ANNEXURE-I

Scope of Work - Electrical Works for Modernisation of 86 Building Substation			
S. No	**Work Description**	**Unit**	**Quantity**
1	Disconnecting and removal of existing HT Incoming & out going cables of size 3R X 1C X 630 sq.mm Aluminium XLPE from BVP-4 Oil Circuit Breakers.	Nos	9
2	Disconnecting and removal of existing HT Incoming & out going cables of size 1R X 3C X 120 sq.mm Aluminium PILC from BVP-4 Oil Circuit Breakers/IB4 switch	Nos	3
3	Disconnecting and removal of existing HT out going cables of size 1R X 3C X 300 sq.mm copper from IB4 switch	Nos	1
4	Dismantling of the existing HT breakers BVP-4 Oil Circuit Breakers and shifting it to store as per site engineer instructions	Nos	4
5	Dismantling of the existing 6.6KV, IB4 Oil Switch and shifting it to store as per site engineer instructions	Nos	1
6	Unpacking and disassembly of VCBs for shifting inside the substation. The job includes removal of packing, removing covers, disconnecting interconnecting busbars, draw-out of trucks and loading the VCB on to the platform of substation using Hydraulic crane.	Nos	4
7	Shifting, Assembly, Erection, Testing and Commissioning of 6.6KV, VM-12, BHEL make, Indoor type VCBs. The VCBs shall be erected on the trenches by providing MS material. The job includes IR test, primary injection, secondary injection and testing of relays mounted on VCB panels. Approx. Size: 820(L) x 2355(W) x 2700(H) mm and Wt: 1500kgs each.	Nos	4
8	Supply of the following termination kits/straight through joints:		
	i) 6.6KV (UE) end termination kits for 3Cx300 sq.mm, PVC/PILC. **Make: Raychem/3M**	Nos	1
	ii) Supply of long barrel copper lugs suitable for 300 sq.mm	Nos	3
	iii) straight through joints for 3C X 240 sq.mm, 1.1KV, PILC cable, **Make: 3M Scotchcast 450**	Nos	1
	iv) straight through joints for 3.5C X 400 sq.mm, 1.1KV, PVC cable **Make: 3M Scotchcast 450**	Nos	4
	v) Supply of 6.6KV (UE) end termination kits for 3Cx120 sq.mm, PILC. **Make: Raychem/3M**	Nos	3
9	Shifting and termination of 1C X 630 sq.mm. Work involves execution of termination kit providing holes in the cable gland plate, fixing of aluminium gland plate for single core cables providing mechanical support for cables, relaying and adjustment of cable in the trench for up to 5 mtrs for facilitating cable entry into the VCB, terminating the cable in the VCB, tagging of cables, application of wallputty or any suitable sealant over the gaps in the glandplate and closing the cable chamber. Crimping tool is in the scope of contractor.	Nos	3
10	Shifting and execution of 6.6KV (UE) end termination kits for 3C X 120 sq.mm Aluminium PILC cable. Work involves execution of termination kit, providing holes in the cable gland plate, providing mechanical support for cables, relaying and adjustment of cable in the trench for up to 5 mtrs for facilitating cable entry into the VCB, terminating the cable in the VCB, tagging of cables, application of wallputty or any suitable sealant over the gaps in the glandplate and closing the cable chamber. Crimping tool is in the scope of contractor.	Nos	3
11	Shifting and execution of 6.6KV (UE) end termination kits for 3C X 300 sq.mm HT cable. Work involves execution of termination kit, providing holes in the cable gland plate, providing mechanical support for cables, relaying and adjustment of cable in the trench for up to 5 mtrs for facilitating cable entry into the VCB, terminating the cable in the VCB, tagging of cables, application of wallputty or any suitable sealant over the gaps in the glandplate and closing the cable chamber. Crimping tool is in the scope of contractor.	Nos	1
12	Disconnection of cables, dismantling of the existing IB4 switch for Ward-Leonard System and shifting to make way for new VCBs, reerection, reconnection of old cables and commissioning of the same	Nos	1
13	Disconnection of cables, dismantling of the existing BVP4 breaker for Ward-Leonard System and shifting to make way for new VCBs, reerection, reconnection of old cables and commissioning of the same	Nos	1
14	Shifting & Earthing of Equipment from nearest Earth riser with 50x6mm/ 25x3mm GI flat	Mts	50
15	Shifting, Fabrication and Erection of structural steel for equipment/cable tray support. The job includes supply and painting of Red Oxide.	Ton	0.5

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16	Shifting and laying of following LT power PVC armoured aluminium/elastomeric LT copper flexible cable for AC and DC control supply for VCBs. The job includes Dressing and clamping the cables to mechanical support.		
	5C X 1.5 sq.mm Copper cable	Mts	50.00
17	Power cable termination including supply of cable glands & lugs (Copper/Aluminium).		
	5C X 1.5 sq.mm Copper cable	Nos	4.00
18	Shifting, erection, assembly of 1000KVA dry type transformer inside compact secondary substation for commissioning the transformer. The work involves shifting of transformer, erection inside CSS, termination of HT cables, LT bus bars, interconnection between phase on HV side, providing earthing connection, connection of RTD cables, checking for any loose connections and rectifying them etc Approximate weight: 2 Tons	Nos	1.00
19	Shifting, laying and dressing of 3C X 95 sq.mm, 11KV (UE), HT cable. The job includes opening of RCC trench covers, shifting of cable drum, laying, and dressing of cable inside the trench. The work also includes removal of sand in trench for a length of 10 mtrs near CSS for facilitating laying of cable	Mts	20.00
20	Shifting, execution of termination kits for 3C X 95 sq.mm HT cable inside CSS. The job includes providing mechanical support to the cables, relaying the cable for a length sufficient enough to bring the cable inside the cable chamber, removal of gland plate, making hole for cable entry, etc.	Nos	1.00
21	Shifting, execution of straight-through kits for 3C X 95 sq.mm HT cable. All the tools required are in the scope of contractor.	Nos	1.00
22	Shifting, laying and dressing of 1C X 95 sq.mm, 11KV (E), HT Copper flexible cable inside CSS for 11KV Supply to Transformer	Mts	15.00
23	Shifting, execution of termination kits for 1C X 95 sq.mm HT cable inside CSS. The job includes providing mechanical support to the cables, relaying the cable for a length sufficient enough to bring the cable inside the cable chamber, removal of gland plate, making hole for cable entry, etc.	Nos	6.00
24	Supply of commissioning assistance during the transformer testing and commissioning		
	1) Unskilled	Days	5.00
	2) Skilled	Days	5.00
25	Shifting, Erection, Testing and commissioning of 300KVAr Automatic Power Factor Correction Panels for improvement of Power Factor	Nos	2.00
26	Shifting, laying and dressing of 3.5C X 300 sq.mm cable for APFC Panel	Mts	100.00
27	Termination of 3.5C X 300 sq.mm cable. The job includes supply of double compression cable glands suitable for 3.5CX300 sq.mm cable and cable lugs	Nos	4.00

NOTE:

1) The works are to be carried out in accordance with IE rules 1956. After completion of erection works, the contractor has to arrange inspection by CEA and obtain the permission for charging the sub-station. BHEL will provide all relevant drgs and other necessary arrangements will be borne by the contractor.

2) The quantities indicated are tentative and may increase or decrease. Any other works not mentioned but required for completion of the project are to be carried out by the contractor.

3) The contractor should follow all the statutory requirements, Environmental Management System (EMS), Occupation Health and Safety Management System (OHSAS) while executing the work.

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