection and Alignment of LT Dry Type Transformers</b> (Erection & Alignment- With Protocol-80%, Punch Point rectification -10%, Handing Over-10%)			
A.10.8.1	Transformer Rating-1600 KVA:11KV/ 415V located at AHP LT PMCC1-Compressor/Vaccum PH Area @+14.0m elevation:Approx.(LxBxH)=(3.90Mx2.1Mx2.95M),Apprx.Weight=6000Kgs	Nos	2	0.0025331771
A.10.8.2	Transformer Rating-1600 KVA:11KV/ 415V located at AHP LT PMCC2-Compressor/Vaccum PH Area @+14.0m elevation:Approx.(LxBxH)=(3.90Mx2.1Mx2.95M),Apprx.Weight=6000Kgs	Nos	2	0.0025331771
A.10.8.3	Transformer Rating-1000 KVA:11KV/ 415V located at AHP LT PMCC3-FA Silo Area @+4.0m elevation:Approx.(LxBxH)=(3.35Mx1.85Mx2.7M),Approx.Weight=4600Kgs	Nos	2	0.0025331771
A.11	<b>Erection and Alignment of LT Bus Duct (3MM Thick) including Copper and Alluminium Flexibles terminations at Transformer and MCC end as per Drawings.</b> (Erection & Alignment- With Protocol-80%, Punch Point rectification -10%, Handing Over-10%)			
A.11.1	Busduct Rating-2500Amps for 1600KVA Transformers and AHP LT PMCC1-Compressor/Vaccum PH Area @+14.0m elevation:Appr.(LXBXH) of Busduct is (10.5Mx0.8Mx0.4M)	Sets	2	0.0035464667

Annexure-VI				
Sl.No.	Description of BBU Items	UoM	AHP Qty.	% Weightage
A.11.2	Busduct Rating-2500Amps for 1600KVA Transformers and AHP LT PMCC2-Compressor/Vaccum PH Area @+14.0m elevation:Appr.(LXBXH) of Busduct is (4.5Mx0.8Mx0.4M)	Sets	2	0.0015199143
A.11.3	Busduct Rating-1600Amps for 1000KVA Transformers and AHP LT PMCC3-FA Silo Area @+4.0m elevation:Approx.(LXBXH) of Busduct is (4.5Mx0.5Mx0.4M)	Sets	2	0.0015199143
A.12	<b>Special Installations:Batteries (220VDC, 24V DC and 230V AC)</b> (Erection & Alignment- With Protocol-70%,Commissioning - With Protocol-10%,Punch Point rectification , Completion of Facilities -10%,Handing Over-10%)			
A.12.1	Complete installation & commissioning of 220V LEAD ACID PLANTE HIGH DISCHARGE TYPE BATTERY-1.85 ECV 108 CELLS WITH ALL ACCESSORIES, Fuse box, battery stands and Cabling from battery to charger panels,DCDB including DC insulation monitoring system in each.DCDB, etc at +4.7m elevation. Cabling implies laying,dressing of cables and supply & erection of cable glands, lugs, tags, ferrules, clamps,conduits etc. included in this line item.Scope includes interconnection of Cells & rows , placing of racks/stands , filling of Electrolyte, assistance to Battery bank commissioning executive etc. Contractor shall also provide support for Charging and discharging of battery by arranging salt water , drum etc.	Sets	1	0.0016887800
A.12.2	Periodic maintenance of batteries located which includes cleaning, tightning of clamp/vent , grease removal , checks for leakage etc	Sets	6	0.0003268806
A.13	Computer/ HMI station/printer with all power & communication cords, monitors, CPU's	Sets	1	0.0004878580
A.14	Installation of Instruments like pressure transmitters/switches,RTD's/temperature switches, flowmeters,level meters, solenoids etc.	Nos	6	0.0002673381
A.15	<b>Cable Laying works</b> -Scope Includes laying,dressing,supply & fixing of clamps/cable ties with required accessories etc as per technical specification. Supply of Fire resistant nylon cable ties,clamps & accessories as required are included in this line item. (Laying of cables - With Protocol-80%,Dressing, Tagging, Clamping,Punch Point rectification -10%Handing Over-10%)			
A.15.1	<b>Communication Cable Laying</b>			
A.15.1.1	Fibre Optic Cable Laying in HDPE conduit.HDPE supply and laying cost not included in this line item	Mtrs	1600	0.0022965913
A.15.1.2	Fibre Optic Cable Laying in Tray.	Mtrs	400	0.0001914206
A.15.1.3	Ethernet/ Lan coaxial/ IO bus/ Modbus/ Profibus etc. Cable Laying with Rigid/ flexible GI conduit as per requirement.Conduit supply cost not included in this line item.	Mtrs	600	0.0008612217
A.15.2	<b>G Type &amp; F Type (0.5 sqmm) Armoured Copper Screen/Instrumentation Cables laying</b>			
A.15.2.1	2P/4P/6P X 0.5 Sqmm Armoured Cable	Mtrs	52400	0.0313974325
A.15.2.2	8P/10P/12P X 0.5 Sqmm Armoured Cable	Mtrs	68400	0.0624422540
A.15.3	<b>G Type &amp; F Type (1.5 sqmm) Armoured Copper Screen/Instrumentation Cables laying</b>			
A.15.3.1	2P/ 4P/ 6P X 1.5 Sqmm Armoured Cable	Mtrs	16000	0.0095870023
A.15.3.2	8P/10P/12P X 1.5 Sqmm Armoured Cable	Mtrs	7600	0.0069380282
A.15.4	<b>2.5 Sqmm Armoured Copper Control Cable Laying</b>			
A.15.4.1	2C/3C/5C X 2.5 CU ARMOURED CABLE	Mtrs	30000	0.0179756293
A.15.4.2	7C/9C/12C X 2.5 CU ARMOURED CABLE	Mtrs	30400	0.0277521129
A.15.5	<b>1 Core - 1100V AC/ DC grade Armoured Copper/ Aluminium Cables Laying</b>			
A.15.5.1	Up to 1C X 95 SQ.MM CU/AL ARMOURED CABLE	Mtrs	1000	0.0007132643
A.15.5.2	1C X 120/150/185/240 SQ.MM CU/AL ARMOURED CABLE	Mtrs	1000	0.0008416005
A.15.5.3	1C X 300/240 SQ.MM CU/AL ARMOURED CABLE	Mtrs	1000	0.0008416005
A.15.6	<b>2 Core - 1100V AC/ DC Fire Survival grade Armoured Copper/ Aluminium Cable Laying</b>			
A.15.6.1	2C X 2.5/4.0/6.0/10.0/16.0 SQ.MM CU/AL ARMOURED CABLE	Mtrs	20400	0.0122234279
A.15.6.2	2C X 95/120/150/185 SQ.MM CU/AL ARMOURED CABLE	Mtrs	1000	0.0009128984
A.15.7	<b>3 Core - 1100V AC grade Armoured Copper/ Aluminium Cable Laying</b>			
A.15.7.1	3C X 2.5/4.0/6.0/10.0/16.0 SQ.MM CU/AL ARMOURED CABLE	Mtrs	6400	0.0045648915
A.15.7.2	3C X 25/35/50 SQ.MM AL ARMOURED CABLE	Mtrs	4400	0.0058990180
A.15.7.3	3C X 70/95/120 SQ.MM AL ARMOURED CABLE	Mtrs	4400	0.0080335064
A.15.7.4	3C X 150/185/240 SQ.MM AL ARMOURED CABLE	Mtrs	14900	0.0501551428
A.15.7.5	3C X 300 SQ.MM AL ARMOURED CABLE	Mtrs	800	0.0026928936
A.15.8	<b>3.5/ 4 Core - 1100V AC grade Armoured Cables Laying</b>			
A.15.8.1	4C X 4.0/6.0/10.0/16.0 SQ.MM CU/AL ARMOURED CABLE	Mtrs	8000	0.0057061144
A.15.8.2	3.5C/4C X 25/35/50 SQ.MM AL ARMOURED CABLE	Mtrs	44000	0.0589901803
A.15.8.3	3.5C/4C X 70/95/120 SQ.MM AL ARMOURED CABLE	Mtrs	34500	0.0462536641
A.15.8.4	3.5C/4C X 150/185/240 SQ.MM AL ARMOURED CABLE	Mtrs	800	0.0026928936
A.15.8.5	3.5CX300 AL 1.1KV, XLPE, FRLS, ARMOURED CABLE	Mtrs	4400	0.0148109146
A.15.9	<b>11kV HT Power Armoured Cable Laying</b>			
A.15.9.1	11 kV -HT Power - 3C X 240 Sqmm AL, Armoured Cable Laying	Mtrs	1600	0.0046100659
A.15.10	<b>3.3kV HT Power Armoured Cable Laying</b>			
A.15.10.1	3.3 kV -HT Power - 3C X 240 Sqmm AL Armoured Cable Laying	Mtrs	2250	0.0064829051



Annexure-VI				
Sl.No.	Description of BBU Items	UoM	AHP Qty.	% Weightage
A.16	Cable Termination/ Joints : (1 Run of Termination indicates termination of Cable at both ends for all cores including cable glanding , fixing of lugs & cable tag, continuity checking, drilling of gland plates, supply & fixing of ferrule for all cores as per specification etc). . Ferrules/ sleeves shall be from electronic ferrule machine printed and the electronic ferrule machine shall be arranged by contractor. Supply of glands, lugs & termination kits is included in this line item. For any straight through joint - 1 run end termination rates shall be considered (Glanding,termination,Continuity check,ferruling - With Protocol-80%,Punch Point rectification -10%Handing Over-10%)			
A.16.1	Communication Cable Termination/ Joints			
A.16.1.1	FOC Cable Terminations ( all the cores shall be Terminated at both ends)	Runs	8	0.0014257848
A.16.1.2	Ethernet/ Lan coaxial/ IO bus/ Modbus Cable Lan Cable Terminations.Crimping of UTP/LAN cables along with supply of suitable RJ45 or suitable connectors is also in bidders scope (1 run = termination at Both ends)	Runs	40	0.0016887908
A.16.2	Screen Cable Terminations-Including Supply of Glands, Lugs and Other Consumables			
A.16.2.1	G & F Type pair Cables up to 6 Pair ( 0.5 sqmm) (1 run = termination at Both ends)	Runs	800	0.0116846439
A.16.2.2	G & F Type pair Cables 8P to 12P Pair ( 0.5 sqmm) (1 run = termination at Both ends)	Runs	260	0.0049397132
A.16.2.3	G & F Type pair Cables up to 6 Pair ( 1.5 sqmm) (1 run = termination at Both ends)	Runs	120	0.0031699393
A.16.2.4	G & F Type pair Cables 8P to 12P Pair ( 1.5 sqmm) (1 run = termination at Both ends)	Runs	24	0.0007668005
A.16.3	Control Cable Terminations-Including Supply of Glands, Lugs and Other Consumables			
A.16.3.1	2.5 Sq mm Control Cable Terminations Up to 9 Core (1 run = termination at Both ends)	Runs	400	0.0058423219
A.16.3.2	2.5 Sq mm Control Cable Terminations 10C to 12C (1 run = termination at Both ends)	Runs	60	0.0011399338
A.16.4	Power Cable Terminations-Including Supply of Glands, Lugs and Other Consumables. Supply of bi-metallic lugs is covered elsewhere in the BoQ. Supply of Tinned Cu. & Aluminium lugs are covered in this line item.			
A.16.4.1	1/2/3/3.5/4 Core - 415 V grade Copper Cables upto 16Sqmm (1 run = termination at Both ends)	Runs	80	0.0009950222
A.16.4.2	1/2/3/3.5/4 Core - 415 V grade Aluminium Cables upto 16Sqmm (1 run = termination at Both ends)	Runs	40	0.0006572641
A.16.4.3	1/2/3/3.5/4 Core - 415 V grade Aluminium Cables 25 to 70 Sqmm (1 run = termination at Both ends)	Runs	40	0.0007873343
A.16.4.4	1/2/3/3.5/4 Core - 415 V grade Aluminium Cables 95 to 150 Sqmm (1 run = termination at Both ends)	Runs	20	0.0009470986
A.16.4.5	1/2/3/3.5/4 Core - 415 V grade Aluminium Cables 185 to 300 Sqmm (1 run = termination at Both ends)	Runs	30	0.0018700301
A.16.5	11 kV HT Power Cable Terminations			
A.16.5.1	11 kV - 3Core*240Sqmm AL Cable end terminations (1 run = termination at Both ends)	Runs	6	0.0005783036
A.16.6	3.3 kV HT Power Cable Terminations			
A.16.6.1	3.3 kV - 3Core*240Sqmm AL Cable end terminations (1 run = termination at Both ends)	Runs	16	0.0015421430
A.17	SiteServices rectification , Completion of Facilities -10%,Handing Over-10%)			
A.17.1	Health , Safety , Quality Works			
A.17.1.1	Identification/ Marking of equipments by Computerised stickers at AHP MCC-1, AHP MCC-2	Sets	12	0.0000675528
A.17.1.2	Lamination,framing & Mounting of Colored Flow Diagrams in Control Room- A0/A1 size, safety posters etc at AHP MCC-1, AHP MCC-2	Nos	4	0.0003377570
A.17.1.3	Vacuum/ Blower - Cleaning of MCC,DCS and other panels & House keeping of MCC buildings & Control rooms - 4 times cleaning at AHP MCC-1, AHP MCC-2	Times	8	0.0008556525
A.17.1.4	Installation of Fire proof sealing - Cables/ cable tray openings in walls and floors or through pipe sleeves from one area to another or one elevation to another, between the units and within the same unit, shall be sealed by a fire-proof sealing system. The fireproof sealing system (FPSS) shall effectively prevent the spread of fire from the flaming to the non-flaming side, in the event of a fire. The FPSS shall conform to relevant standard.Supply not included here	Kgs	200	0.0035820070
A.17.1.5	Installation/ Application of Fire retardant cable coating paints The cables shall be coated with fire protection material of 2 mm dry thickness at the strategic locations so as to limit the spread of fire.Supply not included here	Kgs	400	0.0013350391
A.17.1.6	Cleaning of panels erected by other agencies by Blower/vacuum etc	Times	80	0.0085565250
A.17.1.7	Painting of Feeder names in MCC/DCDB/DCFB/ACFB/ACDB/ Cable tray identification marking (min 75mm height) at end,branches,every 10Mtr in long tray runs & Painting of Welded Portions of Earthing and Lightning protection Flats/rods according to Technical Specification. Painting shall be as per industry standards. Scope includes supply of paint also.	Lot	1	0.0040796311
A.18	Project services (Providing services-90%, Handing Over-10%)			
A.18.1	Project services for arrangement of consumables, construction power , illumination, service water, hydra, crane, jcb, welding rods, site safety Helmets, tools and tackles , site measurement , reconciliation, customer certification and followup, gate pass application, documentation & billing works etc.	Man Month	24	0.0172255981
A.18.2	Project Services like submission of gatepass for personnel , vehicle , tools , testing kits, hydra, jcb, getting issued material from stores , police verification, commerical works,official procedures etc. at Service Point 1	Man Month	24	0.0172255981

Annexure-VI				
Sl.No.	Description of BBU Items	UoM	AHP Qty.	% Weightage
A.18.3	Project Services like submission of gatepass for personnel , vehicle , tools , testing kits, hydra, job, getting issued material from stores , police verification, commerical works,official procedures etc. at Service Point 2	Man Month	24	0.0172255981
A.18.4	Project Services like Arranging unarmed security round-the-clock in areas surrounding AHP MCC -1	Man Month	72	0.0395172949
A.18.5	Project Services like Arranging unarmed security round-the-clock in areas surrounding AHP MCC -2	Man Month	72	0.0395172949
A.19	<b>Commissioning Services as per Technical Specification</b> - Deputation of Electrical team with all required testing kits for commissioning of equipments. as per TS. Necessary barracading works including supply as required near equipment during commissioning is included in this line item (Testing & Commissioning (Local)with protocol-70%, Testing & Commissioning (Remote/Loop)with Load/drive with protocol - 10%,Successful Integrated sequence operation for 3 months with protocol -10%, Handing Over-10%)			
A.19.1	<b>SQTCCOD - Safety,Quality,Testing,Charging,Commissioning,Operation,Demonstration</b> and 24Hours Emergency trouble shooting support from starting to till 30 days from the date of Operation demonstration protocol.			
A.19.1.1	SQTCCOD of Treated Earth Pits/ Earth grid in each equipment area - 10 fine readings in each area as per Technical Specification One grid means all the earth pits of a building in totality including both earthing and lightning along with submisison of report (MCC, TP, PH, Con Gallery, Cable rack,Silo,Pump house, etc)	Grids	12	0.0036477779
A.19.1.2	SQTCCOD of Transformers including VCB operational checks.	Sets	6	0.0040024240
A.19.1.3	SQTCCOD of Busducts.	Sets	6	0.0040024240
A.19.1.4	SQTCCOD of Incomers (2 no.),Buscoupler(1 no.) , Bus PT/ Line PT (4 no.s) and all Control Supply transformer feeders/ control busses in MCCs - ( includes all protection relay , CT, BPT, LPT , CTD, Ammeter, Voltmeter, acb breaker , testing, scheme check , operation in load , current measurement , etc)	Sets	3	0.0054716609
A.19.1.5	SQTCCOD of ACB Motor/ Feeder outgoing feeders.	Nos	6	0.0037024150
A.19.1.6	SQTCCOD of RDOL/ DOL/ DDOL contactor feeders.	Nos	100	0.0448891646
A.19.1.7	SQTCCOD of SFU/ MCB/ MCCB outgoing feeders.	Nos	120	0.0141858088
A.19.1.8	SQTCCOD of MLDB, WDBs , ACDB, DCDB, PDB	Nos	8	0.0019364764
A.19.1.9	SQTCCOD of DCS Panels (Power,DI/DO/AO/AI/ Communication modules).	Nos	16	0.0018914412
A.19.1.10	SQTCCOD of Relay Panels ( Relay energisation from HMI & output voltages).	Nos	2	0.0002364301
A.19.1.11	SQTCCOD of HT motors including VCB operational checks	Nos	16	0.0068001689
A.20	<b>Statutory Certifications</b> (Providing services-90%, Handing Over-10%)			
A.20.1	Drawings and Protocols Submission & Approval	Lot	1	0.0042219486
A.20.2	Electrical Inspector clearance	Lumpsum	1	0.0201716699
A.20.3	Trouble shooting and Operation & Maintenance ( 1 commissioning engineer, 1 highly skiled, 1 skilled technicians with tools and tackles )	Shifts	292	0.0253741850
A.20.4	System study in Etap including fault level calculations and relay setting and relay co-ordination for 11KV, 6.6kV and 415V systems for the entire distribution network. The study report will substantiate all the input data/parameters, various technical considerations, detailed design calculations in an explanatory way. It will also contain the charts for recommended settings of IDMT & DMT graphs, major calculations, protection calculations, etc. Both hard copy and editable data files of the system studies will be furnished for online review by BHEL/WBPDCL	Lot	1	0.0052276740
A.20.5	Deputation of Testing Team with required kits , tools & plants for additional testing & commissioning requirements. <i>This is apart from the testing works envisaged in item A.20.1 &amp; shall be used by BHEL as per requirement</i>	Mandays	12	0.0030398125
A.21	<b>Material Handling &amp; Storage ( to be used for contingency requirement by BHEL)</b> (Providing Unloading & Storage services with protocols-80%.Issue, Reconciliation -10%,Handing Over-10%)			
A.21.1	Material Reciept, Unloading,Shifting to store, stocking & storage of materials.	Tons	34	0.0006136537
A.21.2	Material Reshifting at Site	Tons	4	0.0000779440
B	<b>Miscellenious Materials Supply of Electrical items.</b> Any material supplied by contractor must be of approved make wherever defined in contract and shall meet the technical specifications provided. Before procuring or bringing such material vendor shall mandatorily take approval from BHEL. ANY ITEM SHALL NOT BE DISPATCHED TO SITE WITHOUT WRITTEN APPROVAL FROM BHEL. (Receipt at site-80%, Installation(if applicable) -10%, Handing Over-10%)			
B.1	<b>Civil materials</b>			
B.1.1	Tarpaulin covers for storage	KGs	30	0.0002786522
B.2	<b>Earthing &amp; Lightening Protection</b>			



Annexure-VI				
Sl.No.	Description of BBU Items	UoM	AHP Qty.	% Weightage
B.2.1	Lightning Insulator (epoxy conical) suitable for fixing 75x10mm/25x6 GS flat to structure/column/RCC walls etc with necessary mounting bracket, GI clamp, nut, bolt complete with all hardware with minimum 60mm isolation from GS.	Sets	600	0.0015956472
B.2.2	Clamp for fixing 75 x 10 along parapet walls/roof top of buildings	Sets	600	0.0012665931
B.2.3	Concrete/ Insulator Compound blocks ( approx 200mm x 200mm x 75mm ) for resting Lightning conductor at roof top.	Nos	80	0.0000855575
B.3	Steel materials			
B.3.1	GS angle(ISA) , Insert plates , channels(ISMC) , reinforcement , barbed wires	Tons	2	0.0040530832
B.3.2	Anchor fastner Nuts ,Bolts with spring & plain washers - up to 50 mm dia)	Nos	400	0.0004728477
B.3.3	Hardwares : Nuts , Bolts , spring & plain washers, clamps, slits, Upto 10 mm plates	KGs	200	0.0005629113
B.3.4	Heavy duty PVC pipes - up to 100mm dia	Mtrs	40	0.0000570497
B.3.5	20 mm dia GI conduit	Mtrs	20	0.0000499228
B.3.6	50 mm dia GI conduit	Mtrs	20	0.0001248070
B.3.7	100 mm dia GI conduit	Mtrs	40	0.0004992280
B.3.8	32 mm dia Flexible conduit	Mtrs	120	0.0003423326
B.3.9	HDPE pipe 63 mm dia (shall be used for laying OFC and STP cables in outdoor environment. HDPE pipe shall be permanently lubricated type with ISI marked. The internal diameter of the HDPE pipe shall be suitably selected so that 50% free space is maintained during cable drawing. The pipe shall conform to DOT standard GR/CDS-08/02 Nov. 2004 with latest amendments)	Mtrs	200	0.0016174678
B.3.10	HDPE pipe 32 mm dia (shall be used for laying OFC and STP cables in outdoor environment. HDPE pipe shall be permanently lubricated type with ISI marked. The internal diameter of the HDPE pipe shall be suitably selected so that 50% free space is maintained during cable drawing. The pipe shall conform to DOT standard GR/CDS-08/02 Nov. 2004 with latest amendments)	Mtrs	200	0.0008215710
B.4	11 kV and 3.3kV HT Power Cable end terminations and Straight through jointing kits - Transformer end, Switchgear end and Motor end.			
B.4.1	11 kV - 3Core*240Sqmm AL Cable end terminations	Nos	12	0.0062016657
B.4.2	11 kV - 3Core*240Sqmm AL Straight through joint	Nos	4	0.0039589916
B.4.3	3.3 kV - 3Core*240Sqmm AL Cable end terminations	Nos	30	0.0155041642
B.4.4	3.3 kV - 3Core*240Sqmm AL straight through joint	Nos	4	0.0039589916
B.5	LT Cable Straight Through jointing kit ( 1/ 2/ 3/ 3.5/ 4 cores)			
B.5.1	2.5/ 4/ 6/ 10/ 16 Sqmm -CU	Nos	2	0.0001579962
B.5.2	25/ 35/ 50 Sqmm -AL	Nos	2	0.0001910784
B.5.3	70/ 95/ 120 Sqmm - AL	Nos	2	0.0002532502
B.5.4	150/ 185 Sqmm - AL	Nos	4	0.0006890230
B.5.5	240/ 300 Sqmm - AL	Nos	4	0.0010495052
B.5.6	400/ 630 Sqmm - AL	Nos	1	0.0003108589
B.6	Control Cable Straight Through jointing kit			
B.6.1	2.5 Sq mm Control Cable Terminations Up to 9 Core	Nos	4	0.0002357520
B.6.2	2.5 Sq mm Control Cable Terminations 10C to 12C	Nos	4	0.0003537449
B.7	LT Screen Cables Straight Through jointing kit			
B.7.1	G & F Type pair Cables 8P to 12P Pair ( 0.5 sqmm)	Nos	4	0.0002357520
B.7.2	G & F Type pair Cables 14P to 18P Pair ( 0.5 sqmm)	Nos	4	0.0003537449
B.8	Supply of heavy duty, Bimetallic, long barrel type , insulated Bimetallic lugs for AI Power Cables (Pin/Ring/U shape as required).			
B.8.1	Lugs (Bimetallic) suitable for 25 Sqmm Cables	Nos	58	0.0003969868
B.8.2	Lugs (Bimetallic) suitable for 35 Sqmm Cables	Nos	5	0.0000375027
B.8.3	Lugs (Bimetallic) suitable for 95 Sqmm Cables	Nos	40	0.0004095352
B.8.4	Lugs (Bimetallic) suitable for 150 Sqmm Cables	Nos	10	0.0001294770
B.8.5	Lugs (Bimetallic) suitable for 185 Sqmm Cables	Nos	40	0.0008692641
B.8.6	Lugs (Bimetallic) suitable for 240 Sqmm Cables	Nos	35	0.0007785732
B.8.7	Lugs (Bimetallic) suitable for 300 Sqmm Cables	Nos	10	0.0002797730

Annexure-VI				
Sl.No.	Description of BBU Items	UoM	AHP Qty.	% Weightage
B.9	Erection Accessories to Facilitate work execution & HSE/ TQM			
B.9.1	Supply & Erection of Rubber mats for Insulation -12KV- 2.5mm thick, 1 mtr width- shall conform to IS:15652	Sq mtrs	300	0.0061978703
B.9.2	Supply of Fire proof sealing	KGs	200	0.0137956324
B.9.3	Supply of Fire retardant paints	KGs	400	0.0093453879
B.9.4	Supply & Erection of FIRE EXTINGUISHER (4kg - CO2 type)	Nos	2	0.0002414952
B.9.5	Supply & Erection of Fire Buckets ( 4no's in each set ) with Stand as per relevant Indian Standard	Nos	2	0.0001885813
B.9.6	Supply & Mounting of Caution/ Danger Board in English , Hindi, local langauage as per I.E. rules	Nos	40	0.0004481045
B.9.7	Supply of First aid kits ( As per HSE Document)	Nos	6	0.0002955361
B.10	Miscellenious Material Supply of Civill items for contingency purpose All items shall be supplied as per WBPDCL/BHEL specificaitions only after the approval of Make & Quantity by BHEL Site engineer. Bidder to take concurrence from BHEL site engineer before supply of below items (Receipt at site-80%, Installation(if applicable) -10% (if not applicable same (10%) shall be paid against receipt), Handing Over-10%)			
B.10.1	Civil materials			
B.10.1.1	Concrete mixture	KGs	300	0.0002567580
B.10.1.3	Hume pipe type NP2 - up to 150 mm dia	Mtrs	8	0.0000114099
B.10.1.4	Hume pipe type NP2 - above 150 mm dia	Mtrs	8	0.0001004148
B.10.1.5	150 mm dia GI conduit	Mtrs	8	0.0000319506
B.10.1.6	6mm thick chequered plate	Sq mtrs	40	0.0035883269
B.10.1.7	8mm thick chequered plate	Sq mtrs	40	0.0047844358
B.11	Cabling Accessories			
B.11.1	Cable Tags in aluminium	Nos	400	0.0000538226
B.11.2	Cable Clamping materials ( 25mm x 3mm aluminium flat ) - 25 x 3 aluminium strip 0.2kg/ meter.	Mtrs	1200	0.0016211434
B.11.3	Trefoil cable clamps suitable as per site requirement for cable dressing for cables in trefoil formation	Nos	40	0.0003058102
B.11.4	GI strip for bunching cables as per site requirement for cable dressing Cables shall be tied to the trays with G.I./Aluminum or self-locking grip strips at not more than 2 meter intervals for horizontal runs and at not more than 1 meter intervals for vertical runs. All cable shall be strapped individually.	Nos	200	0.0015290512
B.11.5	Shorting Links for TB shorting 0.5/1.5/2.5 sqmm cable	Nos	40	0.0000171115
B.12	Electrical Components & panels			
B.12.1	Copper Bus bars	KGs	4	0.0001109122
B.12.2	Aluminium Busbars	KGs	12	0.0000954128
B.12.3	Control Junction Boxes - 120 terminals	Nos	2	0.0012323633
B.12.4	Power Junction Boxes with suitable AL.busbars - Input:2or3 Runs of Power Cables of 3/3.5/4C X 185/240/300 Sq.mm, Output:1or2 Runs of Power Cables of 1C x /120/185/240/300 Sq.mm	Nos	4	0.0029722548
B.13	Miscellaneous items			
B.13.1	LED Lighting fixtures as per site requirement	Nos	20	0.0000611621
B.13.2	Supply & Erection of Portable sump pumps along with the required pipe approx.10M for dewatering	Nos	2	0.0000611620
B.14.3	Supply of 11KV electrically tested rubber gloves.	Sets	1	0.0000236432
			Supply(Rs.)	0.0955530550
			E&C(Rs.)	0.9044469450
			Grand Total(Rs.)	1.00