

**Ministry of Health & Family Welfare
(GOVERNMENT OF INDIA)**

Ministry of Health & Family Welfare

Nirman Bhavan, Maulana Azad Road
New Delhi – 110011

Tender for

**Supply, Installation, Testing & Commissioning of
33KV Sub-station equipment including
Construction of Substation Building of Housing
Complex for AIIMS-like Institution under PMSSY
at Bhubaneswar (Orissa)**

Volume - V

BILL OF QUANTITIES (BOQ)

Tender No. HSCC/PMSSY/BHUBANESWAR/SS/2011

DECEMBER 2011

Consultant

HSCC (India) LTD.

(A Govt. of India Enterprise)

E-6A, Sector-1, Noida, U.P-201301

Phone: 0120-2542436-40, Fax: 0120-2542447

Website:<http://www.hsccltd.com>

**Supply, Installation, Testing & Commissioning of
33KV Sub-station equipment including
Construction of Substation Building of Housing
Complex for AIIMS-like Institution under PMSSY
at Bhubaneswar (Orissa)**

BILL OF QUANTITIES

PROJECT: BILL OF QUANTITIES OF AIIMS HOUSING AT BHUBNESHWAR (33KV SUB STATION).

S.No.	Description.	Qty.	Unit.	Rate in Figures (in Rs.)	Rate in words (in Rs.)	Amount (in Rs.)
1	2	3	4	5	6	7
	SUBHEAD: H.T. SUB STATION					
	SUBSTATION EQUIPMENTS					
1.00	Sub Station -1					
1.01	HT Panel					
	Supply, erection, testing and commissioning of indoor type HT Panel having 630A, 33 kV, 3 Phase, 50 Hz., metal clad, dead front, 18.4 KA rupturing capacity Vacuum Circuit Breakers with interlocking scheme for the operation of different VCB, connections etc. complete with following incomers and outgoings including interlocking as per technical specifications and as required.					
	a INCOMER :					
	i 1No. VCB Panel having following					
	1 No. 630A, 33 kV, 3 Phase, 50Hz., metal clad, dead front, 18.4 KA rupturing capacity, Fully Drawout type, Vacuum Circuit Breaker (VCB)					
	1 set of 33kV/110V Potential Transformers with HRC fuses for metering and protection.					
	1 Set of Phase indicating lamps with HRC fuses					
	1 No. 0-33 kV digital voltmeter with selector switch					
	1 set of indicating lamps to indicate OPEN, CLOSE, TRIP, SPRING CHARGED, TRIP CIRCUIT HEALTHY					
	2 No. Push button for CLOSE and TRIP					
	1 set of 100/5-5A Current Transformer for metering and protection or as required by state electricity board.					
	1 No. digital ammeter with selector switch					
	1 Set of CDG 61 (2 No. O/C, 1 No. E/F) relay					
	8 window Alarm annunciator with separate hooter, accept and rest push buttons.					
	1 Set of undervoltage relay and Overvoltage relay					

S.No.	Description.	Qty.	Unit.	Rate in Figures (in Rs.)	Rate in words (in Rs.)	Amount (in Rs.)
1	2	3	4	5	6	7
	1 set of trip circuit supervision relay					
	Auxiliary Relay with shunt trip coil.					
	1 No. Master Trip relay					
	1 No. digital Power factor meter					
	1 No. digital Frequency meter					
	1 No. 3-Phase digital Trivector Meter of suitable rating					
	BUSBARS :					
	33KV, 630 Amps, 18.4 KA Three Phase busbars of Copper.					
	b OUTGOINGS :					
	i 5 No. VCB Panels each having following					
	1 No. 630A, 33kV, 3 Phase, 50Hz., metal clad, dead front, 18.4 KA rupturing capacity, Fully Drawout type, Vacuum Circuit Breaker (VCB)					
	1 set of indicating lamps to indicate OPEN, CLOSE, TRIP, SPRING CHARGED, TRIP CIRCUIT HEALTHY					
	Push buttons for CLOSE and TRIP					
	1 set of Current Transformer for metering and protection as per requirement.					
	1 set of 33kV/110V Potential Transformers with HRC fuses for metering and protection.					
	1 No. digital Amps ammeter with selector switch					
	1 Set of CDG 61 (2 No. O/C, 1 No. E/F) relay					
	1 No. Master Trip Relay					
	1 set of trip circuit supervision relay					
	Auxiliary Relay with shunt trip coil.					
	8 window Alarm annunciator with separate hooter, accept and rest push buttons.					
	HT Panel as mentioned above.	1	Set			

S.No.	Description.	Qty.	Unit.	Rate in Figures (in Rs.)	Rate in words (in Rs.)	Amount (in Rs.)
1	2	3	4	5	6	7
1.02	Four pole structure with GOD, AB switch/ D.O. fuse and lightning arresters etc with pin/ disc insulators of 33 KV grade complete with foundation of pole etc complete as per requirements of State Electricity Board and as required.	1	Set			
1.03	TRANSFORMER Supply, erection, testing and commissioning of 1250 KVA, 33/0.433 kV, 3 Phase, 4 wire, 50 Hz., ON-AN Transformer for out door duty with an off load tap changer -7.5% and +5% in the steps of 2.5% with cable at primary (HT side) and secondary end (LT side) shall be connected through busduct, the transformer shall be complete with first filling of oil, with buchholz relay protection, high winding temperature sensors, complete with all fittings, interconnection of control cables and accessories, soak pit for transformer oil complete as per technical specifications including fencing, gate, pebbles etc as per state electricity rule and civil foundation as per manufacturers requirements.	2	Set			
1.04	BUS DUCTS (Outdoor type) i) Supply, Installation, testing and commissioning of 2000 A phase and neutral TPN, 415 V, 3 Phase, 4 Wire, sandwich construction Aluminium Bus Duct including bends, flexible joints, earth bus (2 runs of aluminium strips), supports for installation, supporting arrangements, canopy etc. complete as per technical specifications and as required.	50	Mtrs			
1.05	BATTERY CHARGER PANEL					

S.No.	Description.	Qty.	Unit.	Rate in Figures (in Rs.)	Rate in words (in Rs.)	Amount (in Rs.)
1	2	3	4	5	6	7
	Supply, erection, testing and commissioning of 110 V DC, 20 Amp battery charger panel complete with battery, control cabling etc. as per technical specifications and as required.					
	Sealed Maintenance Free (SMF) batteries of 40 ampere hour capacity for above 33kV VCB panels in HT Panel Room of the building as specified above.					
	Boost and Trickle charger suitable for above items.					
	1 No. AC Voltmeter (0-500Volt)					
	1 No. DC Voltmeter					
	1 No. DC Ammeter					
	1 set of AC and DC indicating lamps					
	1 No. DC Battery charging position indicator					
	DC distribution board suitable for above application to incoming & outgoing MCBs include tripping, closing and indication etc.					
	Control cabling between DC Distribution panel to the HT panel of the Substation with suitable core 1.5 sqmm copper cable					
	Battery Charger as mentioned above.	2	Set			
1.06	H.T. CABLE					
	Supply of following sizes of 33 kV grade multicore aluminium conductor XLPE armoured and overall HRPVC sheathed power cable as per IS : 7098.					
	i 3 Core, 240 sq mm	1000	Metre			
1.07	Supplying and making end termination with heat shrinkable jointing kit complete with all accessories including lugs; suitable for following size 3 Core, XLPE aluminium conductor cable of 33kV grade as required.					
	i 240 sqmm indoor type	8	Each			
	ii 240 sqmm outdoor type	6	Each			

S.No.	Description.	Qty.	Unit.	Rate in Figures (in Rs.)	Rate in words (in Rs.)	Amount (in Rs.)
1	2	3	4	5	6	7
1.08	Providing and laying of 150mm dia non pressure NP2 class (heavy duty) RCC pipe with collar joint with stiff mixture of cement (1 cement : 2 fine sand) including testing the joints, digging and back filling the trench etc. as required for laying of pipe to be laid 1100 mm below ground level.	600	Metre			
1.09	Laying of one number 33 kV, XLPE power cable of 3 core 240 Sqmm in RCC pipe of 150mm dia complete as required	1000	Metre			
1.10	Making of manhole size 1.5 m (depth) X 1.5 m(width) with suitable opening including manhole cover and monkey ladder complete as required.	12	Nos			
1.11	Supply & laying of 33 KV cable route marker of suitable location & internal.	30	Nos			
	Sub Station -2					
1.12	HT Panel					
	Supply, erection, testing and commissioning of indoor type HT Panel having 630A, 33 kV, 3 Phase, 50 Hz., metal clad, dead front, 18.4 KA rupturing capacity Vacuum Circuit Breakers with interlocking scheme for the operation of different VCB, connections etc. complete with following incomers and outgoings including interlocking as per technical specifications and as required.					
	a INCOMER :					
	i 1 No. VCB Panel having following:					
	1 No. 630A, 33 kV, 3 Phase, 50Hz., metal clad, dead front, 18.4 KA rupturing capacity, Fully Drawout type, Vacuum Circuit Breaker (VCB)					

S.No.	Description.	Qty.	Unit.	Rate in Figures (in Rs.)	Rate in words (in Rs.)	Amount (in Rs.)
1	2	3	4	5	6	7
	1 set of 33kV/110V Potential Transformers with HRC fuses for metering and protection.					
	1 Set of Phase indicating lamps with HRC fuses					
	1 No. 0-33 kV digital voltmeter with selector switch					
	1 set of indicating lamps to indicate OPEN, CLOSE, TRIP, SPRING CHARGED, TRIP CIRCUIT HEALTHY					
	2 No. Push button for CLOSE and TRIP					
	1 set of 50/5-5A Current Transformer for metering and protection or as required by state electricity board.					
	1 No. digital ammeter with selector switch					
	1 Set of CDG 61 (2 No. O/C, 1 No. E/F) relay					
	8 window Alarm annunciator with separate hooter, accept and rest push buttons.					
	1 Set of undervoltage relay and Overvoltage relay					
	1 set of trip circuit supervision relay					
	Auxiliary Relay with shunt trip coil.					
	1 No. Master Trip relay					
	1 No. digital Power factor meter					
	1 No. digital Frequency meter					
	1 No. 3-Phase digital Trivector Meter of suitable rating					
	BUSBARS :					
	33KV, 630 Amps, 18.4 KA Three Phase busbars of Copper.					
	b OUTGOINGS :					
	i 4 No. VCB Panels each having following:					
	1 No. 630A, 33kV, 3 Phase, 50Hz., metal clad, dead front, 18.4 KA rupturing capacity, Fully Drawout type, Vacuum Circuit Breaker (VCB)					
	1 set of indicating lamps to indicate OPEN, CLOSE, TRIP, SPRING CHARGED, TRIP CIRCUIT HEALTHY					
	Push buttons for CLOSE and TRIP					

S.No.	Description.	Qty.	Unit.	Rate in Figures (in Rs.)	Rate in words (in Rs.)	Amount (in Rs.)
1	2	3	4	5	6	7
	1 set of Current Transformer for metering and protection as per requirement.					
	1 set of 33kV/110V Potential Transformers with HRC fuses for metering and protection.					
	1 No. digital Amps ammeter with selector switch					
	1 Set of CDG 61 (2 No. O/C, 1 No. E/F) relay					
	1 No. Master Trip Relay					
	1 set of trip circuit supervision relay					
	Auxiliary Relay with shunt trip coil.					
	8 window Alarm annunciator with separate hooter, accept and rest push buttons.					
	HT Panel as mentioned above.	1	Set			
1.13	TRANSFORMER					
	Supply, erection, testing and commissioning of 1000 KVA, 33/0.433 kV, 3 Phase, 4 wire, 50 Hz., ON-AN Transformer for out door duty with an off load tap changer -7.5% and +5% in the steps of 2.5% with cable at primary (HT side) and secondary end (LT side) shall be connected through busduct, the transformer shall be complete with first filling of oil, with buchholz relay protection, high winding temperature sensors, complete with all fittings, interconnection of control cables and accessories, soak pit for transformer oil complete as per technical specifications including fencing, gate, pebbles etc as per state electricity rule and civil foundation as per manufacturers requirements.	2	Set			
1.14	BUS DUCTS (Outdoor type)					

S.No.	Description.	Qty.	Unit.	Rate in Figures (in Rs.)	Rate in words (in Rs.)	Amount (in Rs.)
1	2	3	4	5	6	7
	i) Supply, Installation, testing and commissioning of 1600 A, 3 phase and neutral TPN, 415 V, 3 Phase, 4 Wire, sandwich construction Aluminium Bus Duct including bends, flexible joints, earth bus (2 runs of aluminium strips), supports for installation, supporting arrangements, canopy etc. complete as per technical specifications and as required.	50	Mtrs			
	TOTAL FOR SUBHEAD 1: H.T. SUB STATION					
	SUB HEAD 2: EARTHING SAFETY EQUIPMENT AND MISC. ITEMS					
2.00	EARTHING, SAFETY EQUIPMENTS AND MISC. ITEMS					
2.01	Earthing with Copper plate 600mmX600mmX3mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. (but without charcoal or coke and salt) complete as per CPWD general specifications for electrical works Part-1, Internal - 2005 and IS:3043-1987.	12	Set			
2.02	Earthing with GI plate 600mmX600mmX6mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. (but without charcoal or coke and salt) complete as per CPWD general specifications for electrical works Part-1, Internal - 2005 and IS:3043-1987.	12	Set			
2.03	Extra for using charcoal and salt for GI or copper plate earth electrode as required.	24	Set			

S.No.	Description.	Qty.	Unit.	Rate in Figures (in Rs.)	Rate in words (in Rs.)	Amount (in Rs.)
1	2	3	4	5	6	7
2.04	Supplying and laying 50mmX6mm Copper strip on surface/on existing cable trench/RCC pipe or in recess for earth electrode as required.	100	Metre			
2.05	Providing and fixing 50mmX6mm GI strip on surface/on existing cable trench/RCC pipe or in recess for earth electrode as required.	300	Metre			
2.06	Providing and fixing H.T. (33kV) danger notice plate of 250mmX150mm made of mild steel, atleast 2mm thick and vitreous enameled white on both sides and with inscription in signal red colour on front side as required.	4	Each			
2.07	Supplying and laying of 33KV grade 1 metre wide anti skid chequered type rubber mat.	40	Metre			
2.08	Design, manufacture, supply and installation of Fire Buckets 13 litre capacity 4 Nos. duly filled with sand and GI pipe support stand for these buckets with 14 guage MS painted sheet etc. complete as required as per fire safety norms.	4	Set			
2.09	Supply and fixing shock treatment chart in English, Hindi and local language mounted on 5mm thick Plywood and 3mm thick plain glass front complete as required.	4	Set			
2.10	Supplying and fixing CO2 type 9 Kg capacity fire extinguishers as approved by ISI complete as required.	4	Set			

S.No.	Description.	Qty.	Unit.	Rate in Figures (in Rs.)	Rate in words (in Rs.)	Amount (in Rs.)
1	2	3	4	5	6	7
2.11	Supplying, storing, handling and fixing in position First Aid Medical Box complete as per tech. specifications as required.	2	Each			
	TOTAL SUB HEAD 2: EARTHING, SAFETY EQUIPMENT AND MISC. ITEMS					
A.	GRAND TOTAL FOR ALL ELECTRICAL WORKS					

S.No.	Description.	Qty.	Unit.	Rate in Figures (in Rs.)	Rate in words (in Rs.)	Amount (in Rs.)
1	2	3	4	5	6	7
	SUBHEAD 3 : CIVIL WORKS:					
B.	Civil works					
	Construction and completion of RCC frame structure single storey Two nos. Electrical Substation consisting of Meter room having size (5mX6mX5m), HT Panel room having size 15mx6.0mx5.0m , and LT Room having Size 20mx6.0mx5.0m including one Toilet(total area 240 sqm of one Substation) . Total area is of 480 SQM for both Substations. Height of the building is 5.0m as per specifications, makes etc complete in all respect.					

S.No.	Description.	Qty.	Unit.	Rate in Figures (in Rs.)	Rate in words (in Rs.)	Amount (in Rs.)
1	2	3	4	5	6	7
	The above civil ,electrical, PHE works consist of the following items - i)Totally RCC frame Structure building (All structural drgs to be approved by engineer on submiission by contractor) ii)Soling, 100 mm thick sand filling, 100mm th. PCC (1:5:10) for base flooring; iii) Brick work in C.M. 1:6 (1 cement : 6 coarse sand) iv) RCC Work (C.Concreting, M-25 Grade of Conc. & Reinforcement Steel, TMT 500) as per approved structural drawings v) C.Plastering both Internal & External, internal plastering 12 - 15 mm with cement mortar 1:5 (1 cement : 5 fine sand) and outer plaster 20mm with cement mortar 1:4 (1 cement : 4 coarse sand). Ceiling plaster 6mm thick cement mortar 1:3 (1 cement : 3 fine sand) vi) Painting both Internal (Oil bound distemper) & External painting (Sand finish with Apex/Weather shield paint,(Asian/ICI/Berger make) as per approved shade. vii) Kota stone Flooring and skirting(as per CPWD specifications) in all panel rooms including ordinary polishing & Anti skid tile flooring for Toilets, Tiles in dado in Toilets(upto false ceiling height) (Naveen/Somany/Kajaria make).					

S.No.	Description.	Qty.	Unit.	Rate in Figures (in Rs.)	Rate in words (in Rs.)	Amount (in Rs.)
1	2	3	4	5	6	7
	viii) cable trenches Entrance doors shall be suitable size rolling shutter approved by engineer ix) In front of rolling shutter ramps shall be provided and Rough Kota on Ramp & External porch area on both sides. x) Plinth protection around the building as per CPWD specifications 35mm thick flush doors (commercial painted with synthetic enamel paint) with teak lipping around including fittings & fixtures in all internal including Door closer, Lock (Acme, Godrej or equivqlent) of approved make (Door Kitply, Century, Green Ply or equivqlent) including fittings & fixtures .Shop drawings to be submitted for approval. Aluminium make: Jindal/Hindalco/Indal)					
	xi) Terrace water proofing with Brick bat coba as per CPWD specifications.					

S.No.	Description.	Qty.	Unit.	Rate in Figures (in Rs.)	Rate in words (in Rs.)	Amount (in Rs.)
1	2	3	4	5	6	7
	<p>xii) Plumbing Works:</p> <p>a) GI Pipes (Concealed/Exposed) should be of Jindal Hissar, Tata, Prakash Surya</p> <p>b) CI pipes should be of NECO, HEPCO, IS 3989 or equivqlent (BIS make)</p> <p>c) C.P fittings, Mixer/Pillar taps, CP Brass accessories should be of standard design and should be of ISI make for all toilets.</p> <p>d) Urinal-Hindware 60011 or equivqlent Smart Urinal St. White color.</p> <p>e) WC Hindware 92016 Wall Hung White or eq., water closet with Soft Close.</p> <p>f) Wash basin Hindware or eq. Garnet 10080 White Colour</p> <p>g) Construction of Gully Trap & manhole as per standard design.</p> <p>h) PVC tank 500lts capacity 4 nos (Sintex or Eq.)</p> <p>i) Connection of water supply and sewer line upto nearest mahole</p> <p>j) CI IS 3989 water pipe</p> <p>k) Including internal electrification, fittings, fixtures, switches, wire, cables as per requirements and with the approval of Engineer.</p>					
	Note: Before the execution of item/ items ,prior approval should be taken. The work should be executed as per CPWD specifications.					
	Approval from Local Authorities is also in the scope . This includes liasioning with Local authorities for getting all necessary approvals required for Electrical building services (HT and LT panel rooms) i/c Making Submission & As Built Drawings, Occupation certificate and Completion Certificate etc. complete in all respect as per direction and approval of Engineer Incharge.	480	Sq. Mtr			

S.No.	Description.	Qty.	Unit.	Rate in Figures (in Rs.)	Rate in words (in Rs.)	Amount (in Rs.)
1	2	3	4	5	6	7
	TOTAL FOR ALL CIVIL WORKS					
	GRAND TOTAL FOR ALL ELECTRICAL & CIVIL WORKS					

SUMMARY OF COST ESTIMATE - ELECTRICAL WORKS

S.No.	Description	Amount In Figure (In Rs.)	Amount in Words (Rs.)
1	SUBHEAD 1: H.T. SUB STATION		
2	SUB HEAD 2: EARTHING SAFETY EQUIPMENT AND MISC. ITEMS		
3	SUBHEAD 3 : CIVIL WORKS:		
	GRAND TOTAL FOR ALL ELECTRICAL & CIVIL WORKS		

**SUMMARY SHEET FOR Supply, Installation, Testing & Commissioning of
33KV Sub-station equipment including Construction of Substation Building of
Housing Complex for AIIMS-like Institution under PMSSY at Bhubaneswar
(Orissa)**

S.No	Name of Head	Total Quoted Amount (In Indian Rupees)
1	Civil Works	
2	Electrical works	
	Total in Figures	
	Total in Words	

END OF
VOLUME-V