

BOQ Cum Rate Schedule for Supply, Erection & Commissioning of Construction Power Network at 1x800 MW HPGCL Yamunanagar Project.						
S. No.	DESCRIPTION	UOM	QUANTITY	Factor(F)	Rate per Qty= Factor(F) X quoted Value(A)/1000	Amount= Rate per UOM* Qty
Bill of Quantities for Package-A					-----A	
1.0	PREPARATION OF DRAWING & OBTAINING STATUTORY APPROVAL					
1.1	Route survey, preparation of route drawing, Detailed SLD, Detailed 11/11.5kV and 11kV/433V substation drawing, 11kV distribution drawing, Two/Four/Six/Eight pole structure arrangement drawing, Earthing layout, sag calculation for OH line & any other document /drawing as required by Electrical inspectrate and getting approval of above from statutory authority and also includes liaison with electrical inspectrate for field inspection and obtaining clearance certificate for charging the entire system in a phased manner as per site requirement (any number of times till completion of entire scope under this contract.)	Lump sum	1	10.7624462	0	0
2.0	SUPPLY PORTION OF BOM FOR 11kV OH Lines/Cable/Substation etc.					
2.0.1	11kV/11.5kV Substation Related Items					
2.0.1.1	Supply of Lightning arrestor set suitable for 11kV as per ISS/IEC Spec No. IS:3070/2-1985/Latest. (Each set consist of all 3 Phases).	Sets	2	0.1383163	0	0
2.0.1.2	Supply of 11kV HG Fuse set as per IS (Each set consist of all 3 Phases).	Sets	2	0.1054351	0	0
2.0.1.3	Supply of 11kV pin insulator with Gi pin as per IS:731-1971 IS:2486 Part-II – 1989.(Each set consist of all 3 Phases).	Sets	4	0.018641	0	0
2.0.1.4	Supply of 11kV disc insulator with fixing arrangements & conductor holding clamps as per IS:3188/1965 & IEC 309/1969/Latest.(Each set consist of all 3 Phases).	Sets	2	0.0419423	0	0
2.0.1.5	Supply of 11kV pin insulator with pins as per IS: 2544/1963 AMD 125 & IEC 168/1969 Latest.(Each set consist of all 3 Phases).	Sets	4	0.018641	0	0
2.0.1.6	Supply of 11kV 400A Air break switch-double break-horizontal mounting rotating type as per ISS/IEC Spec No.4710/1968: 265-C/1970/Latest.	Nos.	1	0.5049879	0	0
2.0.1.7	Supply of 11kV DO fuse as per ISS/IEC Latest. (Each set consist of all 3 Phases)	Sets	2	0.1604196	0	0
2.0.1.8	Supply of 2kVA 230V 1 phase sine wave UPS of reputed make with 2 nos. of exide make 150AH 12V tubuler lead acid batteries. Vendor shall specify the make for which he is quoting in the bid and shall submit relevant certificates along with supply.	Sets	1	1.0423938	0	0
2.0.1.9	Supply of 50kVA 3 phase 4 wire 11kV/433V copper wound DYN11 oil filled out door plinth mounted Distribution transformer of reputed make to provide power supply to 11/11.5kV sub station and illumination etc.	Nos.	1	5.575758	0	0
2.0.1.10	Supply of 125A out door type Floor mounted Power distribution board (PDB), IP 55 protection, Double Door type, Incomer-01 no. 125A TPN MCCB. Outgoing-02 nos. 63A TPN ELCBs with 30mA tripping, 03 nos. 40A TPN ELCBs with 30mA tripping, 02 nos. 32 A TPN ELCBs with 30mA tripping withTimer & contactors for auto on/off and 3 indicating lamps with fuse for indication bus supply ON, Digital voltmeter & VSS 0-500V, suitable bus bar arrangement for phase and neutral. Sufficient space should be provided in the removable cable gland plate to accommodate minimum 1R 3.5Cx185 sq. mm. incoming cable and outgoing cables of different sizes. All MCCB, MCBs and ELCBs shall be of reputed make.	Nos.	1	1.6633635	0	0
2.0.1.11	Supply of 11kV Outdoor Vacuum Circuit Breaker (VCB) with outdoor busbar terminal bushing connectors Panel as per BHEL Technical Specifications including 230 V AC/220/110 V DC Power Pack/ SMPS Facility Power Supply for control circuit inside the panel.	Nos.	3	12.2298155	0	0
2.0.1.12	Supply of operator remote control desk/Relay control panel with chair for operating the 11kV/11.5kV Substation consisting of 2 Nos. of 2.5 MVA and 50kVA, 11kV/11.5kV and 11kV/0.440kV Transformers & 2Nos. of 11kV outdoor vacuum circuit breakers. This remote control desk/relay control panel shall control all operation points of Substation i.e control supply on status, UPS and battery healthiness, main supply on status for 11kV/11.5kV and 11kV/0.440kV transformers and VCB's.Other healthiness monitoring which includes breaker on/off status, trip circuit healthy indication, relay coordinations & trip alarm annunciation window etc. The panel shall be approved by BHEL.	Set	1	1.6105353	0	0
2.0.2	11kV Overhead Ring Main Line Related Items.					
2.0.2.1	Supply of ACSR RABBIT conductors as per IS:398/1961 (To meet 3 phases/lines)	Meters	9900	0.0012986	0	0
2.0.2.2	Supply of 9 m long 280kg working load pre-stressed cement concrete poles (PSCC) as per IS:1678.	Nos.	100	0.1755179	0	0
2.0.2.3	Pole ISMB-250 11 m for 11kV Height for Overhead line two/four pole steel structure at Sub Station.	Nos.	42	0.5850597	0	0
2.0.2.4	ISMC-100 for cross beam for Overhead line two/four pole steel structure at Sub Station.	MT	7	1.3480765	0	0
2.0.2.5	ISMC-75 for cross beam for Overhead line two/four pole steel structure at Sub Station.	MT	2	1.3480765	0	0
2.0.2.6	Supply of 11kV "V" Cross arms/Straight Arm with suitable back clamps including supply of necessary fasteners as per IE specification.	Nos.	70	0.050582	0	0
2.0.2.7	Supply of 11kV Gi stay (7/3.15mm) sets with Guy, Bow, Stay Rod, wire etc. as per I.E. Specifications. (Each set consist of all 3 Phases).	Sets	70	0.0915606	0	0
2.0.2.8	Supply of 11kV top fittings (I Clamp) with suitable back clamps including supply of necessary fasteners as per IE specification.	Nos.	70	0.0157461	0	0
2.0.2.9	Supply of 11kV disc insulator with fixing & conductor and holding clamp as per IS: 3188/1965 & IEC 309/1969/Latest. (Each set consist of all 3 Phases).	Sets	20	0.0419423	0	0
2.0.2.10	Supply of 11kV pin insulator with pins as per IS: 2544/1963 AMD 125 & IEC 168/1969 Latest. (Each set consist of all 3 Phases).	Sets	70	0.0142922	0	0
2.0.2.11	Supply of 11kV 400A Air break switch-double break-horizontal mounting rotating type as per ISS/IEC Spec No.4710/1968: 265-C/1970/Latest.	Nos.	15	0.5049879	0	0
2.0.2.12	Supply of 11kV 400A Air break switch-double break-Vertical mounting rotating type as per ISS/IEC Spec No.4710/1968: 265-C/1970/Latest.	Nos.	10	0.5049879	0	0
2.0.2.13	Supply of 11kV Lightning arrestor set as per ISS/IEC Spec No. IS:3070/2-1985/Latest. (Each set consist of all 3 Phases).	Sets	10	0.1383163	0	0
2.0.2.14	Supply of 11kV HG fuse as per ISS/IEC Spec IS: 9385/Latest. (Each set consist of all 3 Phases)	Sets	10	0.1054351	0	0
2.0.2.15	Supply of 11kV DO fuse as per ISS/IEC Latest. (Each set consist of all 3 Phases)	Sets	10	0.1555594	0	0
2.0.2.16	Supply of out door type weather proof 630A capacity 11kV Pillar box IP 55 Protection as per IS with one no. Incoming and two nos. outgoing including supply of accessories.	Nos.	3	1.5577108	0	0

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2.0.2.17	Supply and fixing of anti climb device (barbed wire) roiled on the poles at 2m height as per I.E. specification and numbering of poles.	Sets	70	0.0841647	0	0
2.0.3	Common Items for 11kV OH Lines and Substation Equipments.					
2.0.3.1	Supply of 5Cx2.5sqmm LT Power Cable along with double compression type brass cable glands and required number of termination lugs of reputed make suitable for CT and PT Wiring from VCB's to Control Panels.	Meters	250	0.0026394	0	0
2.0.3.2	Supply of 7C/9C/10Cx1.5sqmm LT Control Cable along with double compression type brass cable glands and required number of termination lugs of reputed make suitable for extending alarm, annunciation and protection VCB's and Xmers.	Meters	500	0.0028279	0	0
2.0.3.3	Supply of 1Cx10sqmm LT Control Cable along with double compression type brass cable glands and required number of termination lugs of reputed make suitable for earthing of high mast lightning arrangements.	Meters	500	0.0008484	0	0
2.0.3.4	Supply of 65x10 mm GI earth flat.	Meters	155	0.0109699	0	0
2.0.3.5	Supply of 50x6 mm GI earth flat.	Meters	321	0.0049485	0	0
2.0.3.6	Supply of 25x3 mm GI earth flat.	Meters	341	0.0024966	0	0
2.0.3.7	Supply of 8SWG wire	Meters	5800	0.0004001	0	0
2.0.3.8	Supply of Required MS/GI/Nickel cadmium fasteners/anchor fasteners for erection of all supply materials and completion of entire works covered under this package (M6 to M16).	kg	100	0.0031366	0	0
2.0.3.9	Supply of Heat shrink type HT Indoor/Outdoor termination kits of reputed make suitable for 3Cx185 sqmm 11kV Cables.	Nos.	3	0.1767819	0	0
2.0.3.10	Supply of Heat shrink type HT straight through jointing kits of reputed make for 3Cx185 sqmm 11kV Armoured Cables.	Nos.	2	0.2967494	0	0
2.0.3.11	Supply of Heat shrink type HT Indoor termination kits of reputed make suitable for 11kV 3Cx95 sqmm sqmm Cables.	Nos.	13	0.1767819	0	0
2.0.3.12	Supply of Heat shrink type HT Outdoor termination kits of reputed make suitable for 11kV 3Cx95 sqmm Cables.	Nos.	13	0.1767819	0	0
2.0.3.13	Supply of Heat shrink type HT straight through jointing kits of reputed make for 11kV 3Cx95 sqmm sqmm Cables.	Nos.	5	0.2967494	0	0
2.0.3.14	Supply of Heat shrink type HT Indoor/Outdoor termination kits of reputed make suitable for 11kV 3Cx185 sqmm Cables.	Nos.	20	0.1767819	0	0
2.0.3.15	Supply of Heat shrink type HT straight through jointing kits of reputed make for 11kV 3Cx185 sqmm Cables.	Nos.	10	0.2967494	0	0
2.0.3.16	Supply of 200mm dia RCC hume pipes for rmake use of cable crossing where ever required such as existing culverts, trenches and road etc for HT Cables.	Meters	150	0.0189604	0	0
2.0.3.17	Supply of 150mm NB 4.8mm thick medium class GI pipes for make use of cable crossing where ever required such as existing culverts, trenches and road etc for for LT Cables.	Meters	150	0.0129597	0	0
2.0.3.18	Supply of Fire Buckets with stand floor mounted type of rigid & good quality-4 nos. 10 ltr capacity Fire buckets per stand-Type & make shall be approved by BHEL/ Engineer.	Sets	12	0.054749	0	0
2.0.3.19	Supply of Aluminium alloy 5kg CO2 fire extinguisher industrial type with ISI Mark of reputed make. Type & make shall be approved by BHEL/ engineer.	Nos.	12	0.0811391	0	0
2.0.3.20	Supply of HT cable route markers standard size with 1m height angle support.	Nos.	175	0.0093674	0	0
2.0.3.21	Supply of LT cable route markers standard size with 1m height angle support.	Nos.	153	0.0091561	0	0
2.0.3.22	Supply and fixing of Griddle Guards of length 15m, with 8SWG GI Wire for Road crossing with necessary fixing arrangement etc, as per IS Specification.	Sets	10	1.8912911	0	0
2.0.4	FOR AREA LIGHTING Related Items.					
2.0.4.1	Supply of High Mast (30 Meters) along with its Accessories (Civil works, Feeder Panel, 04Nos Earthing Per High Mast) including 12 Nos. 400W LED outdoor luminaire.	Nos.	10	7.3342884	0	0
2.0.4.2	Supply of steel tubular swaged poles, 9 mtr long made of sheet steel having ultimate tensile strength 42 kg F/sq. mm conforming to BIS: 2713 (part-II) complete with 300x300x6 mm thick MS base plate for welding at site and size as per configuration given in BIS for 410 SP-28 (113 kg; pole weight) .	Nos.	249	0.2316751	0	0
2.0.4.3	Supply of Electrical junction box (GI/PVC)of good quality to suit the opening available in above lighting pole, one connector block for 3 Phase 4 wire incoming and outgoing cable to next street light pole with 01 no. 6A SP MCB for street light and earthing etc.	Nos.	67	0.0368596	0	0
2.0.4.4	Supply of 90W LED street light fitting of make Phillips/CGL/Bajaj/Havells only.	Nos.	76	0.0625123	0	0
2.0.4.5	Supply of 50mm NB 3.6mm thick medium class standard GI pipe for incoming and outgoing cables.	Meters	166	0.0141148	0	0
2.0.4.6	Supply of out door type metal clad Lighting distribution board (LDB) having IP-55 protection with double door type and one incomer with 100A TPN MCCB additionally with 3 nos. 32 A TPN ELCBs with 30mA tripping and timer & contactors for auto on/off street lights and 3 indicating lamps with fuse for indication bus supply ON, Digital Voltmeter & VSS 0-500V etc. Suitable busbar arrangement for Phase and Neutral. Sufficient space should be provided in the removable cable gland plate to accommodate incoming power cable and all outgoing cables.	Nos.	8	1.1050667	0	0
2.0.4.7	Supply of weather proof LED street light fitting 150 watt of Bajaj, Crompton, Philips or equivalent make, complete with one piece of appropriate driver (integral/non-integral) and suitable for directly slipping over light mounting bracket made out of 40 mm OD pipe and suitable for lamps, JB, cabling & termination of items supplied (To be mounted on 9 mtr pole - Item No.B.5.2.1).	Nos.	205	0.1521453	0	0

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2.0.4.8	Supply of 3-Phase metering and power distribution board complete with: (1) Incoming SFU TPN 400 Amps -1no, (2) Outgoing SFU TPN 200 Amps -1nos. (3) Outgoing SFU TPN 63 Amps -1nos. (4) Outgoing SFU TPN 32 Amps -7nos. 3 Phase Electronic Energy Meter - BHEL / L&T / GEC make. Ammeter, Voltmeter and Selector Switches for both - AE and Kaycee make. Phase indication lamps, HRC fuses for IC and OG feeders, cable glands, power terminals for cables termination, cable lugs and provision for doubly earthing the panel enclosure. Panel enclosure shall be made of sheet metal thickness not less than 1.6 mm and suitable for out door installation, modular construction, hinged door with locking arrangement, base frame, should have slopped canopy, duly painted with first coat of primer and two coats of synthetic enamel paint (interior with white paint and exterior with light grey as per shade 5, is 630) Internal power distribution to devices shall be with al busbars or copper flexible single core PVC cables of 1.1 kV grade, control wiring with 1.5 sqmm, suitable stool made out of MS structure of 1.2 meter high for mounting of panel with anchoring arrangement at foundation, suitable for bottom entry of cables.	Nos.	1	4.2262579	0	0
2.0.4.9	Supply of 415 Volt AC, 3 phase/four wire power feeder pillar board, board shall be comprises of three number and one number aluminium bus bar for phase & neutral respectively. Bus bar rating shall be 200 amps and shall be mounted on epoxy insulator of 1.1 kV grade, each bus bar shall have drilled hole for connecting incoming /outgoing cables, provision for earthing the panel enclosure. Panel enclosure shall be made of sheet metal thickness not less than 1.6 mm and suitable for out door installation, hinged door with locking arrangement, base frame, should have slopped canopy, duly painted with first coat with primer and two coats of synthetic enamel paint (interior with white paint and exterior with smoke grey as per IS), suitable stool made out of MS structure of 1.2 meter high for mounting of panel with anchoring arrangement at foundation.	Nos.	6	1.5214528	0	0
2.0.4.10	Supply of out door type metal clad Lighting distribution board (LDB) having IP-55 protection with double door type and one incomer with 100A TPN MCCB additionally with 3 nos. 32 A TPN ELCBs with 30mA tripping and timer & contactors for auto on/off street lights and 3 indicating lamps with fuse for indication bus supply ON, Digital Voltmeter & VSS 0-500V etc. Suitable busbar arrangement for Phase and Neutral. Sufficient space should be provided in the removable cable gland plate to accommodate incoming power cable and all outgoing cables.	Nos.	6	0.8937489	0	0
Bill of Quantities for Erection, Testing and Commissioning						
2.0.5	Erection, Testing and Commissioning BOQ Items.					
2.0.5.1	Interconnection Through 11kV OH Lines					
2.0.5.2	11kV/11.5kV Substation Related Items.					
2.0.5.2.1	Erection of Lightning arrester set suitable for 11kV as per ISS/IEC Spec No. IS:3070/2-1985/Latest. (Each set consist of all 3 Phases).	Sets	1	0.0783199	0	0
2.0.5.2.2	Erection of 11kV HG Fuse set as per IS (Each set consist of all 3 Phases).	Sets	1	0.094521	0	0
2.0.5.2.3	Erection of 11kV pin insulator with GI pin as per IS:731-1971 IS:2486 Part-II – 1989. (Each set consist of all 3 Phases).	Sets	4	0.0075881	0	0
2.0.5.2.4	Erection of 11kV disc insulator with fixing arrangements & conductor holding clamps as per IS:3188/1965 & IEC 309/1969/Latest. (Each set consist of all 3 Phases).	Sets	1	0.0179038	0	0
2.0.5.2.5	Erection of 11kV disc insulator with fixing & conductor and holding clamp as per IS: 3188/1965 & IEC 309/1969/Latest. (Each set consist of all 3 Phases).	Sets	1	0.0179038	0	0
2.0.5.2.6	Erection of 11kV pin insulator with pins as per IS: 2544/1963 AMD 125 & IEC 168/1969 Latest. (Each set consist of all 3 Phases).	Sets	4	0.0075881	0	0
2.0.5.2.7	Erection of 11kV 400A Air break switch-double break-horizontal mounting rotating type as per ISS/IEC Spec No.4710/1968-265-C/1970/Latest.	Nos.	1	0.2634202	0	0
2.0.5.2.8	Erection of 11kV Lightning arrester set as per ISS/IEC Spec No. IS:3070/2-1985/Latest. (Each set consist of all 3 Phases).	Sets	1	0.0877589	0	0
2.0.5.2.9	Erection of 11kV HG fuse as per ISS/IEC Spec IS: 9385/Latest. (Each set consist of all 3 Phases)	Sets	1	0.1308598	0	0
2.0.5.2.10	Erection of 11kV DO fuse as per ISS/IEC Latest. (Each set consist of all 3 Phases)	Sets	1	0.1308598	0	0
2.0.5.2.11	Erection of Pole ISMB-250 11m for 11kV Overhead line two/four/six/eight pole steel structure at Sub Station.The erection includes excavation of earth of size 1x1x1.8m depth, fasteners, foundation bolt, grouting with concrete of ratio 1:4:8 for size of 1x1x1.8m depth including supply of cement, sand, metal etc for the foundation and coping of poles by 1 feet height.	Nos.	12	0.117012	0	0
2.0.5.2.12	Erection of ISMC-100 for cross beam for Overhead line two/four/six/eight pole steel structure at Sub Station.	MT	2	0.5461037	0	0
2.0.5.2.13	Erection of ISMC-75 for cross beam for Overhead line two/four/six/eight pole steel structure at Sub Station.	MT	1	0.5461037	0	0
2.0.5.2.14	Erection, testing and commissioning of 11kV Outdoor Vacuum Circuit Breaker (VCB) with outdoor busbar terminal bushing connectors OR Erection, testing and commissioning of Ring Main Unit Panel as applicable as per BHEL Technical Specifications including 230 V AC/220/110 V DC Power Pack/ SMPS Facility Power Supply for control circuit inside the panel.	Nos.	2	0.8452516	0	0
2.0.5.2.15	Erection, testing and commissioning of 2kVA 230V 1 phase sine wave UPS of reputed make with 2 nos. of oxide make 150AH 12V tubular lead acid batteries.	Sets	1	0.1578839	0	0
2.0.5.2.16	Erection, testing and commissioning, including oil filtration and submission of oil test report of 50kVA 3 phase 4 wire 11kV/433V copper wound DYN11 oil filled out door plinth mounted Distribution transformer of reputed make to provide power supply to 11/11.5kV sub station and illumination etc.	Nos.	1	0.9663211	0	0
2.0.5.2.17	Erection, testing and commissioning of operator remote control desk/Relay control panel with chair for operating the 11kV/11.5kV Substation consisting of 02 Nos. of 2.5 MVA 11kV/ 11.5kV and 50kVA 11kV/ 0.440kV Transformers, 02 Nos. of 11kV Outdoor Ring Main Unit and 02 Nos. Outdoor Vacuum Circuit Breakers. This remote control desk/relay control panel shall control all operation points of Substation i.e control supply on status, UPS and battery healthiness, main supply on status for 11kV/11.5kV and 11kV/0.440kV transformers and VCB's/ RMUs.Other healthiness monitoring which includes breaker on/off status, trip circuit healthy indication, relay coordinations & trip alarm annunciation window etc. The panel shall be approved by BHEL.	Nos.	1	0.3474645	0	0
2.0.6	11kV Overhead Ring Main Line Related Items.					
2.0.6.1	Stringing of ACSR RABBIT conductors as per IS:398/1961 (To meet 3 phases/lines)	Meters	6600	0.000874	0	0

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2.0.6.2	Erection of 9 m long 280kg working load pre-stressed cement concrete poles (PSCC). The erection includes excavation of earth of size 1x1x1.8m depth, grouting with concrete of ratio 1:4:8 for size of 1x1x1.8m depth including supply of cement, sand, metal etc. for the foundation and coping of poles by 1 feet height.	Nos.	100	0.0658192	0	0
2.0.6.3	Erection of Pole ISMB-250 11 m Height for 11kV Overhead line two/four/six/eight pole steel structure at Sub Station.The erection includes excavation of earth of size 1x1x1.8m depth, fasteners, foundation bolt, grouting with concrete of ratio 1:4:8 for size of 1x1x1.8m depth including supply of cement, sand, metal etc for the foundation and coping of poles by 1 feet height.	Nos.	30	0.117012	0	0
2.0.6.4	Erection of ISMC-100 for cross beam for Overhead line two/four/six/eight pole steel structure at Sub Station.	MT	5	0.5470682	0	0
2.0.6.5	Erection of ISMC-75 for cross beam for Overhead line two/four/six/eight pole steel structure at Sub Station.	MT	1	0.5470682	0	0
2.0.6.6	Erection of 11kV "V" Cross arms/Straight Arm with suitable back clamps including erection of necessary fasteners as per IE specification.	Nos.	70	0.008952	0	0
2.0.6.7	Erection of 11kV GI stay (7/3.15mm) sets with Guy, Bow, Stay Rod, wire etc. as per I.E. Specifications. (Each set consist of all 3 Phases).	Sets	70	0.035803	0	0
2.0.6.8	Erection of 11kV top fittings (I Clamp) with suitable back clamps including erection of necessary fasteners as per IE specification.	Nos.	70	0.004841	0	0
2.0.6.9	Erection of 11kV disc insulator with fixing & conductor and holding clamp as per IS: 3188/1965 & IEC 309/1969/Latest. (Each set consist of all 3 Phases).	Sets	20	0.0098311	0	0
2.0.6.10	Erection of 11kV pin insulator with pins as per IS: 2544/1963 AMD 125 & IEC 168/1969 Latest. (Each set consist of all 3 Phases).	Sets	70	0.0068485	0	0
2.0.6.11	Erection of 11kV 400A Air break switch-double break-horizontal mounting rotating type as per ISS/IEC Spec No.4710/1968-265-C/1970/Latest.	Nos.	15	0.3953982	0	0
2.0.6.12	Erection of 11kV 400A Air break switch-double break-vertical mounting rotating type as per ISS/IEC Spec No.4710/1968-265-C/1970/Latest.	Nos.	10	0.2639571	0	0
2.0.6.13	Erection of 11kV Lightning arrester set as per ISS/IEC Spec No. IS:3070/2-1985/Latest. (Each set consist of all 3 Phases).	Sets	10	0.0662751	0	0
2.0.6.14	Erection of 11kV HG fuse as per ISS/IEC Spec IS: 9385/Latest. (Each set consist of all 3 Phases)	Sets	10	0.1308598	0	0
2.0.6.15	Erection of 11kV DO fuse as per ISS/IEC Latest. (Each set consist of all 3 Phases)	Sets	10	0.1308598	0	0
2.0.6.16	Laying and Termination of 11kV 3Cx95sqmm Armoured HT Cable along with double compression type brass cable glands and required number of termination lugs of reputed make suitable for Interconnection of OH line with respective PSS.	Meters	3000	0.0025635	0	0
2.0.6.17	Laying and Termination of 11kV 3Cx185sqmm Armoured HT Cable along with double compression type brass cable glands and required number of termination lugs of reputed make suitable (for Interconnection of Ring Main System).	Meters	500	0.0027444	0	0
2.0.6.18	Erection, testing and commissioning of out door type weather proof 630A capacity 11kV Pillar box IP 55 Protection as per IS with one no. Incoming and two nos. outgoing.	Nos.	3	0.2882969	0	0
2.0.6.19	Erection and fixing of anti climb device (barbed wire) roled on the poles at 2m height as per I.E. specification and numbering of poles.	Sets	70	0.0374942	0	0
2.0.6.20	Supply of materials as required for erection, testing & commissioning of 11kV/433V Package Substation.	Sets	10	5.4887631	0	0
	Supply of materials as required for erection, testing & commissioning of 11kV/433V Package Substation.					
	A- Leveling of substation yard, supply and spreading of 40mm size stone aggregate of 75mm thick for an area of approx size 8m x 6m, supply and construction of Brick work with cement mortar 1:6 of 230 mm thick and 450 mm height all-round the substation yard, plastering the brick work in CM 1:6 , white washing etc complete. (Per Sub Station).					
	B- Supply and construction of foundation as per supplier foundation drawing for 500KVA. Package Substation. Apprx size 4400 mm x 4400 mm x500 mm height (size may slightly vary as per new order of PSS) from ground level and including excavation of plinth pit and base concreting and plastering, white washing etc... as per the instruction of BHEL site engineer.					
	C- Supply and fixing of 3.15mm GI chain linked wire fencing height 2m for the substation of size 8m x 6m including grouting of 3m height ISA 75 fabricated posts at an interval of 1.5m (2m vertical 0.5m slanting, 0.5m grouting) and three runs of barbed wire along with the fencing on the slanting angle post, fixing of mesh with post by 50x6mm MS flat with fasteners (2 nos./post) and earthing of fencing by 8 SWG GI wire and providing finish aluminum painting of all steel materials etc. Supplied structural steel materials are used for fencing posts. (Per Sub Station)					
	D- Supply and installation of 1m x 2m height MS gate made of MS Angle, channel/rolled sections including supply and fixing of hinges, locking arrangement etc including providing finish aluminum painting etc. (Per Sub Station)					
	E-Supply and Erection of 3m long 50mm dia 3.6 mm thick medium class GI funnel type earth electrode with filling of bentonite earthing powder as per standard, four side brick work chamber with cement plastering, white washing and removable type RCC/ cast iron cover plate.Scope includes supply of required bentonite eathing powder, cement, brick, sand, RCC/cast ironcover plate. Minium 06 earthpits per sub station. Sub station earthing shall be carried out by using supplied 50x6, 25x6 and 25x3 mm earth flats (separate rate given for supply and E&C of earth flats.)					
	F-Supply and erection 2 nos. 5m height 3mm thick conical GI street light pole of reputed make with 40W LED street light fitting with base plate, foundation bolts and single lighting GI arm bracket with fasteners including supply all civil materials like cement , metal & sand etc for making foundation and cabling from LT panel. Supply and providing of necessary timer circuit for auto charging of lights. Make shall be approved by BHEL/ Engineer					
	G- supply and installation of two numbers vertical air terminations, 6m height 50 mm NB 3.6mm thick medium class GI Pipe with 1m height lightning spike on the top (total height -7m) with suitable Base plate & foundation bolts for Ligning protection of PSS. Vertical air terminal shall be grounded with earth pits. Required civil works for lightning pole erection and grouting including supply of grouting civil materials are in the scope of Contractor. (Per Sub Station)					
	H- Supply & Fixing of 06 nos. 11kV danger board of standard size (Per Sub Station).					

BOQ Cum Rate Schedule for Supply, Erection & Commissioning of Construction Power Network at 1x800 MW HPGL Yamunanagar Project.						
S. No.	DESCRIPTION	UOM	QUANTITY	Factor(F)	Rate per Qty= Factor(F) X quoted Value(A)/1000	Amount= Rate per UOM* Qty
2.0.7	Common Items for 11kV OH Lines and Substation Equipments.					
2.0.7.1	Laying and Termination of 3.5Cx185sqmm LT Power Cable along with double compression type brass cable glands and required number of termination lugs of reputed make suitable for interconnection of LTDB with Package Substation.	Meters	500	0.001553	0	0
2.0.7.2	Laying and termination of 3.5Cx70sqmm LT Power Cable along with double compression type brass cable glands and required number of termination lugs of reputed make suitable for Lighting LDB &50 kVA Aux. Transformer.	Meters	2550	0.0017467	0	0
2.0.7.3	Laying and termination of 3.5Cx25sqmm LT Power Cable along with double compression type brass cable glands and required number of termination lugs of reputed make suitable for High Mast.	Meters	3250	0.0016833	0	0
2.0.7.4	Laying and termination of 5Cx2.5sqmm LT Power Cable along with double compression type brass cable glands and required number of termination lugs of reputed make suitable for CT and PT Wiring from VCB's to Control Panels.	Meters	250	0.000886	0	0
2.0.7.5	Laying and termination of 3Cx2.5sqmm LT Power Cable along with double compression type brass cable glands and required number of termination lugs of reputed make suitable for extending AC/DC control supply to VCB's and Xmers.	Meters	500	0.0008606	0	0
2.0.7.6	Laying and termination of 7C/9C/10Cx1.5sqmm LT Control Cable along with double compression type brass cable glands and required number of termination lugs of reputed make suitable for extending alarm, annunciation and protection VCB's and Xmers.	Meters	500	0.0010969	0	0
2.0.7.7	Laying and termination of 1Cx10sqmm LT Control Cable along with double compression type brass cable glands and required number of termination lugs of reputed make suitable for earthing of high mast lighting arrangements.	Meters	500	0.0008606	0	0
2.0.7.8	Erection of 65 x 10 mm GI earth flat.	Meters	155	0.002194	0	0
2.0.7.9	Erection of 50 x 6 mm GI earth flat.	Meters	321	0.0015579	0	0
2.0.7.10	Erection of 25 x 3 mm GI earth flat.	Meters	341	0.0012631	0	0
2.0.7.11	Erection of 8SWG wire.	Meters	5800	0.0002846	0	0
2.0.7.12	Erection of Required MS/GI/Nickel cadmium fasteners/ anchor fasteners for erection of all Erection materials and completion of entire works covered under this package (M6 to M16).	kg	100	0.0025895	0	0
2.0.7.13	Erection of Heat shrink type HT Indoor/Outdoor termination kits of reputed make suitable for 11kV 3Cx185 sqmm Armoured Cables.	Nos.	3	0.0600079	0	0
2.0.7.14	Erection of Heat shrink type HT straight through jointing kits of reputed make for 11kV 3Cx185 sqmm Armoured Cables.	Nos.	2	0.0915606	0	0
2.0.7.15	Erection of Heat shrink type HT Indoor termination kits of reputed make suitable for 11kV 3Cx95 sqmm Cables.	Nos.	13	0.0600079	0	0
2.0.7.16	Erection of Heat shrink type HT Outdoor termination kits of reputed make suitable for 11kV 3Cx95 sqmm Cables.	Nos.	13	0.0600079	0	0
2.0.7.17	Erection of Heat shrink type HT straight through jointing kits of reputed make for 11kV 3Cx95 sqmm sqmm Cables.	Nos.	5	0.0915606	0	0
2.0.7.18	Erection of Heat shrink type HT Indoor/Outdoor termination kits of reputed make suitable for 11kV 3Cx185 sqmm Cables.	Nos.	20	0.0600079	0	0
2.0.7.19	Erection of Heat shrink type HT straight through jointing kits of reputed make for 11kV 3Cx185 sqmm Cables.	Nos.	10	0.0915606	0	0
2.0.7.20	Erection of 200 mm dia RCC hume pipes for rmake use of cable crossing where ever required such as existing culverts, trenches and road etc for HT Cables.	Meters	150	0.0069493	0	0
2.0.7.21	Erection of 150mm NB 4.8mm thick medium class GI pipes for make use of cable crossing where ever required such as existing culverts, trenches and road etc for LT Cables.	Meters	150	0.003686	0	0
2.0.7.22	Erection of Fire Buckets with stand floor mounted type of rigid & good quality-4 nos. 10 liter capacity Fire buckets per stand-Type & make shall be approved by BHEL/ Engineer.	Sets	12	0.0494422	0	0
2.0.7.23	Erection of Aluminium alloy 5kg CO2 fire extinguisher industrial type with ISI Mark of reputed make. Type & make shall be approved by BHEL/ engineer.	Nos.	12	0.0494422	0	0
2.0.7.24	Erection of HT cable route markers standard size with 1m height angle support.	Nos.	175	0.0033714	0	0
2.0.7.25	Erection of LT cable route markers standard size with 1m height angle support.	Nos.	153	0.0031601	0	0
2.0.7.26	Erection and fixing of Griddle Guards of length 15m, with 8 SWG GI Wire for Road crossing with necessary fixing arrangement etc, as per IS Specification.	Sets	10	0.7389901	0	0
2.0.8	FOR AREA LIGHTING Related Items.					
2.0.8.1	Installation/Erection of steel tubular swaged poles, 9 mtr long made of sheet steel having ultimate tensile strength 42 kg F/sq. mm conforming to BIS: 2713 (part-II) complete with 300x300x6 mm thick MS base plate for welding at site and size as per configuration given in BIS for 410 SP-28 (113 kg- pole weight) with 1.5 mtr deep excavation, concreting in 1:4:8 ratio size 45 cms x 45 cms x 150 cms and pole plinth in 1:3:6 cement concreting having 300 mm height and 300 mm dia including double earthing of pole with suitable arrangement, duly painted with two coats of red oxide paint and one coat of aluminium paint to be applied after erection; the length of pole below ground to be painted with two coats of black bituminous paint. the pole shall be complete with JB, fuse and minor fabrication as below : i) Drilling 20 mm dia hole at about 2.5 mtr from ground level for wire leads from junction box to light fixture. ii) Drilling 15mm dia holes at about 0.7 and at 2.5 mtr from ground level and welding 12 mm nuts for using a 12 mm GI bolt for fastening earth conductors. iii) Welding required holes for fixing pole cap of street light bracket. iv) Welding diametrally 10 mm MS round 30 mm below pole top edge for clipping wire leads .	Nos.	63	0.1084657	0	0
2.0.8.2	Erection of Electrical junction box (GI/PVC)of good quality to suit the opening available in above lighting pole, one connector block for 3 Phase 4 wire incoming and outgoing cable to next street light pole with 01 no. 6A SP MCB for street light and earthing etc.	Nos.	67	0.0087032	0	0
2.0.8.3	Erection of 90W LED street light fitting of make Philips/CGL/Bajaj/Havells only.	Nos.	76	0.022303	0	0
2.0.8.4	Cable Laying and Termination of 2Cx2.5sqmm size copper PVC/ XLPE insulated cable conforming to IS1554 (Part-I)/ IS 7098 (part-II) respectively insulated flexible cable of reputed make.	Meters	9800	0.0008479	0	0

BOQ Cum Rate Schedule for Supply, Erection & Commissioning of Construction Power Network at 1x800 MW HPGCL Yamunanagar Project.						
S. No.	DESCRIPTION	UOM	QUANTITY	Factor(F)	Rate per Qty= Factor(F) X Quoted Value(A)/1000	Amount= Rate per UOM* Qty
2.0.8.5	Erection of 50mm NB 3.6mm thick medium class standard GI pipe for incoming and outgoing cables.	Meters	166	0.0024205	0	0
2.0.8.6	Erection, testing and commissioning of out door type metal clad Lighting distribution board (LDB) having IP-55 protection with double door type and one incomer with 100A TPN MCCB additionally with 3 nos. 32 A TPN ELCBs with 30mA tripping and timer & contactors for auto on/off street lights and 3 indicating lamps with fuse for indication bus supply ON, Digital Voltmeter & VSS 0-500V etc. Suitable busbar arrangement for Phase and Neutral. Sufficient space should be provided in the removable cable gland plate to accommodate incoming power cable and all outgoing cables.	Nos.	8	0.2840707	0	0
2.0.8.7	Civil Works, Erection, Earthing and Charging of High Mast (30 Meters) along with its Accessories.	Sets	10	2.5357547	0	0
2.0.8.8	Installation/Erection of steel tubular swaged poles, 9 mtr long made of sheet steel having ultimate tensile strength 42 kg F/sq. mm conforming to BIS: 2713 (part-II) complete with 300x300x6 mm thick MS base plate for welding at site and size as per configuration given in BIS for 410 SP-28 (113 kg- pole weight) with 1.5 mtr deep excavation, concreting in 1:4:8 ratio size 45 cms x 45 cms x 150 cms and pole plinth in 1:3:6 cement concreting having 300 mm height and 300 mm dia including double earthing of pole with suitable arrangement, duly painted with two coats of red oxide paint and one coat of aluminium paint to be applied after erection; the length of pole below ground to be painted with two coats of black bituminous paint. the pole shall be complete with JB, fuse and minor fabrication as below : i) Drilling 20 mm dia hole at about 2.5 mtr from ground level for wire leads from junction box to light fixture. ii) Drilling 15mm dia holes at about 0.7 and at 2.5 mtr from ground level and welding 12 mm nuts for using a 12 mm GI bolt for fastening earth conductors. iii) Welding required holes for fixing pole cap of street light bracket. iv) Welding diametrically 10 mm MS round 30 mm below pole top edge for clipping wire leads .	Nos.	186	0.1084657	0	0
2.0.8.9	Installation/Erection & Commissioning of LED street light fitting 150 watt of Bajaj, crompton, Philips or equivalent make, complete with one piece of appropriate driver (integral/non-integral) and suitable for directly slipping over light mounting bracket made out of 40 mm OD pipe and suitable for lamps, JB, cabling & termination of items supplied .	Nos.	205	0.0174662	0	0
2.0.8.10	Providing suitable foundation for mounting AC distribution board as specified and Installation/Erection and Commissioning of 3-Phase metering and power distribution board complete with: (1) Incoming SFU TPN 400 Amps -1no. (2) Outgoing SFU TPN 200 Amps -1nos. (3) Outgoing SFU TPN 63 Amps -1nos. (4) Outgoing SFU TPN 32 Amps -7nos. 3 Phase Electronic Energy Meter - BHEL / L&T / GEC make. Ammeter, Voltmeter and Selector Switches for both - AE and Kaycee make. Phase indication lamps, HRC fuses for IC and OG feeders, cable glands, power terminals for cables termination, cable lugs and provision for doubly earthing the panel enclosure. Panel enclosure shall be made of sheet metal thickness not less than 1.6 mm and suitable for out door installation, modular construction, hinged door with locking arrangement, base frame, should have slopped canopy, duly painted with first coat of primer and two coats of synthetic enamel paint (interior with white paint and exterior with light grey as per shade 5, is 630) internal power distribution to devices shall be with al busbars or copper flexible single core PVC cables of 1.1 kv grade, control wiring with 1.5 sqmm, suitable stool made out of MS structure of 1.2 meter high for mounting of panel with anchoring arrangement at foundation, suitable for bottom entry of cables.	Nos.	1	0.5071509	0	0
2.0.8.11	Providing suitable foundation for mounting 415 Volt AC power feeder pillar board and Installation/Erection and Commissioning of 415 Volt AC, 3 phase/four wire power feeder pillar board, board shall be comprises of three number and one number aluminium bus bar for phase & neutral respectively. Bus bar rating shall be 200 amps and shall be mounted on epoxy insulator of 1.1 kv grade, each bus bar shall have drilled hole for connecting incoming /outgoing cables, provision for earthing the panel enclosure. Panel enclosure shall be made of sheet metal thickness not less than 1.6 mm and suitable for out door installation, hinged door with locking arrangement, base frame, should have slopped canopy, duly painted with first coat with primer and two coats of synthetic enamel paint (interior with white paint and exterior with smoke grey as per IS), suitable stool made out of MS structure of 1.2 meter high for mounting of panel with anchoring arrangement at foundation .	Nos.	6	0.3381006	0	0
2.0.8.12	Erection, testing and commissioning of out door type metal clad Lighting distribution board (LDB) having IP-55 protection with double door type and one incomer with 100A TPN MCCB additionally with 3 nos. 32 A TPN ELCBs with 30mA tripping and timer & contactors for auto on/off street lights and 3 indicating lamps with fuse for indication bus supply ON, Digital Voltmeter & VSS 0-500V etc. Suitable busbar arrangement for Phase and Neutral. Sufficient space should be provided in the removable cable gland plate to accommodate incoming power cable and all outgoing cables.	Nos.	6	0.2840707	0	0
2.0.8.13	Cable Laying and Termination of 2Cx6 sqmm Aluminium Armoured PVC/XLPE insulated cable confirming to IS 1554 (Part-I)/ IS 7098 (part-I) respectively along with double compression type brass cable glands, required nos of termination lugs, Jointing kits, Straight throughs and suitable glands and including laying of cable below ground, excavation of trench of 600 mm depth in all kind of soil, termination of cables cores with crimp type lugs, providing sand layer below/ above the cable, brick laying both side /above the above the cable and back filling etc complete. Cables are to be laid from 415 Volt AC power feeder pillar board to lighting poles & pole to pole.	Meters	18600	0.0006074	0	0
2.0.8.14	Cable Laying and Termination of 3.5CX35 sqmm Al armoured PVC/XLPE insulated cable confirming to IS 1554 (Part-I)/ IS 7098 (part-I) respectively along with double compression type brass cable glands, required nos of termination lugs, Jointing kits, Straight throughs and suitable glands and including laying of cable below ground, excavation of trench of 600 mm depth in all kind of soil, termination of cables cores with crimp type lugs, providing sand layer below/ above the cable, brick laying both side /above the above the cable and back filling etc. Cables are to be laid from transformer sub station to 415 Volt AC distribution board to store yard & sheds.	Meters	2201	0.0011726	0	0
2.0.8.15	Cable Laying and Termination of 3.5CX95 sqmm Aluminium Cable Armoured PVC/XLPE insulated cable confirming to IS 1554 (Part-I)/ IS 7098 (part-I) respectively along with double compression type brass cable glands, required nos of termination lugs, Jointing kits, Straight throughs and suitable glands and including laying of cable below ground, excavation of trench of 600 mm depth in all kind of soil, termination of cables cores with crimp type lugs, providing sand layer below/ above the cable, brick laying both side /above the above the cable and back filling etc complete. Cables are to be laid from 415 Volt AC distribution board to feeder pillar board, feeder pillar board to lighting mast / tower & for sheds.	Meters	2100	0.0017467	0	0

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S. No.	DESCRIPTION	UOM	QUANTITY	Factor(F)	Rate per Qty= Factor(F) X quoted Value(A)/1000	Amount= Rate per UOM* Qty
2.0.8.16	Cable Laying and Termination of 3.5CX185 sqmm aluminium armoured PVC/XLPE insulated cable conforming to IS 1554 (Part-I)/ IS 7098 (part-I) respectively along with double compression type brass cable glands, required nos of termination lugs, Jointing kits, Straight throughs and suitable glands and including laying of cable below ground, excavation of trench of 600 mm depth in all kind of soil, termination of cables cores with crimp type lugs, providing sand layer below/ above the cable, brick laying both side /above the above the cable and back filling etc. Cables are to be laid from transformer sub station to 415 Volt AC distribution board.	Meters	2522	0.0018735	0	0
2.0.9	SUPPLY & ERECTION PORTION OF BOM FOR CIVIL RELATED WORKS.					
2.0.9.1	Excavation of cable trench size 0.4x1.0 m depth in hard rock for HT cable and 0.4x0.8 m depth for LT cable. After cable laying, the trench will be back filled with excavated earth materials / other outside earth materials with compaction.	CUM	5938	0.0044615	0	0
2.0.9.2	Supply & Erection and spreading of river sand in cable trench of 300 mm thick for protection of HT Power cable.	CUM	900	0.0356396	0	0
2.0.9.3	Supply and laying of red/ ash bricks in the cable trench for protection of HT Power cable.	No.s	75000	0.0003452	0	0
2.0.9.4	Construction of 5mX 4m size 10 feet height Control room, including supply of required civil materials like cement, sand, bricks, metal, reinforcement rods etc. The control room is concrete roof, brick wall room with inside & out site plastering, cement flooring with necessary trench arrangements for control desk & UPS and two nos 4ftX 4 ft glass alu. slide type windows, one wooden door of normal size (2.1X 1.2m) with lock & key arrangement. Including painting of control room. Supply & providing of control room lighting with minimum 4 nos. of 40 W Tube light fitting, 2 nos. 1200 sweep ceiling fans and 4 nos of 40 W LED street light fitting for out side area lighting, necessary electrical wiring for fans & lights with 02 nos 5A switched socket & 2 nos 15 A switched socket in lighting board, incoming main switch, earthing, incoming power connection etc. complete(Light fittings & fans are reputed make only).	Set	1	8.9192383	0	0
2.0.9.5	Supply and installation of One No. vertical air terminations, 6m height 50 mm NB 3.6mm thick medium class GI Pipe with 1m height lightning spike on the top (total height-7m) with suitable Base plate & foundation bolts for Lightning protection of PSS. Vertical air terminal shall be grounded with earth pits. Required civil works for lightning pole erection and grouting including supply of grouting civil materials are in the scope of Contractor. (for 11/11.5kV substation.)	Sets	2	0.1029143	0	0
2.0.9.6	Supply and Erection of 3m long 50mm dia 3.6 mm thick medium class GI funnel type earth electrode with filling of bentonite earthing powder as per standard, four side brick work chamber with cement plastering, white washing and removable type RCC/ cast iron cover plate. Scope includes supply of required betonite eathing powder, cement, brick, sand, RCC/cast iron cover plate. Minium 02 earthpits per LDB. Earthing shall be carried out by using 50x6 and 25x3 mm earth flats (Supply and erection rates of earth flats is provided separately.)	Nos.	20	0.1029143	0	0
2.0.9.7	Supply and erection of 600mm Ladder type tray along with all accessories	Meters	60	0.0205828	0	0
2.0.9.8	Supply and construction of RCC foundation as per scheme drawing for 11 kV VCB's/RMUs. Approx size 3.0m x 1.5m x2.6m (LXBXH)-2 nos., 11kV/11.5 kV, Tentative detail as specified under and may vary as per site conditions..	set	3	1.6250617	0	0
Package B						
Bill of Quantities of Operation and Maintenance Part-B						
2.1	Operation and running maintenance includ-ing attending breakdown jobs for the en-tire Construction Power Network and Area lighting covered in this contract (Erected and Commissioned under this sub-contract). There should be adequate amount of Electricians and helpers available at site round the clock for this Package along with a Site In charge during day shifts. The maintenance contract period will start after energizing of 10 Nos. of 11kV/433V Package substations and Main 11/11.5kV substation. The scope also includes O&M of High Masts, BHEL Offices, BHEL Stores, BHEL yard, etc.	Months	48	5.1008067	0	0
Grand Total of Package-A & B (In Rupees)						