

# TENDER DOCUMENT

TENDER SPECN No : BAP : ERN : OPAL : RWTP : ELEC :C : 240

DATED : 04.03.2014

NAME OF WORK :

ELECTRICAL WORKS (ERECTION & COMMISSIONING) FOR RAW WATER TREATMENT PLANT (RWTP), INVOLVING HANDLING AT SITE STORES / STORAGE YARD, SHIFTING TO SITE OF WORK, ERECTION, TESTING AND COMMISSIONING OF ELECTRICAL COMPONENTS OF RWTP, AT OPAL, DAHEJ, BHARUCH, GUJARAT USING CONTRACTOR'S TOOLS AND PLANTS, CRANES , CONSUMABLES, MANPOWER ETC.

## PART - II ( PRICE BID)



ERECTION SERVICES DEPARTMENT

**BHARAT HEAVY ELECTRICAL LTD**

BOILER AUXILIARIES PLANT

RANIPET - 632 406

## SCHEDULE OF RATES & QUANTITIES

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INSTRUCTIONS TO BIDDERS
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| <p><b>1. ALL THE ITEMS OF WORK INDICATED BELOW SHALL BE CARRIED OUT USING CONTRACTOR'S OWN TOOLS AND PLANTS, CRANES , TRAILORS, MACHINARIES, MAN POWER AND CONSUMABLES.</b></p>  |
| <p><b>2. THE ITEM OF WORKS INDICATED SHALL INCLUDE WORK INCLUDES HANDLING OF STRUCTURALS / COMPONENTS AT SITE STORES / STORAGE YARDS, TRANSPORTATION TO SITE OF ERECTION, HANDLING AT SITE OF ERECTION, ASSEMBLY, ERECTION, ALIGNING, WELDING, TESTING, ASSISTANCE IN COMMISSIONING ETC.</b></p> |
| <p><b>3. THE DISTANCE OF BHEL / CUSTOMER STORES / STORAGE YARD WITHIN THE PLANT TO SITE OF ERECTION IS IN A RADIUS OF ABOUT 2.0 KM. ALL THE ABOVE RWTP MATERIALS &amp; COMPONENTS WILL BE SUPPLIED BY BHEL ON FREE ISSUE BASIS.</b></p>  |
| <p><b>4. BHEL WILL NOT PROVIDE POWER AND WATER . THE BIDDER SHALL ARRANGE AT THEIR OWN COST DIESEL GENERATOR SET OF SUITABLE CAPACITY FOR POWER REQUIREMENTS.</b></p>  |
| <p><b>5. CRANES OF REQUIRED CAPACITY AND QUANTITY FOR COMPLETION OF THE ERECTION OF RWTP, WITHIN THE STIPULATED PERIOD, SHALL BE IN THE BIDDERS SCOPE.</b></p>   |
| <p><b>6. BIDDERS TO TO NOTE THAT EVALUATION OF BIDS WILL BE DONE ON THE TOTAL AMOUNT QUOTED ONLY.</b></p>  |
| <p><b>7. THE QUANTITIES INDICATED ARE ONLY APPROXIMATE AND ARE LIKELY TO VARY TO THE EXTENT OF +15% OR -15%..</b></p>  |
| <p><b>8. FOR DETAILS OF SCOPE OF WORK REFER THE TENDER SPECIFICATION.</b></p>  |
| <p><b>9. A COPY OF UNPRICED PRICE-BID SHALL BE SUBMITTED ALONG WITH THE PART-I (TECHNICAL BID) WITHOUT INDICATING ANY RATE OR AMOUNT. "QUOTED" / "NOT QUOTED" SHALL BE ENTERED IN THE UNPRICED PRICE BID. ONLY THE APPLICABLE SERVICE TAX PERCENTAGE SHALL BE INDICATED.</b></p>                 |

**SIGNATURE WITH SEAL OF BIDDER**

### SCHEDULE OF RATES AND QUANTITIES

TENDER SPECN No : BAP : ERN : OPAL :RWTP : ELEC : C : 240

DT : 04.03.2014

**NAME OF WORK :**

ELECTRICAL WORKS (ERECTION & COMMISSIONING) FOR RAW WATER TREATMENT PLANT (RWTP), INVOLVING HANDLING AT SITE STORES / STORAGE YARD, SHIFTING TO SITE OF WORK, ERECTION, TESTING AND COMMISSIONING OF ELECTRICAL COMPONENTS OF RWTP, AT OPAL, DAHEJ, BHARUCH, GUJARAT USING CONTRACTOR'S TOOLS AND PLANTS, CRANES , CONSUMABLES, MANPOWER ETC.

**NOTE :**

1. For detailed sope of work refer to Tender specification.
2. BHEL WILL NOT PROVIDE POWER AND WATER . THE BIDDER SHALL ARRANGE AT THEIR OWN COST DIESEL GENERATOR SET OF SUITABLE CAPACITY FOR POWER REQUIREMENTS.
3. Supply of PVC shroud for outdoor cable glands is in the scope of bidder / contractor.
4. The price quoted shall be inclusive of VAT and all other taxes and duties, except service tax which is to be indicated separately.

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S. No.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE / UNIT in Rs.	AMOUNT in Rs.
1	ERECTION & COMMISSIONING OF TRANSFORMERS.				
a	SERVICE TRANSFORMER 2000KVA , 3 phase, 6.6 KV / 433 V, INCLUDING ALL ACCESSORIES, PIPING, NEUTRAL EARTHING RESISTOR ETC. REFER TO THE SPECN FOR DETAILS OF WORK. APPROX WT. 6400 KG EACH	2.00	No.		
b	LIGHTING TRANSFORMER IN UF AREA, 25 KVA INCLUDING ALL ACCESSORIES. ETC. REFER TO THE SPECN FOR DETAILS OF WORK. APPROX WT. 1000 KG EACH	2.00	No.		

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S. No.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE / UNIT in Rs.	AMOUNT in Rs.
<b>2</b>	<b>ERECTION &amp; COMMISSIONING OF 415 V LT PANELS, CONTROL PANELS, SSPBs, JBs ETC.</b>				
<b>a</b>	<b>LTPCC PANEL IN SS14 AREA</b> APPROX. SIZE : 14000L x 1750W x2450 H mm APPROX.. WEIGHT : 9000kg/ESP	<b>1</b>	No.		
<b>b</b>	<b>LTPMCC PANELS IN UF SHED.</b> APPROX. WEIGHT : 10000 KGS SIZE APPROX. 19000MM(L) X 1750 MM (W) X 2450 MM (H)	<b>1</b>	No.		
<b>c</b>	<b>LOCAL START STOP PUSH BUTTON</b> APPROX. WEIGHT : 2.5 KG EACH	<b>110</b>	No.		
<b>d</b>	<b>ACDB ( UPSDB) 110V FOR UPS</b> IN CCR ROOM APPROX. WEIGHT : 15 KGS SIZE APPROX. 500MM X 500 MM	<b>1</b>	No.		
<b>e</b>	<b>MLDB IN UF SHED.</b> APPROX. WEIGHT : 200 KGS SIZE APPROX. 2000MM X 1000 MM	<b>1</b>	No.		
<b>3</b>	<b>ERECTION &amp; COMMISSIONING DCS SYSTEM AND ACCESSORIES IN CCR AREA. PVC SHROUD FOR OUTDOOR CABLE GLANDS IS IN BIDDERS / CONTRACTORS SCOPE.</b>				
<b>a</b>	<b>DCS PANEL IN CCR AREA</b> SIZE APPROX. 800MM X 800 MM X 2100	<b>1</b>	SET		
<b>b</b>	<b>Laying and termination of PVC insulated armoured Electronic Earthing copper Cable</b> upto the Electronic Earth pit (2 runs each of 20 metres length approx.) in CCR area.	<b>1</b>	SET		
<b>c</b>	<b>Modbus Protocol converter</b> in CCR area Work includes laying and termination of armoured Modbus Cable suitable for RS485/RS422 communication from CCR DCS to CCR DCS panel (2 runs each of 70 metres length) approx	<b>1</b>	SET		

SIGNATURE AND SEAL OF BIDDER

S. No.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE / UNIT in Rs.	AMOUNT in Rs.
<b>4</b>	<b>ERECTION &amp; COMMISSIONING CONTROL PANELS AND ACCESSORIES IN UF AREA.</b> PVC SHROUD FOR OUTDOOR CABLE GLANDS IS IN BIDDERS / CONTRACTORS SCOPE.				
<b>a</b>	REMOTE IO PANEL- 1 IN UF AREA SIZE APPROX. : 7200(W) X 800(D) X 2100(H) (in 9 SECTIONS).	<b>1</b>	SET		
<b>b</b>	<b>Laying and termination of PVC insulated armoured Electronic Earthing</b> copper Cable upto the Electronic Earth pit (2 runs each of 20 metres length approx.) in UF area.	<b>1</b>	SET		
<b>c</b>	<b>Numerical relay protocol convertors</b> supporting 3 relays, IEC 61850 protocol with screened twisted pair (CAT5E)cable from Remote IO panel 1 to MCC panel in UF area along with suitable HDPE pipe with joint coupler Accessories (3 x 40 mtrs length approx.).	<b>1</b>	SET		
<b>5</b>	<b>ERECTION &amp; COMMISSIONING CONTROL PANELS AND ACCESSORIES IN SS14 AREA.</b> PVC SHROUD FOR OUTDOOR CABLE GLANDS IS IN BIDDERS / CONTRACTORS SCOPE.				
<b>a</b>	REMOTE IO PANEL IN SS14 AREA SIZE APPROX. : 2400 x 800 x 2100 .(in 3 sections)	<b>1</b>	SET		
<b>b</b>	<b>Laying and termination of PVC insulated armoured Electronic Earthing</b> copper Cable upto the Electronic Earth pit (2 runs each of 20 metres length approx.)	<b>1</b>	SET		
<b>c</b>	<b>Numerical relay protocol convertors</b> supporting 3 relays, IEC 61850 protocol with screened twisted pair (CAT5E)cable from Remote IO panel 2 to MCC panel in SS14 area along with suitable HDPE pipe with joint coupler Accessories (3 x 40 mtrs length)	<b>1</b>	SET		
<b>d</b>	Erection of 21" TFT Monitors Industrial grade Operator Workstation PC along with PC console table, executive chair and Engineering system software with 4 size laser printer with table	<b>1</b>	SET		

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S. No.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE / UNIT in Rs.	AMOUNT in Rs.
e	Erection of 21" TFT Monitor Industrial grade Operator cum Engineering Workstation PC along with PC console table, executive chair and Operator system software with Alarm & Event (A&E) Dot Matrix printer with table	1	SET		
f	Laying & termination of Redundant Optic fiber cable (2 runs each of 1200 meters length)between CCR DCS panel to Remote IO panel 1 in UF area with suitable accessories connectors and adapters along with suitable HDPE pipe conduit and joint coupler accessories	1	SET		
g	Laying & Termination of Redundant Optic fiber cable (2 runs each of 2000 meters length) between CCR DCS panel to Remote IO panel 2 in MCC area with suitable accessories connectors and adapters along with suitable HDPE pipe conduit and joint coupler accessories	1	SET		
h	Erection of Non UPS Power Distribution board switch fuse protected with 1 incomer (2KVA, 240V AC 50Hz)and 6 outgoing feeders(25A, DPST)	1	SET		
i	Laying and termination of PVC insulated armoured Electronic Earthing copper Cable upto the Electronic Earth pit (2 runs each of 20 metres length)	1	SET		
j	Erection of 48 Way Junction Box size 400 x 300 wt=10 kg	6	SET		

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S. No.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE / UNIT in Rs.	AMOUNT in Rs.
k	Erection of 24 Way Junction Box size 300 x 300, wt= 6 kg	10	SET		
6	<b>Laying of the following Analog &amp; Digital Instrumentation cables</b> between LT MCC panel, VFD panel, PLC panels to equipment, Junction Boxes and interconnecting panels as per cable routing drawing, Cable schedule in cable trays / trenches / conduits and dressing / clamping as per specification. Cables and cable tags only shall be supplied by BHEL on free issue basis at site store. Supply of cable clamps / ties etc. for proper dressing of cables shall be in the scope of supply of bidders / contractors. Also, supply and fixing of PVC shroud for out door cable glands is bidders / contractor's scope				
a	6P x 1.5 sqmm overall shielded digital cable	14500	Mtr		
b	12P x 1.5 sqmm overall shielded digital cable	5000	Mtr		
c	6P x 1.5 sqmm individual pair shielded and overall shielded analog cable	3500	Mtr		
d	12P x 1.5 sqmm individual pair shielded and overall shielded analog cable	2300	Mtr		
e	7C X 2.5sqmm Analog Inst power supply cable from DCS to field JB	3000	Mtr		
f	Installation of Interconnection cables between DCS panels to OWS, UPS, PDB ( approx. 60 m )	1	SET		
g	Installation of Electronic earthing cable from DCS panels to earth pit. ( approx. 40 m length)	1	SET		

SIGNATURE AND SEAL OF BIDDER

S. No.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE / UNIT in Rs.	AMOUNT in Rs.
<b>7</b>	<b>Termination of the following Analog &amp; Digital Instrumentation cables</b> between LT MCC panel, VFD panel, DCS panels to equipment, Junction Boxes and interconnecting panels as per cable routing drawing, Cable schedule and standard specification. Cable glands and lugs shall be supplied by BHEL on free issue basis at site store. Supply of ferrules, cable ties etc. is in the scope of the contractor. Termination here means that of a cable and not a core of the cable. Termination involves cutting of cable to required length, fixing of cable gland, fixing ferrules and crimping lugs for all the required cores, dressing of the cable and all the cores inside the panel etc., and connecting all / required cores inside the panels / JB's, SSPBs, etc. as per drawing. Also, supply and fixing of PVC shroud for out door cable glands is bidders / contractor's scope				
<b>a</b>	6P x 1.5 sqmm overall shielded digital cable	65	Nos		
<b>b</b>	12P x 1.5 sqmm overall shielded digital cable	140	Nos		
<b>c</b>	6P x 1.5 sqmm individual pair shielded and overall shielded analog cable	65	Nos		
<b>d</b>	12P x 1.5 sqmm individual pair shielded and overall shielded analog cable	140	Nos		
<b>f</b>	7C X 2.5sqmm Analog Inst power supply cable from DCS to field JB	100	Nos		
<b>h</b>	Termination of nterconnection cables between DCS panels to OWS, UPS, PDB	1	SET		
<b>i</b>	Termination of Electronic earthing cable from DCS panels to earth pit.	1	SET		

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S. No.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE / UNIT in Rs.	AMOUNT in Rs.
<b>8</b>	<b>Erection of the following GI Cable Trays (2.5 / 2.0 mm tk, 3m length)</b> , including couplers with fasteners & Accessories for laying the Power / Control / Instrumentation cables between LT MCC panel, VFD panels, PLC panels to equipment, Junction Boxes, LPBs and interconnecting panels as per cable routing drawing, Cable schedule. Complete cable trays, couplers and fasteners will be supplied by BHEL on free issue basis.				
<b>a</b>	600 mm wide Ladder Type GI Cable trays - each 3M length	2100	Nos.		
<b>b</b>	300 mm wide Ladder Type GI Cable trays - each 3 M length	675	Nos.		
<b>c</b>	150 mm wide Ladder Type GI Cable trays - each 3 M length	325	Nos		
<b>d</b>	600 mm wide Perforated Type GI Cable trays-each 3M length	370	Nos.		
<b>e</b>	150 mm wide Perforated Type GI Cable trays-each 3M length	900	Nos.		
<b>f</b>	50 mm wide Perforated Type GI Cable trays - each 3M length	50	Nos.		
<b>g</b>	<b>Laying of the following Earthing materials (both buried and over the floor)</b> as per earthing detailed drawing and I.E rules. Crimp type lug and gland earthing clamp for G I Wire, equipment earth plate and gland supplied by BHEL on free issue basis. The scope of work includes fixing of equipment earth plates, where required. SUPPLY OF CLEATS / CLAMPS FOR FIXING IS IN THE SCOPE OF BIDDER / CONTRACTOR.				
<b>a</b>	Hot Dip GI Flat 75 mm x 10 mm	3800	Mtr.		
<b>b</b>	Hot Dip GI Flat 40mm x 5 mm	1300	Mtr.		

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S. No.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE / UNIT in Rs.	AMOUNT in Rs.
c	Hot Dip GI Flat 16mm x 5 mm	200	Mtr.		
d	8 SWG GI Wire	19000	Mtr.		
e	Supply and installation of Earth pit as per IE rules and drawing of BHEL. Work includes supply of all the materials required for an earth pit, including pipe.	12	No.		
10	<b>Laying of the following Control Cables ( PVC, FRLS, armoured, copper conductor)</b> between RO DM Plant LT MCC/VFD panels and Local Push Button Stations(LPB) PLC panels to equipment, Junction Boxes and interconnecting panels as per cable routing drawing & cable schedule through / over cable trays / trenches / conduits and dressing / clamping as per specification. Cables and cable tags only shall be supplied by BHEL on free issue basis at site store. Supply of cable clamps / ties etc. for proper dressing of cables shall be in the scope of supply of bidders / contractors. Also, supply and fixing of PVC shroud for out door cable glands is bidders / contractor's scope				
a	7 Core X 2.5 sqmm Cu. Armoured	21000	Mtr.		
11	<b>Termination of the following Control Cables ( PVC, FRLS, armoured, copper conductor)</b> between RO DM Plant LT MCC/VFD panels and Local Push Button Stations(LPB) DCS panels to equipment, Junction Boxes and interconnecting panels as per cable routing drawing, cable schedule and standard specification. Cable glands and lugs shall be supplied by BHEL on free issue basis at site store. Supply of ferrules, cable ties etc. is in the scope of the contractor. Termination here means that of a cable and not a core of the cable. Termination involves cutting of cable to required length, fixing of cable gland, fixing ferrules and crimping lugs for all the required cores, dressing of the cable and all the cores inside the panel etc., and connecting all / required cores inside the panels / JB's, SSPBs, etc. as per drawing.				
a	7 Core X 2.5 sqmm Cu. Armoured	200	Nos		
12	<b>Laying of the following power cables (XLPE, FRLS, armoured, Aluminium/Copper Conductor)</b> between LTMCC TO to drives as per cable routing drawing, Cable schedule in cable trays / trenches / conduits and dressing / clamping as per specification. Cables and cable tags only shall be supplied by BHEL on free issue basis at site store. Supply of cable clamps / ties etc. for proper dressing of cables shall be in the scope of supply of bidders / contractors. Also, supply and fixing of PVC shroud for out door cable glands is bidders / contractor's scope				
a	3C X 2.5 sq mm Cu 1.1 kv armoured	4500	Mtr.		

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S. No.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE / UNIT in Rs.	AMOUNT in Rs.
b	3C X 4 sq mm Cu 1.1 kv armoured	7700	Mtr.		
c	3C X 25 sq mm Al 1.1 kv armoured	4600	Mtr.		
d	3C X 35 sq mm Al 1.1 kv armoured	500	Mtr.		
e	3C X 70 sq mm Al 1.1 kv armoured	1200	Mtr.		
f	3C X 95 sq mm Al 1.1 kv armoured	3200	Mtr.		
g	3C X 120 sq mm Al 1.1 kv armoured	400	Mtr.		
h	1C X 50 sq mm Al 1.1 kv armoured	2200	Mtr.		
i	1C X 120 sq mm Al 1.1 kv armoured	3400	Mtr.		
k	1C X 630 sq mm Al 1.1 kv armoured	43000	Mtr		
l	3C X 240 sq mm Al 6.6 kv armoured ( HT Cable)	200	Mtr.		

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S. No.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE / UNIT in Rs.	AMOUNT in Rs.
13	<b>Termination of the following Power Cables (XLPE, FRLS, armoured, Aluminium/Copper Conductor)</b> between RO DM Plant LT MCC/VFD panels and Local Push Button Stations(LPB) PLC panels to equipment, Junction Boxes and interconnecting panels as per cable routing drawing, cable schedule and standard specification. Cable glands and lugs shall be supplied by BHEL on free issue basis at site store. Supply of ferrules, cable ties etc. is in the scope of the contractor. Termination here means that of a cable and not a core of the cable. Termination involves cutting of cable to required length, fixing of cable gland, fixing ferrules and crimping lugs for all the required cores, dressing of the cable and all the cores inside the panel etc., and connecting all / required cores inside the panels / JB, SSPBs, etc. as per drawing.				
a	3C X 2.5 sq mm Cu 1.1 kv armoured	65	Nos		
b	3C X 4 sq mm Cu 1.1 kv armoured	60	Nos		
c	3C X 25 sq mm Al 1.1 kv armoured	65	Nos		
d	3C X 35 sq mm Al 1.1 kv armoured	6	Nos		
e	3C X 70 sq mm Al 1.1 kv armoured	16	Nos		
f	3C X 95 sq mm Al 1.1 kv armoured	48	Nos		
g	3C X 120 sq mm Al 1.1 kv armoured	6	Nos		
h	1C X 50 sq mm Al 1.1 kv armoured	8	Nos		

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S. No.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE / UNIT in Rs.	AMOUNT in Rs.
i	1C X 120 sq mm Al 1.1 kv armoured	32	Nos		
j	1C X 630 sq mm Al 1.1 kv armoured	265	Nos		
k	3C X 240 sq mm Al 6.6 kv armoured (HT Termination kit shall be supplied by BHEL on free issue basis)	32	Nos		
l	Supply & termination of <b>Straight Joint</b> for 1C X 630 cable.	50	Nos		
m	Supply and installation of <b>Trefoil Clamps</b> for IC cables.	500	Nos		
14	<b>FABRICATION AND ERECTION</b> (including painting ) of supports for panels, cable trays, junction boxes, push button stations, instrument panels etc. from raw materials like channels, angles etc. (ISMC 75, ISA50etc). supplied by BHEL on free issue basis. Painting shall be as per BHEL specification.	10.00	METRIC TON (MT)		
15	<b>ERECTION OF PRE-FABRICATED</b> of supports for cable trays, push button stations etc. ( major area between UF area and ) The supports are to be bolted to concrete floor using anchor bolts or welded to structures / base plates. Grip Anchor bolts shall be supplied by BHEL on free issue basis.	26.00	METRIC TON (MT)		
16	Supply and installation of <b>Rubber Mats</b> (1Mx1Mx12mm TK)	150.00	SQM		

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S. No.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE / UNIT in Rs.	AMOUNT in Rs.
<b>17</b>	<b>Erection of Instruments, SS Fittings, Instrument panels, Junction Boxes etc. Materials supplied by BHEL on free issue basis.</b>				
<b>a</b>	Pressure Guage / Pressure Transmitter / Level Indicator (for tank)	12	Nos.		
<b>b</b>	SS Fittings for Instruments alongwith isolation valves, 2 way manifolds. Instrument fittings details:- (approx. qty per set) a) ss 316 seamless 3/4" pipe as per SCH 40 = 3 Metre, b) 3/4" Hex nipple(NPT (M)), 100 mm length , = 7 Nos, c) 3/4" globe valve both end NPT (f) THREADED = 2 nos, d) 3/4" FLANGE(NPT (F) , = 3 Nos, e) 3/4" Equal Tee =2 Nos , f) 3/4" end cap =2 Nos, g) A aptor one end 3/4" other 1/2" = 1 Nos, h) 1/2 " Coupler = 1 Nos, i) 3/4" Elbow = 1 Nos Wt approx 20 kgs	12	SET		
<b>18</b>	<b>Erection of the following Air conditioning &amp; Ventillation system equipment. Materials supplied by BHEL on free issue basis.</b>				
<b>a</b>	Air Conditioner (1.5 tons Split type)	7	Nos		
<b>b</b>	Exhaust fan - for ventillation	7	Nos		

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S. No.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE / UNIT in Rs.	AMOUNT in Rs.
<b>19</b>	<b>Erection of the following Fire Alarm &amp; Detection system components. Materials supplied by BHEL on free issue basis.</b>				
<b>a</b>	Manual call point safe	4	Nos		
<b>b</b>	Exit sign	2	Nos		
<b>c</b>	Fault isolator module	1	Nos		
<b>d</b>	Laying and Termination of 5P x 0.63 sq mm Cu. overall screened cable	600	Mtr		
<b>e</b>	Laying and termination of 2 pair x 1.5 sqmm Cu. overall screened cable	3000	Mtr		
<b>20</b>	<b>Erection of the following PA / Telephone system components. Materials supplied by BHEL on free issue basis.</b>				
<b>a</b>	Loudspeaker	5	Nos		
<b>b</b>	Laying and termination of 20 P x 0.63sqmm cable	1200	Mtr		
<b>c</b>	Telephone JB	10	Nos		

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S. No.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE / UNIT in Rs.	AMOUNT in Rs.
d	RJ-11 for telephone	10	Nos		
<b>21</b>	<b>Erection of the following illumination system components (including emergency lighting). Materials supplied by BHEL on free issue basis.</b>				
a	FL TL 2 X 40 FITTINGS with down pipes	50	SET		
b	HPMV LAMP 250 w with accessories	20	SET		
c	400 watts flood light fixtures with accessories	25	SET		
d	1x125 HPSV street light with accessories	20	SET		
e	1x 150 watts HPSV street light with accessories	6	SET		
f	2 x 36 watts CFL with accessories	10	SET		
g	Normal lighting panel	25	Nos		

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S. No.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE / UNIT in Rs.	AMOUNT in Rs.
h	Emergency lighting panel	10	Nos		
i	7.5 metre Gl. poles	3	Nos		
j	9.5 metre G.I Poles	6	Nos		
k	1200 mm long 120 degree bend 50 NB pipe	20	Nos		
l	1c x 2.5 sq.mm Cu.wire ( includes termination)	3000	Mtr.		
m	3c x 2.5 sq.mm Cu. Armoured cable	3000	Mtr.		
n	4c x 16 sq,mm armoured cable	3500	Mtr.		
o	G.I. Conduits & accessories like clamps, screws, bends, jb, elbows etc. for 1c wires	1000	Mtr		
p	Domestic type 5/15 A receptacle with switch ( Flush mounted modular)	5	Nos		
q	Industrial metal clad type 15 A receptacle along with switch and plug	3	Nos		

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S. No.	DESCRIPTION OF WORK	QUANTITY	UNIT	RATE / UNIT in Rs.	AMOUNT in Rs.
r	63 A TPN Welding receptacle (Safe Area)	1	No		
22	<b>ERECTION OF LIGHTNING PROTECTION SYSTEM</b> consisting lightning arrestor rod, down coming earth, clamps, insulators etc.	1	SET		
23	<b>CEIG APPROVAL</b> - consultancy charges towards preparation of drawings, obtaining drawing approval and safety clearance from CIEG etc. complete for the entire scope of work and plant.	1.00	LUMPSUM		
	<b>TOTAL</b>				
	<b>SERVICE TAX APPLICABLE</b>		RATE _____%		
	TOTAL AMOUNT OF INCLUDING SERVICE TAX				

TOTAL AMOUNT IN WORDS :

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