

Name of Work	1. Electrical portion of the work "Provision of Galvalium sheet, Sprinkler and other allied miscellaneous work at BJRI Goods Shed". 2. Electrical portion of the work "Development of Goods Shed as per NGT Guidelines at RIG under the jurisdiction of ADEN/RIG". 3. Electrical portion of the work "Development of Goods Shed as per NGT Guidelines at Kotarlia(KRL) " 4. Electrical portion of the work "Provision of Gelvalium sheet , Sprinkler and other allied miscellaneous work at Akaltara Goods Shed". 5. Electrical portion of the work "Provision of Gallvalium Sheet, Sprinkler and other allied miscellaneous work at KHS goods shed." 6. Electrical portion of the work "Provision of Galvalium sheet, Sprinkler and other allied miscellaneous work at Kamalpurgram(KLPG) Goods Shed". 7. Electrical portion of the work "Development of KJZ goods shed."
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Schedule 1: Electrical portion of the work "Provision of Galvalium sheet, Sprinkler and other allied miscellaneous work at BJRI Goods Shed".

SN	Description of Items	Qty.	Unit	Rate	Total
1	Supply of Submersible pump 5HP, Three Phase-Submersible Pump Set, 10/11 stage, 5star rated suitable for 150 mm dia. Bore, suitable head/discharge as per no. of stages above.	4	Nos	39991	159964
2	Supply of 5 H.P. SEMI AUTOMATIC STAR DELTA starter panel	4	Nos	6500	26000
3	Installation of pumps supplied	4	Nos	1201	4804
4	Supply of Submersible cable 3 core PVC insulated Flat with copper conductor 4 sq mm size as per details	200	Mtrs	90	18000
5	Supply of PVC insulated Galvanised Steel wire rope 8 mm size as per details	200	Mtrs	228	45600
6	Supply of SPN Distribution board conforms to IS-13032. DBS are phosphatised and panted With epoxy polyster based powder paint, sheet steel enclosure for flush/surface mounting with neutral link.earth terminal & bus- bar single door 6 way.	1	Nos	931	931
7	supply of MCB sp 6-32 A capacity.	6	Nos	213	1278
8	Fixing, connection & commissioning of DB/bus-bar chamber supplied above.	1	Nos	41	41
9	Supply of Crosslinked Polyethylene Insulated PVC Sheathed Armoured Cable 4x25 sqmm with Aluminium conductor, suitable for rated voltage at 1100 volts grade, heat resisting insulation-armoured, armoured type: strip, as per IS:7098(Part 1):1988 latest.	1500	Mtrs	300	450000
10	Laying of cable in open air/fixed in wall with supply of all material (Except cable & GI Pipe).	300	Mtrs	42	12600
11	Laying of cable of lower size (upto 4x35 Sq. mm) in Polythene (HDPE) pipe without digging of earth dressing of land including supply of HDPE pipe & all materials . [HDPE pipe 50 mm Diameter, PN 6 or above, conforming to IS 4984 : 2016 or relevant IS standard type: coil/straight as per requirement]	900	Mtrs	127	114300
12	Laying of cable of in GI pipe including supply of all materials (including G.I. Pipe & except Cable). With supply of G.I. pipe dia. 50mm thickness min. 2mm	100	Mtrs	279	27900
13	Cable laying across the road/track by using trench-less construction method (HDD)	200	Mtrs	4243	848600
14	Trenching/Digging of earth 1 mtr deep for cable laying.	400	Mtrs	88	35200
15	Supply of electric Ceiling Fan BLDC Type Sweep Size (mm):1200, rating: 5star, type of regulator: Electronic/remote	4	Nos	2836	11344

16	Supply of On delay Electronic Timer suitable for 230V AC, 48V AC/DC, 24V AC/DC, Time range 0-10 sec or 1-100 sec or 0-300 sec	4	Nos	1377	5508
17	Supply of power contactor 25A rating with 1NO+1NC	4	Nos	1826	7304
18	Fixing & Connection of Contactor Timer Unit Supplied above.	4	Nos	712	2848
19	Concealed Wiring for 6/16 Amps plug points with PVC Pipe and PVC insulated copper conductor 2.5 sq.mm. size with modular board supply of all materials.	10	Points	689	6890
20	Concealed wiring for light fan & 6 Amps plug points with PVC Pipe and PVC insulated copper conductor 1.5 sq.mm. size with modular board with supply of all materials.	104	Points	664	69056
21	Concealed Wiring for Sub-circuits.	200	Mtrs	207	41400
22	Supply of LED Inverter Batten 20 W 6500 K Tubelight polycarbonate body	40	Nos	796	31840
23	Fixing of lights/fans supplied as above with supply of flexible wire to connection othe nearest ceiling rose.	54	Nos	58	3132
24	Supply of LED Flood Light 100W with die cast aluminium heat sink IP66, colour≥ 6000K with high power LEDs as light source	10	Nos	4409	44090
25	Fixing & connection of luminaire supplied above.	10	Nos	58	580
26	Earthing arrangement.	4	Nos	3428	13712
27	Supply of 16 meters High Mast Lighting Tower for large area with LED Flood Lighting System with 12 Nos LED FLOOD LIGHT LUMINAIRE complete with steel wire rope double drum winch control panel lantern carriage arrangement etc. with all accessories.	6	Nos	292000	1752000
28	Erection/Installation, Commissioning, Testing (ICT) with shallow foundation of high mast tower 16 Meter High supplied above.	6	Nos	90000	540000
29	Supply of LT Copper Distribution panel fabricated from 16 SWG CRCA, Powder coated with Copper busbar of size 25X10 mm as l/c 02 Nos. MCCB 3PN,400 A ,outgoing are-3 no. MCCB3P,100 A, 2no. MCCB 3P,63 A with rotary handle are l/c having R/Y/B indication, metering arrangement etc.complete.	1	Nos	287832	287832
30	Transportation, Installation, testing & Commissioning of LT distribution panel	1	Nos	15733	15733
31	Supply & fixing of 90 KVAR APFC Panel Board made up of 1.6mm/1.8mm CRCA Sheet duly powder coated with Siemens grey RAL 7032/7035 with locking arrangements, Dust & Vermin proof, Aluminum Busbar with color coded sleeves Indicating Lamps with control fuses, APFC relay 8 stage Switchgears – L&T Make Capacitors – Make L&T Total- 90 KVAR (Without Reactor)	1	Nos.	105298	105298
32	Erection & painting of departmentally supplied rail poles (13-8 Mtrs long)	8	MT	2532	20256
33	Supply & Fabriction of steel structure for diffenent work.	1	MT	44601	44601
34	Construction of Cement Concrete foundation containing cement concrete on the proportion 1:3:6 of cement,sand & ballst size of 40mm.	25	Cum	5284	132100
35	Supply of Stays & Guys.	4	Nos.	445	1780
36	Erection of Stays & Guys.	4	Nos.	116	464
37	Supply of 11 KV top clamp.	6	Nos	227	1362
38	Supply of 11 KV pin insulator with supply of required nut & bolts.	6	Nos	95	570
39	Supply of 11 KV disc insulator with supply of required hardware, nut & bolts.	6	Nos	691	4146
40	Fixing of 11 KV top clamp	3	Nos	36	108
41	Fixing of HT pin insulator suitable for 11 KV.	6	Nos	20	120

42	Fixing of HT disc insulator with hardware.	6	Nos	145	870
43	Supply of Aluminium conductor galvanized steel wire 50 sqmm reinforced size 6/3 35 MM ALUMN+ 1/3 35 MM STEEL	1	km	21828	21828
44	Drawl of 5 conductor LT line	0.2	km	3671	734.2
45	Supply & fixing of C.I. clamp for top earth wire with all accessories like MS flat iron 50X8" size , nut - bolt, washer, reel insulator etc.	12	Nos.	191	2292
46	Supply of G.I. wire 8 SWG size.	15	KG	40	600
47	Drawing of earth wire.	15	KG	5	75
48	Supply of LT 5 pin vertical bracket for single circuit including back clamp, nut-bolt and washer.	2	Nos.	1291	2582
49	Fixing of LT 5 pin vertical bracket including back clamp, nut-bolt and washers.	2	Nos.	28	56
50	Supply of LT insulator SHACKLE type 90X75 mm.	10	Nos.	102	1020
51	Supply of G.I. Bolt Nut 4.5 inch x 1/2 inch with G. I. washers for fixing of LT insulators.	10	Nos.	289	2890
52	Fixing of SHACKLE type insulator after release of old insulator.	10	Nos.	74	740
53	Dismantling of overhead line	2	Span	776	1552
54	Supply of Anticlimbing Device.	2	No.	182	364
55	Fixing of Anticlimbing Device.	2	No.	34	68
56	Supply of Danger Boards LT	2	No.	65	130
57	Fixing of Danger Boards LT	2	No.	4	8
58	Supply of 250 KVA transformer 11/.415 KV outdoor distribution copper wound transformer(pole mounted) , min. warranty: 2years	1	Nos	740000	740000
59	Rate for erection ,testing & commissioning of 250 KVA transformer 11/.415 KV outdoor distribution copper wound transformer .	1	Nos	7044	7044
60	Erection, painting & commissioning of four pole structure complete for 11 KV including AB switch,LA,dropout fuse of 2 set each with allied accessories including supply of all material	1	Nos	141339	141339
61	Construction of plinth for transformer plinth for out door transformer of size 2.0Mtr X 2.0Mtr X 2.0Mtr with stone/brick masonry with all connected accessories	1	Nos	5841	5841
62	Excavation of pit for construction of above transformer plinth for outdoor type transformer	1	Nos	2299	2299
63	Supply of 11 kV Covered Conductor 99 Sqmm XLPE insulation	200	Mtrs	389	77800
64	Supply of 11kv polymer disc insulator	9	Nos.	118	1062
65	Erection of 11kv polymer disc insulator	9	Nos.	11	99
66	Supply of Strain Hardware for Raccoon & Dog.	9	Nos.	318	2862
67	Erection of Strain Hardware for Raccoon & Dog.	9	Nos.	31	279
68	Supply of MS Nut & Bolts size 16x160mm & 16x200mm	40	Kg	84	3360
69	Erection of Nuts & bolts	40	Kg	8	320
70	Supply of Heat Shrinkable cable termination kit for XLPE cable Size 3 core 95-120 sqmm, 11 KV system	3	sets	4957	14871
71	Erection of Jointing kit	3	sets	49	147
72	Supply of Jointing Sleeves for Dog conductor	12	Nos	182	2184
73	Erection of Jointing Sleeves	12	Nos	18	216
74	Supply of T-Clamp for Dog Conductor.	12	Nos	346	4152
75	Erection of T-Clamp for Dog Conductor.	12	Nos	34	408
76	Supply of Stay Set 20 mm (Painted) for 11kv WITHOUT STAY WIRE	4	set	1031	4124
77	Erection of Stay Set 20 mm (Painted)	4	Set	103	412
78	Supply of Stay Wire 7/3.15 mm (7/10 SWG)	0.15	MT	93766	14064.9
A	Sub-total				5947985

Schedule 2: Electrical portion of the work "Development of Goods Shed as per NGT Guidelines at RIG under the jurisdiction of ADEN/RIG".					
1	Supply of Submersible pump 5HP, Three Phase-Submersible Pump Set, 10/11 stage, 5star rated suitable for 150 mm dia. Bore, suitable head/discharge as per no. of stages above.	4	Nos	39991	159964
2	Supply of 5 H.P. SEMI AUTOMATIC STAR DELTA starter panel	4	Nos	6500	26000
3	Installation of pumps supplied	4	Nos	1201	4804
4	Supply of Submersible cable 3 core PVC insulated Flat with copper conductor 4 sq mm size as per details	200	Mtrs	90	18000
5	Supply of PVC insulated Galvanised Steel wire rope 8 mm size as per details	200	Mtrs	228	45600
6	Supply of SPN Distribution board conforms to IS-13032. DBS are phosphatised and panted With epoxy polyester based powder paint, sheet steel enclosure for flush/surface mounting with neutral link.earth terminal & bus- bar single door 6 way.	1	Nos	931	931
7	supply of MCB sp 6-32 A capacity.	6	Nos	213	1278
8	Fixing, connection & commissioning of DB/bus-bar chamber supplied above.	1	Nos	41	41
9	Supply of Crosslinked Polyethylene Insulated PVC Sheathed Armoured Cable 4x25 sqmm with Aluminium conductor, suitable for rated voltage at 1100 volts grade, heat resisting insulation-armoured, armoured type: strip, as per IS:7098(Part 1):1988 latest.	500	Mtrs	300	150000
10	Laying of cable in open air/fixed in wall with supply of all material (Except cable & GI Pipe).	100	Mtrs	42	4200
11	Laying of cable of lower size (upto 4x35 Sq. mm) in Polythene (HDPE) pipe without digging of earth dressing of land including supply of HDPE pipe & all materials . [HDPE pipe 50 mm Diameter, PN 6 or above, conforming to IS 4984 : 2016 or relevant IS standard type: coil/straight as per requirement]	200	Mtrs	127	25400
12	Cable laying across the road/track by using trench-less construction method (HDD)	200	Mtrs	4243	848600
13	Trenching/Digging of earth 1 mtr deep for cable laying.	400	Mtrs	88	35200
14	Supply of electric Ceiling Fan BLDC Type Sweep Size (mm):1200, rating: 5star, type of regulator: Electronic/remote	2	Nos	2836	5672
15	Supply of On delay Electronic Timer suitable for 230V AC, 48V AC/DC, 24V AC/DC, Time range 0-10 sec or 1-100 sec or 0-300 sec	4	Nos	1377	5508
16	Supply of power contactor 25A rating with 1NO+1NC	4	Nos	1826	7304
17	Fixing & Connection of Contactor Timer Unit Supplied above.	4	Nos	712	2848
18	Concealed Wiring for 6/16 Amps plug points with PVC Pipe and PVC insulated copper conductor 2.5 sq.mm. size with modular board supply of all materials.	1	Points	689	689
19	Concealed wiring for light fan & 6 Amps plug points with PVC Pipe and PVC insulated copper conductor 1.5 sq.mm. size with modular board with supply of all materials.	10	Points	664	6640
20	Concealed Wiring for Sub-circuits.	50	Mtrs	207	10350
21	Supply of LED Inverter Batten 20 W 6500 K Tubelight	40	Nos	796	31840

	polycarbonate body				
22	Fixing of lights/fans supplied as above with supply of flexible wire to connection othe nearest ceiling rose.	52	Nos	58	3016
23	Supply of LED Flood Light 100W with die cast aluminium heat sink IP66, colour≥ 6000K with high power LEDs as light source	10	Nos	4409	44090
24	Fixing & connection of luminaire supplied above.	10	Nos	58	580
25	Earthing arrangement.	4	Nos	3428	13712
26	Supply,Installation and commissioning including Civil work at site of 16 Meter Height High Mast Tower as per relevant IS complete with Luminaire 12 Nos LED FLOOD LIGHT with steel wire rope double drum winch control panel lantern carriage arrangement etc. with all accessories.	4	Nos	531279	2125116
B	Sub-total				3577383
Schedule 3: Electrical portion of the work "Development of Goods Shed as per NGT Guidelines at Kotarlia(KRL) "					
1	Supply of Submersible pump 5HP, Three Phase-Submersible Pump Set, 10/11 stage, 5star rated suitable for 150 mm dia. Bore, suitable head/discharge as per no. of stages above.	4	Nos	39991	159964
2	Supply of 5 H.P. SEMI AUTOMATIC STAR DELTA starter panel	4	Nos	6500	26000
3	Installation of pumps supplied	4	Nos	1201	4804
4	Supply of Submersible cable 3 core PVC insulated Flat with copper conductor 4 sq mm size as per details	200	Mtrs	90	18000
5	Supply of PVC insulated Galvanised Steel wire rope 8 mm size as per details	200	Mtrs	228	45600
6	Supply of SPN Distribution board conforms to IS-13032. DBS are phosphatised and panted With epoxy polyster based powder paint, sheet steel enclosure for flush/surface mounting with neutral link.earth terminal & bus- bar single door 6 way.	1	Nos	931	931
7	supply of MCB sp 6-32 A capacity.	6	Nos	213	1278
8	Fixing, connection & commissioning of DB/bus-bar chamber supplied above.	1	Nos	41	41
9	Supply of Crosslinked Polyethylene Insulated PVC Sheathed Armoured Cable 4x25 sqmm with Aluminium conductor, suitable for rated voltage at 1100 volts grade, heat resisting insulstion-armoured, armoured type: strip, as per IS:7098(Part 1):1988 latest.	500	Mtrs	300	150000
10	Laying of cable in open air/fixed in wall with supply of all material (Except cable & GI Pipe).	100	Mtrs	42	4200
11	Laying of cable of lower size (upto 4x35 Sq. mm) in Polythene (HDPE) pipe without digging of earth dressing of land including supply of HDPE pipe & all materials . [HDPE pipe 50 mm Diameter, PN 6 or above, conforming to IS 4984 : 2016 or relevant IS standard type: coil/straight as per requirement]	200	Mtrs	127	25400
12	Cable laying across the road/track by using trench-less construction method (HDD)	200	Mtrs	4243	848600
13	Trenching/Digging of earth 1 mtr deep for cable laying.	400	Mtrs	88	35200
14	Supply of electric Ceiling Fan BLDC Type Sweep Size (mm):1200, rating: 5star, type of regulator: Electronic/remote	2	Nos	2836	5672

15	Supply of On delay Electronic Timer suitable for 230V AC, 48V AC/DC, 24V AC/DC, Time range 0-10 sec or 1-100 sec or 0-300 sec	4	Nos	1377	5508
16	Supply of power contactor 25A rating with 1NO+1NC	4	Nos	1826	7304
17	Fixing & Connection of Contactor Timer Unit Supplied above.	4	Nos	712	2848
18	Concealed Wiring for 6/16 Amps plug points with PVC Pipe and PVC insulated copper conductor 2.5 sq.mm. size with modular board supply of all materials.	1	Points	689	689
19	Concealed wiring for light fan & 6 Amps plug points with PVC Pipe and PVC insulated copper conductor 1.5 sq.mm. size with modular board with supply of all materials.	10	Points	664	6640
20	Concealed Wiring for Sub-circuits.	50	Mtrs	207	10350
21	Supply of LED Inverter Batten 20 W 6500 K Tubelight polycarbonate body	40	Nos	796	31840
22	Fixing of lights/fans supplied as above with supply of flexible wire to connection othe nearest ceiling rose.	52	Nos	58	3016
23	Supply of LED Flood Light 100W with die cast aluminium heat sink IP66, colour \geq 6000K with high power LEDs as light source	10	Nos	4409	44090
24	Fixing & connection of luminaire supplied above.	10	Nos	58	580
25	Earthing arrangement.	4	Nos	3428	13712
26	Supply, Installation and commissioning including Civil work at site of 16 Meter Height High Mast Tower as per relevant IS complete with Lumanaire 12 Nos LED FLOOD LIGHT with steel wire rope double drum winch control panel lantern carriage arrangement etc. with all accessories.	4	Nos	531279	2125116
C	Sub-total				3577383

Schedule 4: Electrical portion of the work "Provision of Gelvalium sheet , Sprinkler and other allied miscellaneous work at Akaltara Goods Shed".

1	Supply of Submersible pump 5HP, Three Phase-Submersible Pump Set, 10/11 stage, 5star rated suitable for 150 mm dia. Bore, suitable head/discharge as per no. of stages above.	4	Nos	39991	159964
2	Supply of 5 H.P. SEMI AUTOMATIC STAR DELTA starter panel	4	Nos	6500	26000
3	Installation of pumps supplied	4	Nos	1201	4804
4	Supply of Submersible cable 3 core PVC insulated Flat with copper conductor 4 sq mm size as per details	200	Mtrs	90	18000
5	Supply of PVC insulated Galvanised Steel wire rope 8 mm size as per details	200	Mtrs	228	45600
6	Supply of SPN Distribution board conforms to IS-13032. DBS are phosphatised and panted With epoxy polyster based powder paint, sheet steel enclosure for flush/surface mounting with neutral link.earth terminal & bus- bar single door 6 way.	1	Nos	931	931
7	supply of MCB sp 6-32 A capacity.	6	Nos	213	1278
8	Fixing, connection & commissioning of DB/bus-bar chamber supplied above.	1	Nos	41	41
9	Supply of Crosslinked Polyethylene Insulated PVC Sheathed Armoured Cable 4x25 sqmm with Aluminium conductor, suitable for rated voltage at 1100 volts grade, heat resisting insulstion-armoured, armoured type: strip, as per IS:7098(Part 1):1988 latest.	500	Mtrs	300	150000

10	Laying of cable in open air/fixed in wall with supply of all material (Except cable & GI Pipe).	100	Mtrs	42	4200
11	Laying of cable of lower size (upto 4x35 Sq. mm) in Polythene (HDPE) pipe without digging of earth dressing of land including supply of HDPE pipe & all materials . [HDPE pipe 50 mm Diameter, PN 6 or above, conforming to IS 4984 : 2016 or relevant IS standard type: coil/straight as per requirement]	400	Mtrs	127	50800
12	Trenching/Digging of earth 1 mtr deep for cable laying.	400	Mtrs	88	35200
13	Supply of electric Ceiling Fan BLDC Type Sweep Size (mm):1200, rating: 5star, type of regulator: Electronic/remote	2	Nos	2836	5672
14	Supply of On delay Electronic Timer suitable for 230V AC, 48V AC/DC, 24V AC/DC, Time range 0-10 sec or 1-100 sec or 0-300 sec	4	Nos	1377	5508
15	Supply of power contactor 25A rating with 1NO+1NC	4	Nos	1826	7304
16	Fixing & Connection of Contactor Timer Unit Supplied above.	4	Nos	712	2848
17	Concealed Wiring for 6/16 Amps plug points with PVC Pipe and PVC insulated copper conductor 2.5 sq.mm. size with modular board supply of all materials.	1	Points	689	689
18	Concealed wiring for light fan & 6 Amps plug points with PVC Pipe and PVC insulated copper conductor 1.5 sq.mm. size with modular board with supply of all materials.	10	Points	664	6640
19	Concealed Wiring for Sub-circuits.	50	Mtrs	207	10350
20	Supply of LED Inverter Batten 20 W 6500 K Tubelight polycarbonate body	40	Nos	796	31840
21	Fixing of lights/fans supplied as above with supply of flexible wire to connection othe nearest ceiling rose.	52	Nos	58	3016
22	Supply of LED Flood Light 100W with die cast aluminium heat sink IP66, colour \geq 6000K with high power LEDs as light source	10	Nos	4409	44090
23	Fixing & connection of luminaire supplied above.	10	Nos	58	580
24	Earthing arrangement.	4	Nos	3428	13712
25	Supply of 16 meters High Mast Lighting Tower for large area with LED Flood Lighting System with 12 Nos LED FLOOD LIGHT LUMINAIRE complete with steel wire rope double drum winch control panel lantern carriage arrangement etc. with all accessories.	4	Nos	292000	1168000
26	Erection/Installation, Commissioning, Testing (ICT) with shallow foundation of high mast tower 16 Meter High supplied above.	4	Nos	90000	360000
D	Sub-total				2157067

Schedule 5: Electrical portion of the work "Provision of Gallvalium Sheet, Sprinkler and other allied miscellaneous work at KHS goods shed."

1	Supply of Submersible pump 5HP, Three Phase-Submersible Pump Set, 10/11 stage, 5star rated suitable for 150 mm dia. Bore, suitable head/discharge as per no. of stages above.	4	Nos	39991	159964
2	Supply of 5 H.P. DOL starter panel including timer	4	Nos	40618	162472
3	Installation of pumps supplied	4	Nos	1201	4804
4	Supply of Submersible cable 3 core PVC insulated Flat with copper conductor 4 sq mm size as per details	400	Mtrs	90	36000

5	Supply of PVC insulated Galvanised Steel wire rope 8 mm size as per details	400	Mtrs	228	91200
6	Supply of SPN Distribution board conforms to IS-13032. DBS are phosphatised and panted With epoxy polyester based powder paint, sheet steel enclosure for flush/surface mounting with neutral link.earth terminal & bus- bar single door 6 way.	1	Nos	931	931
7	supply of MCB sp 6-32 A capacity.	6	Nos	213	1278
8	Fixing, connection & commissioning of DB/bus-bar chamber supplied above.	1	Nos	41	41
9	Supply of Crosslinked Polyethylene Insulated PVC Sheathed Armoured Cable 4x50 sqmm with Aluminium conductor, suitable for rated voltage at 1100 volts grade, heat resisting insulation-armoured, armoured type: strip, as per IS:7098(Part 1):1988 latest.	200	Mtrs	580	116000
10	Supply of Crosslinked Polyethylene Insulated PVC Sheathed Armoured Cable 4x25 sqmm with Aluminium conductor, suitable for rated voltage at 1100 volts grade, heat resisting insulation-armoured, armoured type: strip, as per IS:7098(Part 1):1988 latest.	500	Mtrs	406	203000
11	Laying of cable in open air/fixed in wall with supply of all material (Except cable & GI Pipe).	200	Mtrs	42	8400
12	Laying of cable of lower size (upto 4x35 Sq. mm) in Polythene (HDPE) pipe without digging of earth dressing of land including supply of HDPE pipe & all materials . [HDPE pipe 50 mm Diameter, PN 6 or above, conforming to IS 4984 : 2016 or relevant IS standard type: coil/straight as per requirement]	500	Mtrs	127	63500
13	Trenching/Digging of earth 1 mtr deep for cable laying.	500	Mtrs	88	44000
14	Supply of electric Ceiling Fan BLDC Type Sweep Size (mm):1200, rating: 5star, type of regulator: Electronic/remote	2	Nos	2836	5672
15	Supply of On delay Electronic Timer suitable for 230V AC, 48V AC/DC, 24V AC/DC, Time range 0-10 sec or 1-100 sec or 0-300 sec	4	Nos	1377	5508
16	Fixing & Connection of Contactor Timer Unit Supplied above.	4	Nos	712	2848
17	Concealed Wiring for 6/16 Amps plug points with PVC Pipe and PVC insulated copper conductor 2.5 sq.mm. size with modular board supply of all materials.	5	Points	689	3445
18	Concealed wiring for light fan & 6 Amps plug points with PVC Pipe and PVC insulated copper conductor 1.5 sq.mm. size with modular board with supply of all materials.	76	Points	664	50464
19	Supply of Exhaust Fan non-Capacitor Type Sweep Size (mm):300, No.of pole: 4, Insulation of material class: B	4	Nos	2490	9960
20	Supply of Electric Ceiling Fan BLDC Type Sweep Size (mm):1400, rating: 5star, type of regulator: remote	2	Nos	2888	5776
21	Concealed Wiring for Sub-circuits.	150	Mtrs	207	31050
22	Supply of LED Inverter Batten 20 W 6500 K Tubelight polycarbonate body	40	Nos	796	31840
23	Fixing of lights/fans supplied as above with supply of flexible wire to connection othe nearest ceiling rose.	20	Nos	50	1000
24	Supply of LED Flood Light 100W with die cast aluminium heat sink IP66, colour ≥6000K with high power LEDs as light source	10	Nos	2998	29980
25	Fixing & connection of luminaire supplied above.	10	Nos	58	580

26	Point wiring for fans/exhaust fans/lights etc.	10	Nos	164	1640
27	Construction of Cement Concrete foundation containing cement concrete on the proportion 1:3:6 of cement, sand & ballst size of 40mm.	10	Cum	4272	42720
28	Erection of Stays & Guys	2	Nos	194	388
29	Supply of Stays & Guys.	2	Nos	755	1510
30	Cutting of Rail poles	4	Nos	501	2004
31	Transportation of rail pole from PWI godown/way site station to Work site.	1	Trip	26281	26281
32	Earthing arrangement.	5	Nos	3092	15460
33	Supply of 16 meters High Mast Lighting Tower for large area with LED Flood Lighting System with 12 Nos LED FLOOD LIGHT LUMINAIRE complete with steel wire rope double drum winch control panel lantern carriage arrangement etc. with all accessories.	1	Nos	292000	292000
34	Erection/Installation, Commissioning, Testing (ICT) with shallow foundation of high mast tower 16 Meter High supplied above.	1	Nos	90000	90000
E	Sub-total				1541716
Schedule 6: Electrical portion of the work "Provision of Galvalium sheet, Sprinkler and other allied miscellaneous work at Kamalpurgram(KLPG) Goods Shed".					
1	Supply of Submersible pump 5HP, Three Phase-Submersible Pump Set, 10/11 stage, 5star rated suitable for 150 mm dia. Bore, suitable head/discharge as per no. of stages above.	4	Nos	39991	159964
2	Supply of 5 H.P. SEMI AUTOMATIC STAR DELTA starter panel	4	Nos	6500	26000
3	Installation of pumps supplied	4	Nos	1201	4804
4	Supply of Submersible cable 3 core PVC insulated Flat with copper conductor 4 sq mm size as per details	200	Mtrs	90	18000
5	Supply of PVC insulated Galvanised Steel wire rope 8 mm size as per details	200	Mtrs	228	45600
6	Supply of SPN Distribution board conforms to IS-13032. DBS are phosphatised and panted With epoxy polyester based powder paint, sheet steel enclosure for flush/surface mounting with neutral link.earth terminal & bus- bar single door 6 way.	1	Nos	931	931
7	supply of MCB sp 6-32 A capacity.	6	Nos	213	1278
8	Fixing, connection & commissioning of DB/bus-bar chamber supplied above.	1	Nos	41	41
9	Supply of Crosslinked Polyethylene Insulated PVC Sheathed Armoured Cable 4x25 sqmm with Aluminium conductor, suitable for rated voltage at 1100 volts grade, heat resisting insulation-armoured, armoured type: strip, as per IS:7098(Part 1):1988 latest.	1500	Mtrs	300	450000
10	Laying of cable in open air/fixed in wall with supply of all material (Except cable & GI Pipe).	740	Mtrs	42	31080
11	Laying of cable of lower size (upto 4x35 Sq. mm) in Polythene (HDPE) pipe without digging of earth dressing of land including supply of HDPE pipe & all materials . [HDPE pipe 50 mm Diameter, PN 6 or above, conforming to IS 4984 : 2016 or relevant IS standard type: coil/straight as per requirement]	600	Mtrs	127	76200
12	Cable laying across the road/track by	60	Mtrs	4243	254580

	using trench-less construction method (HDD)				
13	Trenching/Digging of earth 1 mtr deep for cable laying.	700	Mtrs	88	61600
14	Supply of electric Ceiling Fan BLDC Type Sweep Size (mm):1200, rating: 5star, type of regulator: Electronic/remote	4	Nos	2836	11344
15	Supply of On delay Electronic Timer suitable for 230V AC, 48V AC/DC, 24V AC/DC, Time range 0-10 sec or 1-100 sec or 0-300 sec	4	Nos	1377	5508
16	Supply of power contactor 25A rating with 1NO+1NC	4	Nos	1826	7304
17	Fixing & Connection of Contactor Timer Unit Supplied above.	4	Nos	712	2848
18	Concealed Wiring for 6/16 Amps plug points with PVC Pipe and PVC insulated copper conductor 2.5 sq.mm. size with modular board supply of all materials.	1	Points	689	689
19	Concealed wiring for light fan & 6 Amps plug points with PVC Pipe and PVC insulated copper conductor 1.5 sq.mm. size with modular board with supply of all materials.	63	Points	664	41832
20	Concealed Wiring for Sub-circuits.	50	Mtrs	207	10350
21	Supply of LED Inverter Batten 20 W 6500 K Tubelight polycarbonate body	40	Nos	796	31840
22	Fixing of lights/fans supplied as above with supply of flexible wire to connection othe nearest ceiling rose.	48	Nos	58	2784
23	Supply of LED Flood Light 100W with die cast aluminium heat sink IP66, colour \geq 6000K with high power LEDs as light source	4	Nos	4409	17636
24	Fixing & connection of luminaire supplied above.	4	Nos	58	232
25	Earthing arrangement.	8	Nos	3428	27424
26	Supply of 16 meters High Mast Lighting Tower for large area with LED Flood Lighting System with 12 Nos LED FLOOD LIGHT LUMINAIRE complete with steel wire rope double drum winch control panel lantern carriage arrangement etc. with all accessories.	6	Nos	292000	1752000
27	Erection/Installation, Commissioning, Testing (ICT) with shallow foundation of high mast tower 16 Meter High supplied above.	6	Nos	90000	540000
28	Laying of cable of in GI pipe including supply of all materials (including G.I. Pipe & except Cable). With supply of G.I. pipe dia. 50mm thickness min. 2mm	100	Mtrs	579	57900
F	Sub-total				3639769

Schedule 7: Electrical portion of the work "Development of KJZ goods shed."

1	Supply of Submersible pump 5HP, Three Phase-Submersible Pump Set, 25 stage, three phae suitable for 150 mm dia, bore, Discharge range 100 m	4	Nos	39991	159964
2	Supply of 5 H.P. DOL starter panel including timer.	4	Nos	6500	26000
3	Installation of pumps supplied	4	Nos	1201	4804
4	Supply of Submersible cable 3 core PVC insulated Flat with copper conductor 4 sq mm size as per details	200	Mtrs	90	18000
5	Supply of PVC insulated Galvanised Steel wire rope 8 mm size as per details	200	Mtrs	228	45600
6	Supply of SPN Distribution board conforms to IS-13032. DBS are phosphatised and panted With epoxy polyster based powder paint, sheet steel enclosure for flush/surface mounting with neutral	1	Nos	931	931

	link.earth terminal & bus- bar single door 6 way.				
7	supply of MCB sp 6-32 A capacity.	6	Nos	213	1278
8	Fixing, connection & commissioning of DB/bus-bar chamber supplied above.	1	Nos	41	41
9	Supply of Crosslinked Polyethylene Insulated PVC Sheathed Armoured Cable 4x25 sqmm with Aluminium conductor, suitable for rated voltage at 1100 volts grade, heat resisting insulation-armoured, armoured type: strip, as per IS:7098(Part 1):1988 latest.	500	Mtrs	300	150000
10	Laying of cable in open air/fixed in wall with supply of all material (Except cable & GI Pipe).	100	Mtrs.	42	4200
11	Laying of cable of lower size (upto 4x35 Sq. mm) in Polythene (HDPE) pipe without digging of earth dressing of land including supply of HDPE pipe & all materials . [HDPE pipe 50 mm Diameter, PN 6 or above, conforming to IS 4984 : 2016 or relevant IS standard type: coil/straight as per requirement]	200	Mtrs	127	25400
12	Cable laying across the road/track by using trench-less construction method (HDD)	200	Mtrs	4243	848600
13	Trenching/Digging of earth 1 mtr deep for cable laying.	400	Mtrs.	88	35200
14	Supply of electric Ceiling Fan BLDC Type Sweep Size (mm):1200, rating: 5star, type of regulator: Electronic/remote	2	Nos	2836	5672
15	Supply of On delay Electronic Timer suitable for 230V AC, 48V AC/DC, 24V AC/DC, Time range 0-10 sec or 1-100 sec or 0-300 sec	4	Nos	1377	5508
16	Supply of power contactor 25A rating with 1NO+1NC	4	Nos	1826	7304
17	Fixing & Connection of Contactor Timer Unit Supplied above.	4	Nos	712	2848
18	Casing-caping Wiring for 6-16Amps plug points with PVC casing capping and PVC insulated copper conductor 2.5 sq. mm. size with supply of all materials.	1	Point	689	689
19	Concealed wiring for light, fan & 6 Amps plug points with PVC Pipe and PVC insulated copper conductor 1.5 sq. mm. size with modular board with supply of all materials.	10	Points	664	6640
20	Concealed Wiring for Sub-circuits.	50	Mtrs	207	10350
21	Supply of LED Inverter Batten 20 W 6500 K Tubelight polycarbonate body	40	Nos	796	31840
22	Fixing of lights/fans supplied as above with supply of flexible wire to connection othe nearest ceiling rose.	52	Nos	58	3016
23	Supply of LED Flood Light 200 W Energy saving IP65 flood light with high power LEDs as light source	10	Nos	4409	44090
24	Fixing & commissioning of LED Flood light fittings	10	Nos	58	580
25	Earthing arrangement.	4	Nos	3428	13712
26	Supply of 16 meters High Mast Lighting Tower for large area with LED Flood Lighting System with 12 Nos LED FLOOD LIGHT LUMINAIRE complete with steel wire rope double drum winch control panel lantern carriage arrangement etc. with all accessories.	4	Nos	292000	1168000
27	Erection/Installation, Commissioning, Testing (ICT) with shallow foundation of high mast tower 16 Meter High supplied above.	4	Nos	90000	360000
G	Sub-total				2980267
	Grand total of complete electrical cost (A+B+C+D+E+F+G)				23421570.1

SCOPE OF WORK & DETAILED TECHNICAL SPECIFICATIONS

SCHEDULE-1 Electrical portion of the work "Provision of Galvalium sheet, Sprinkler and other allied miscellaneous work at BJRI Goods Shed".		
Item No.	Description of Items	Detailed technical specification/ Scope of work of items appearing in schedule- 1
1	Supply of Submersible pump 5HP, Three Phase-Submersible Pump Set, 10/11 stage, 5star rated suitable for 150 mm dia. Bore, suitable head/discharge as per no. of stages above.	Supply of submersible pump capacity 5HP/ (3.7 kW), 415 V $\pm 10\%$, 3 Phase, 50 Hz AC, 10-11 stage, for 150mm Dia . bore well suitable for min.70 meter head (Respective discharge range 60 to 135 LPM) or as per site requirement , ISI Marked to IS:9283 latest or as per requirement as decided by authorized representative of Sr. DEE (RS&G) / BSP . Overall efficiency shall conform to relevant BIS requirements Make:- - Kirloskar, Crompton, CRI, Texmo, Havells or equivalent makes conforming to BIS standards shall be accepted
2	Supply of 5 H.P. SEMI AUTOMATIC STAR DELTA starter panel	Supply of 5 H.P. SEMI AUTOMATIC STAR DELTA starter panel, Three Phase/415 V $\pm 10\%$, 3 Phase, 50 Hz, Contactor Rating Current(A):32 Protection Available: 1. Over current protection 2. Dry run protection with bypass arrangement. 3. Single phasing (Phase reversal) 4. Analog/Digital timer with auto start & stop facilities. Make- Lauritz Knudsen, Siemens, Schneider Electric, ABB, Havells, Crompton Greaves, GIC, C&S or equivalent makes conforming to BIS standards shall be accepted
3	Installation of pumps supplied	The pump sets (supplied against item no.1&2 of schedule 1) shall be installed properly using suitable PVC insulated Galvanized Steel wire rope (supplied against item no.5 of schedule 1)& PVC insulated flat copper conductors(supplied under item nos. 4 of schedule 1) as per directive of Sr. DEE/RS&G/BSP's authorized representative at the locations identified at site. The pump body & control panel shall be earthed separately at two points using 8 SWG GI wire to be supplied by the contractor. Any minor items required for execution of above work shall be supplied by contractor. The work shall be executed as per RDSO guidelines for pumps installations & latest IE rules. The pump set with control panel etc. shall be tested for a period of 24 hrs. continuously and the results shall be jointly signed by the contractor and Sr. DEE(RS&G)'s authorized representative.
4	Supply of Submersible cable 3 core PVC insulated Flat with copper conductor 4 sq mm size as per details	Supply of submersible cable 3 core flat cables with pvc insulation and sheathed with multistrand flexible Copper Conductor for Submersible Pumps with copper conductor 4 sqmm size as per details. Make- Plaza, MES One, Radilite, Vedanta, C SANFLEX ,Finolex, Polycab, Havells, KEI, RR Kabel, ultracab or equivalent makes conforming to BIS standards shall be accepted

5	Supply of PVC insulated Galvanised Steel wire rope 8 mm size as per details	Supply of PVC insulated Galvanized steel wire rope 114 strand, 8 mm size of good tensile strength confirming to relevant IS standard. Make:—Usha martin, Bharat Wire, Orient Wire, Asahi Steel Ind., Visakha Wire, Navin Steel Ind., Mayur Wires, DP Wire Products, Desh Wire products or equivalent makes conforming to BIS standards shall be accepted
6	Supply of SPN Distribution board conforms to IS-13032. DBS are phosphatised and panted With epoxy polyster based powder paint, sheet steel enclosure for flush/surface mounting with neutral link.earth terminal & bus- bar single door 6 way.	The price shall cover supply of SPN Distribution Board, 240V, single-phase, single-door, 6-way type, conforming to IS:13032 and IS:8623 (Part 1), fabricated from CRCA sheet steel duly phosphatised and powder coated with epoxy polyester paint, complete with neutral link, earth terminal, tinned copper bus-bar, and provision for incoming and outgoing MCBs, suitable for flush or surface mounting, complete in all respects as per directive of the authorized representative of Sr.DEE (RS&G)/BSP. Make: – Havells, Legrand, Anchor ,BCH, L&T, Finolex, Wipro, Schneider Electric, ABB, IndoAsian, Hager or equivalent makes conforming to BIS standards shall be accepted
7	supply of MCB sp 6-32 A capacity.	Supply of Miniature Circuit Breaker (MCB), Single Pole (SP), rated current 6A to 32A, suitable for 240V, single-phase, 50 Hz AC supply, with rated breaking capacity not less than 10 kA at 230V, conforming to IS/IEC 60898-1 (latest) . Make: Siemens,Schneider, Havells, Standard, GE, Standard, Indoasian, Control & Switchgear, Legrand, Hager, L&T (Lauritz Knudsen), Sigma , Eaton,ABB or equivalent makes conforming to BIS standards shall be accepted.
8	Fixing, connection & commissioning of DB/bus-bar chamber supplied above.	The DB supplied (against item No: 6 of Schedule 1) will be fixed with help of fixers supplied by the tenderer . The fixers must be painted with corrosion resistant paint & should have thickness at least 5 mm, & 30 mm wide , suitable length & enough strength to withstand the weight of the DBs for a long period . The nut bolts used for fixing should have 10 mm dia or as per requirement & be strong enough to withstand the load of the DB . The work include termination of the incoming & outgoing cables inside the DB with proper size of lugs supplied & fixed by the contractor. The crimping of lugs must be done using a crimping tool with perfect finish. All the material & labor required to complete the above work shall be supplied by the contractor &as per the directive of the authorized representative of Sr.DEE (RS&G)/BSP
9	Supply of Crosslinked Polyethylene Insulated PVC Sheathed Armoured Cable 4x25 sqmm with Aluminium conductor, suitable for rated voltage at 1100 volts grade, heat resisting insulstion-armoured, armoured type: strip, as per IS:7098(Part 1):1988 latest.	Supply of Crosslinked Polyethylene Insulated PVC Sheathed Armoured Cable 4x25 sqmm with Aluminium conductor, suitable for rated voltage at 1100 volts grade, heat resisting insulstion-armoured, armoured type: strip, as per IS:7098(Part 1):1988 latest. Make: Polycab, Havells, KEI, Finolex, RR Kabel, Ultracab, Vishal Cables, or equivalent makes conforming to BIS standards shall be accepted.
10	Laying of cable in open air/fixed in wall with supply of all material (Except cable & GI Pipe).	Laying of cables (supplied by Railway) in open air/ concealed, should be supported with G.I. wire if laid in between two structure (Pole to Pole), such that there should not be any

		<p>mechanical load on cable. Laying of cable should be supported with proper size of 'U, clamp & nut bolts, 1mtr apart, if laid with support of walls. Laying of cable should be properly supported if laid under MS structure/Shelter etc. Laying of cable in open air consists of terminating it to the DB fixed on a SST Poles/Mast or any other supporting structure with proper lugs and glands. The cable shall be laid through class A GI pipes (supplied by Railway) of 40mm dia. or other size, 3 Mtr./ 2 mm long on the vertical runs over the pole/walls .The cable & the pipe shall be properly clamped to the pole/walls with clamps made out of MS flat iron of 25mm x 5mm and painted to be supplied by the contractor. All materials shall be supplied by the contractor. The work shall be shall be done as per the directive of the authorized representative of Sr.DEE (RS&G)/BSP.</p>
11	<p>Laying of cable of lower size (upto 4x35 Sq. mm) in Polythene (HDPE) pipe without digging of earth dressing of land including supply of HDPE pipe & all materials . [HDPE pipe 50 mm Diameter, PN 6 or above, conforming to IS 4984 : 2016 or relevant IS standard type: coil/straight as per requirement]</p>	<p>The cable of lower size upto 4x35 sq.mm (supplied by Railway) shall be laid in cable trenches along the road/track/ yard without digging in all sorts of soil with/without HDPE Pipe including supply of HDPE pipe & all materials.[HDPE pipe 50 mm Diameter, PN 6 or above, conforming to IS 4984: 2016 or relevant IS standard type: coil/straight as per requirement] as per site conditions requirements. The cable laying shall be done and back filling and properly dressing of land there after laying of cable with cement concrete/ Bitumen properly to the original condition. More than one cable be laid on the same trench if required. The path and type of cable to be laid on that path shall be decided by authorized representative of Sr.DEE/ RS&G/BSP' at site. If anything, get damaged/partially damaged the same shall be repaired as far as possible to original by the contractor. Cable shall be supplied by Railway. Cable route marker shall be provided at appropriate distance on cable route by contractor after cable laying.</p>
12	<p>Laying of cable of in GI pipe including supply of all materials (including G.I. Pipe & except Cable). With supply of G.I. pipe dia. 50mm thickness min. 2mm</p>	<p>This item includes Laying of cable of in GI pipe including supply of all materials. With supply of G.I. pipe dia. 50mm thickness min. 2 mm. The Cable laying across the road /track/yard should be done minimum one-meter-deep trench only through GI pipe of suitable diameter & wall thickness. Each cable should be laid through separate GI pipe. If any road/platform is cut for trenching, the same shall be restored after laying of cable with cement, bitumen properly to the original condition.GI pipe shall be used. All supporting materials shall be supplied by the contractor except cable. For underground cable laying cable route marker at appropriate distance shall be provided by contractor after cable laying. The work shall be carried out according to relevant IS std. and as per directive of authorized representative of Sr. DEE(RS&G)/BSP. If anything gets damaged/partially damaged the same shall be repaired as far as possible to original. The depth of cable trench may be varying as per site conditions. During course of digging if depth of 1 meter is not feasible due to technical reason then the depth may be reduced & payment will be done on pro rata basis.</p>

13	Cable laying across the road/track by using trench-less construction method (HDD)	The rate includes pushing of HT/LT cable through HDPE Pipe casing (PE 80 grade, 160 mm OD, 0.6 MPa working pressure, 9 mm thick) by adopting trenchless construction method. The contractor shall join the HDPE pipe and make necessary interlocking as directed by the site in charge. The rate is inclusive of supply of PE 80 grade, 160 mm OD, 0.6 MPa working pressure, 9mm thick HDPE Pipe confirming to IS: 4984:1995 and all other associated items required for the work. The horizontal bore should be done by using an auger boring machine (ABM). The price shall also include construction of required launch pit and reception pit at minimum depth of 3 meters, cleaning out the HDPE pipe casing and restoring the area as required with the help of contractor's men and material.
14	Trenching/Digging of earth 1 mtr deep for cable laying.	The work consists of Trenching/Digging of earth 1mtr deep for cable laying. The trenching /digging shall be done in all sort of soil as per the directive of the authorized representative of Sr.DEE(RS&G)/BSP. If anything gets damaged/partially damaged during trenching /digging the same shall be repaired as far as possible to original. During course of digging if depth of 1 meter is not feasible due to technical reason then the depth may be reduced & payment will be done on pro rata basis
15	Supply of electric Ceiling Fan BLDC Type Sweep Size (mm):1200, rating: 5star, type of regulator: Electronic/remote	Supply of Electric Ceiling Fan BLDC Type Sweep Size (mm):1200, rating: 5 star , type of regulator: Electronic/remote , with 5 year warranty. Make: Khaitan, Havells, Crompton Greaves, Usha, Philips ,Halonix,Polycab, bajaj or equivalent makes conforming to BIS standards shall be accepted.
16	Supply of On delay Electronic Timer suitable for 230V AC, 48V AC/DC, 24V AC/DC, Time range 0-10 sec or 1-100 sec or 0-300 sec	Supply of Electronic On Delay Timer, suitable for operation on 230V AC / 48V AC-DC / 24V AC-DC supply voltage, selectable time ranges of 0–10 seconds or 1–100 seconds or 0–300 seconds, DIN rail / panel mounting type, with LED indication for power and relay status, adjustable timing through front-mounted potentiometer, minimum one potential free changeover (1 C/O) relay output contact rated minimum 5A at 230V AC, high accuracy and repeatability, compact industrial design, complete with all accessories, conforming to relevant IS/IEC standards.
17	Supply of power contactor 25/16A rating with 1NO+1NC	Supply of 25/16A, 3-pole AC-3 power contactor with 1NO+1NC auxiliary contacts, 230V AC coil, conforming to IEC 60947-4-1, suitable for operation up to 690V AC, DIN rail/panel mounting, complete with all accessories. Make: Schneider Electric, Siemens, ABB, Eaton or equivalent makes conforming to BIS standards shall be accepted.
18	Fixing & Connection of Contactor Timer Unit Supplied above.	The work shall include fixing & connection of timer unit (supplied against item no. 16 of schedule-1) at location indicated by authorized representative of Sr.DEE (RS&G)/BSP. The timer should be functioning as per requirements of switching on/off of waste disposer pump as per directive of authorised representative of SrDEE(RS&G)/BSP. All the materials required for fixing/connection shall be supplied by the contractor.
19	Concealed Wiring for 6/16 Amps plug points with PVC Pipe and PVC insulated copper	The concealed wiring for 6-16 A plug points, individual or combined switch, socket & fuse shall be through PVC pipe

	conductor 2.5 sq.mm. size with modular board supply of all materials.	<p>20/25/32mm size/dia as required . PVC pipe shall be heavy type ISI marked with provision of suitable Tees , bends ,elbows, junction boxes as required . The wiring shall be with PVC insulated stranded individual copper conductor 2.5 sq. mm for one socket, 4 Sq. mm if 2 to 3 sockets, 6 Sq. mm if 4 to 5 sockets in a board with supply of modular board. The wires should be 650/1100 volt grade FRLS type of ISI marked with additional properties of FRLS . A separate circuit should be drawn from the main board for the plug point. Switch socket and board shall be of modular type. An earth continuity conductor of 18 SWG PVC copper shall be run from the main board to the plug socket and connected to the earth terminal of the plug socket. Wherever convenient, wiring for light, fan & Plug points shall be done through common pipe. All materials shall be supplied by the contractor. The work shall be done as per the directive of the authorized representative of Sr.DEE (RS&G)/BSP.</p> <p>Make for PVC pipe- Polycab/Anchor/Finolex/Bajaj/ Precision /Richa or equivalent makes conforming to BIS standards shall be accepted.</p> <p>Make for Switch/Socket - Havells brands/L&T/ Legrand/ Anchor/ ROMA/HPL. or equivalent makes conforming to BIS standards shall be accepted.</p> <p>Make for copper wire: Polycab/Havells/KEI/Finolex/RR Kabel/Ultracab. or equivalent makes conforming to BIS standards shall be accepted.</p>
20	Concealed wiring for light fan & 6 Amps plug points with PVC Pipe and PVC insulated copper conductor 1.5 sq.mm. size with modular board with supply of all materials.	<p>The Concealed wiring for light & fan & 6A plug points shall be through PVC Pipe, heavy type ISI marked of size 20/25/32 mm . The wiring shall be with PVC insulated stranded copper conductor 1.5 sq. mm 650/1100 volt grade FRLS type ISI marked. The wiring through walls shall pass through PVC pipes 20/25/32 mm. size & heavy type ISI marked .The wiring shall be terminated into ceiling rose of ISI marked for light & fan points inclusive of supply of all materials. The switches shall be fixed on a board with MS frame with hylem sheet cover 3 mm thick and white finish of size 250x200x50 mm . The fan regulators supplied shall be fitted into the switch board and connected. An earth continuity conductor of 18 SWG PVC copper wire shall be run all along the piping and shall be connected to the down rod of the fan . For convenience, wiring for light & fan points shall be done through common PVC pipe.</p> <p>Make for PVC pipe- Polycab/Anchor/Finolex/Bajaj/ Precision /Richa or equivalent makes conforming to BIS standards shall be accepted.</p> <p>Make for copper wire: Polycab/Havells/KEI/Finolex/RR Kabel/Ultracab or equivalent makes conforming to BIS standards shall be accepted.</p>
21	Concealed Wiring for Sub-circuits.	The Concealed/Casing capping wiring from main switch boards to distribution switch boards & from one room to another room, from DB supplied & fixed up to the main board is referred to as

		<p>sub-circuit. The sub-circuits shall be run through Casing capping /PVC Pipe of different size as required. Casing capping /PVC Pipe shall be heavy type ISI marked (Make- Polycab/Anchor/Finolex/Bajaj/Precision/ Richa or equivalent makes conforming to BIS standards shall be accepted.). The wiring through walls shall pass through Casing capping /PVC pipes. PVC insulated copper stranded conductor 6.0 sq. mm size, 650 – 1100 volts 7 grade of ISI marked FRLS type shall be used. A number of sub-circuits may be run through one Casing capping /PVC pipe for convenience of wiring. One sub- circuit shall consist of two wires one phase & one neutral. Rate for one meter length of the sub circuit shall be taken 01 meter of phase wire & 01 meter neutral wire. Suitable Tees, bends, elbows, junction boxes etc for both surface & concealed wiring as required shall be supplied & fixed by the contractor. In no case the PVC pipe shall be bend to change the direction of wiring .An earth continuity conductor of 1mm PVC copper wire shall be run along the sub-circuit wires & shall be connected to DBs.</p> <p>Make for copper wire: Polycab/Havells/KEI/Finolex/RR Kabel/Ultracab. or equivalent makes conforming to BIS standards shall be accepted.</p>
22	Supply of LED Inverter Batten 20 W 6500 K Tubelight polycarbonate body	<p>Supply of LED Inverter Batten 20 W, 6500 K (Tube light type) (+/-500 K)with high-efficiency SMD LEDs, polycarbonate body and diffuser, minimum IP65 protection ,minimum efficacy ≥ 100 lm/W, CRI≥ 80, operating voltage 140–270 V AC, with inbuilt rechargeable battery for minimum 3 hours backup during power failure, surge protection ≥ 2.5 kV, power factor ≥ 0.9, THD $\leq 10\%$, complete with mounting accessories. The product shall be BIS/ISI marked and conform to relevant IS standards.</p> <p>Report to be mandatory submitted along with the offer LM 79& Test report in respect of the luminaries test certificates should be from Central Government LAB /NABL/ILAC accredited manufacturer/LAB. LM 80 Test report in respect of the LED used in the offered luminaries should be from Central Government LAB /NABL/ILAC accredited manufacturer/LAB.</p> <p>Make – Philips ,Osram ,Havells ,Wipro, Syska ,Oreva ,Polycab, Orient , Surya, Halonix or equivalent makes conforming to BIS standards shall be accepted.</p>
23	Fixing of lights/fans supplied as above with supply of flexible wire to connection othe nearest ceiling rose.	<p>The inverter batten, ceiling fan other LED light (supplied against item no. 22,15 of schedule 1) shall be fixed at location mentioned by Sr. DEE (RS&G)/ Bilaspur 's authorized representative at site with use of proper size of P.K. screws & PVC sleeves shall be connected to supply through PVC pipe/PVC casing capping wiring piercing across the wall .The fitting shall thus be connected to the nearest ceiling rose by the use of 0.75 sq.mm. FRLS flexible wire The fan regulators shall also be fitted on the switch board. An earth continuity conductor of 18 SWG PVC copper wire shall be run all along the piping and shall be connected to the down rod of the fan. Make for Ceiling Rose- Polycab/Anchor/Panasonic/Finolex/ Bajaj / Precision /Richa or equivalent makes conforming to BIS</p>

		standards shall be accepted . Make for Switch/Socket/modular board- Havells brands/L&T/ Anchor/ Legrand/ ROMA/HPL. Or equivalent makes conforming to BIS standards shall be accepted Make for copper wire: Polycab/Havells/KEI/Finolex/RR Kabel/Ultracab or equivalent makes conforming to BIS standards shall be accepted
24	Supply of LED Flood Light 100W with die cast aluminium heat sink IP66, colour $\geq 6000\text{K}$ with high power LEDs as light source	Supply of LED Flood Light 100W (approx.) of input voltage 230 V, Color Temperature- 6000K-7000K, CRI ≥ 70 , Beam angle $\geq 120^\circ$ Lamp Life- min.50000 hours, IP-66, Luminaire system efficacy $\geq 100\text{ Lm/Watt}$, Total Harmonic distortion (in % age) ≤ 10 , AC Power Factor at full Load ≥ 0.95 , with suitable Electrical The Luminaries casing/housing (single piece housing) shall be pressure die casted aluminium alloy with higher thermal conductivity. The luminaire body must be corrosion resistant epoxy powder coated. The luminaire shall have suitable protections against surges, transients and other relevant electrical protections. Report to be mandatory submitted along with the offer: LM 79 Test report in respect of the luminaries test certificates should be from Central Government lab/NABL/ILAC accredited lab. LM 80 Test report in respect of the LED used in the offered luminaries should be from lab /NABL/ILAC accredited lab Make: Philips ,Osram, Havells, Wipro, Syska, Oreva, Polycab, ORIENT , Surya, Halonix or equivalent makes conforming to BIS standards shall be accepted.
25	Fixing & connection of luminaire supplied above.	The work comprises of fixing & commissioning of LED Flood light fittings (supplied under item no. 24 of schedule-1) at location identified by SR.DEE (RS&G)/BSP authorized representative. All tools and labour required for above work shall be supplied by contractor. Make for copper wire: Polycab/Havells/KEI/Finolex/RR Kabel/Ultracab or equivalent makes conforming to BIS standards shall be accepted.
26	Earthing arrangement.	Supply & Laying of earth cone with supply of all materials including GI strip. The earth cone supplied shall be fabricated from Class-B. G.I. pipe confirming to IS: 3043 - 1987 (Reaffirmed 2006) amended up to date or relevant IS standard and as per CEE/GRC drawing No. CEE/A4/P-105. The Earth pipe should have outer dia. 60.2 mm, inner dia. 54.4 mm & thickness 2.9 mm. (aprx.) (Make for GI pipe: SAIL, JINDAL, Surya, TATA, Prakash, PSST or equivalent makes conforming to BIS standards shall be accepted.). The Earth Cone shall be erected as per CEE/GRC' s drawing No. CEE/G/A3/P-134 including supply of all materials. The Earth cone shall be connected by the contractor to the DBs / Poles as described in the erection/installation of the respective materials with GI Strip of size 25 mm \times 3 mm (minimum) (or as specified) with hot-dip galvanization of uniform coating. Make for GI strip: SAIL/Jindal/Surya/TATA/Prakash/PSST or equivalent approved make. The location for earth cones shall be indicated by the authorized representative of SR.DEE (RS&G)/ BSP. Earth values after meggering to be written on the earth pit. M.S. Cover plate 3 mm thick/concrete to be provided on earth pit. All joints

		shall be properly cleaned. The work shall be carried out according to relevant IS std. and as per directive of authorized representative of Sr.DEE(RS&G)/BSP.																														
27	Supply of 16 meters High Mast Lighting Tower for large area with LED Flood Lighting System with 12 Nos LED FLOOD LIGHT LUMINAIRE complete with steel wire rope double drum winch control panel lantern carriage arrangement etc. with all accessories.	Supply of 16 Meter High Mast Lighting Tower suitable for illumination of large open areas, complete with heavy duty galvanized steel mast, head frame, lantern carriage system, stainless steel wire rope, double drum winch mechanism, foundation hardware, aviation warning arrangement, feeder control panel, internal power cabling, and all mounting accessories. The mast shall be provided with 12 Nos. energy efficient LED Flood Light Luminaires of suitable wattage and optics for uniform area illumination, complete with luminaire mounting brackets, integral drivers, surge protection, earthing arrangement, raising and lowering mechanism, weatherproof control gear box, and all associated accessories. The complete system shall be suitable for outdoor operation under severe weather conditions and conform to relevant IS/IEC standards and as per technical data sheet enclosed at Annexure-I .																														
28	Erection/Installation, Commissioning, Testing (ICT) with shallow foundation of high mast tower 16 Meter High supplied above.	Erection & Commissioning design and casting with shallow foundation of High mast tower 16 mtrs. high (supplied against item no. 27 of schedule-1) shall be done as per the design provided by OEM including fixing of luminaries .Any other minor items or civil work required for execution of above work shall be supplied/done by the contractor. The work shall be carried out as per directive of authorized representative of Sr.DEE (RS&G)/BSP All materials, tools & labour required for above work shall be supplied by contractor.																														
29	Supply of LT Copper Distribution panel fabricated from 16 SWG CRCA, Powder coated with Copper busbar of suitable size as I/c 02 Nos. MCCB 3PN,400 A ,outgoing are-3 no. MCCB3P,100 A, 2no. MCCB 3P,63 A with rotary handle are I/c having R/Y/B indication, metering arrangement etc.complete.	<div>Supply of LT Copper Distribution panel fabricated from 16 SWG CRCA, Powder coated with Copper bus bar of size 1 no.(50x10 mm) or 2nos.(40x10 mm)as I/c 02 Nos. MCCB 3PN, 400 A , outgoing are - 3 no. MCCB 3P,100 A, 2 no. MCCB 3P, 63 A with rotary handle are I/c having R/Y/B indication, metering arrangement etc. Complete. Detailed description mentioned below:</div> <table><tr><th colspan="5">Incomer</th></tr><tr><th>SN</th><th>Component</th><th>Technical description</th><th>Qty. (Nos.)</th><th>Make</th></tr><tr><td>1</td><td>MCCB</td><td>400A, 3P, MCCB with 36KA, breaking capacity minimum, ON/OFF with rotary handle</td><td>2</td><td>Mentioned below</td></tr><tr><td>2</td><td>Indication lamp</td><td>230V AC, R,Y,B, LED type 22.5mm dia (LED cluster)</td><td>2</td><td>Reputed make</td></tr><tr><td>3</td><td>Current transformer</td><td>400/5A, CL:1, 10-15VA</td><td>6</td><td>Reputed make</td></tr><tr><td>4</td><td>Ammeter & Voltmeter</td><td>Ammeter & Voltmeter AC digital type</td><td>2</td><td>Reputed make</td></tr></table>	Incomer					SN	Component	Technical description	Qty. (Nos.)	Make	1	MCCB	400A, 3P, MCCB with 36KA, breaking capacity minimum, ON/OFF with rotary handle	2	Mentioned below	2	Indication lamp	230V AC, R,Y,B, LED type 22.5mm dia (LED cluster)	2	Reputed make	3	Current transformer	400/5A, CL:1, 10-15VA	6	Reputed make	4	Ammeter & Voltmeter	Ammeter & Voltmeter AC digital type	2	Reputed make
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		<table><tr><th colspan="5">Outgoing</th></tr><tr><td>1</td><td>MCCB</td><td>100A, 3P, MCCB with minimum 25 kA breaking capacity, ON/OFF with rotary handle</td><td>3</td><td>Mentioned below</td></tr><tr><td>2</td><td>MCCB</td><td>63A, 3P, MCCB with minimum 25 kA breaking capacity ON/OFF with rotary handle</td><td>2</td><td>Mentioned below</td></tr></table> <p>Make for ACBs & MCCBs: Siemens, Hager, Schneider, Sigma, Havells, GE, BCH. , Control & Switchgear, Legrand, HPL, L&T, ABB or equivalent makes conforming to BIS standards shall be accepted.</p>	Outgoing					1	MCCB	100A, 3P, MCCB with minimum 25 kA breaking capacity, ON/OFF with rotary handle	3	Mentioned below	2	MCCB	63A, 3P, MCCB with minimum 25 kA breaking capacity ON/OFF with rotary handle	2	Mentioned below
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2	MCCB	63A, 3P, MCCB with minimum 25 kA breaking capacity ON/OFF with rotary handle	2	Mentioned below													
30	Transportation, Installation, testing & Commissioning of LT distribution panel	The Installation, testing & Commissioning of LT distribution panel LT distribution panel (supplied under item no. 29 of schedule-1) shall be carried out at the required location as per the directive of Sr.DEE(RS&G)/BSP's authorized representative at site. Fixing of new control panel shall be done by the contractor with supply of labour & tools. The work shall be carried out as per directives of Sr. DEE (RS&G)/BSP's authorized representative at site. Necessary modification of foundation / cable trench to suit the dimensions of the new panel shall be done by the contractor with supply of all material & labour. The work of commissioning include connection of incoming & out going cables to the panel with re-socketing of each cable , earthing of the panel with 8 SWG GI wire properly through earth pits & charging the LT distribution system. All materials required shall be supplied by the contractor.															
31	Supply & fixing of 90 KVAR APFC Panel Board made up of 1.6mm/1.8mm CRCA Sheet duly powder coated with Siemens grey RAL 7032/7035 with locking arrangements, Dust & Vermin proof, Aluminum Busbar with color coded sleeves Indicating Lamps with control fuses, APFC relay 8 stage Switchgears – L&T Make Capacitors – Make L&T Total- 90 KVAR (Without Reactor)	Supply & fixing of 90 KVAR APFC Panel Board made up of 1.6mm/1.8mm CRCA Sheet duly powder coated with Siemens grey RAL 7032/7035 with locking arrangements, Dust & Vermin proof, Aluminum Busbar with color coded sleeves Indicating Lamps with control fuses, APFC relay 8 stage (Without Reactor) shall be confirming to specification Details as per ANNEXURE-II . Make: Schnieder /ABB /Neptune /Ducati /L&T or equivalent makes conforming to BIS standards shall be accepted															
32	Erection & painting of departmentally supplied rail poles (13-8 Mtrs long)	The work consist of erection and painting of departmentally supplied rail pole (13-8) .The Rail poles (to be supplied departmentally) approximately 8-13 Mtrs. in height shall be erected with the foundation of approx. 1 cubic meter concrete 1:3:6 proportion of cement, sand and ballast 40mm. [The drawing of foundation may be collected from Sr. DEE(RS&G) office/enclosed.] The pole shall be painted with one coat of primer and one coat of aluminum paint before erection. Poles shall be erected in proper alignment and vertically including supply of all materials, labour, tools, etc. The cost of concreting shall be paid as per item no. 34 of Schedule-1 given above.															

33	Supply & Fabrication of steel structure for different work.	The rate includes the cost for supply, Transportation/cutting, welding, fabrication & erection of H beams/MS joints/Guy post/Fencing uprights/angles, channels work of different size & length, in correct alignment including transportation of H beams /M.S. joists/ angles, channels /flat irons /nut bolts/clamps /Guy posts to site from anywhere in the section as per requirement and according to directives of authorized representative of Sr.DEE (RS&G)/BSP for the purpose of installation of Battery Charger or equivalent work. Any other minor items required for execution of above work shall be supplied by the contractor.
34	Construction of Cement Concrete foundation containing cement concrete on the proportion 1:3:6 of cement,sand & ballst size of 40mm.	The price shall cover excavation, supply & handling of all materials & accessories temporary arrangement for excavation in hard soil and concrete/masonry drains/walls requiring use of chisel & hammer, shoring where necessary casting concrete including frame work where necessary tamping of concrete, grouting of poles and finishing the top of concrete foundation. The price also includes the dismantling of all connected temporary arrangements, backfilling with earth & compacting the same to required height & width as per directive of authorized representative of SR.DEE (RS&G)/BSP.The authorized representative of SR.DEE (RS&G)/BSP shall certify the use of chisel & hammer if necessary. The price shall be paid on the basis of total volume of the concrete foundation. The depth of excavation shall be measured from the formation level to the maximum excavated point. Cement concrete on the proportion 1:3:6 of cement sand & ballast size of 40mm. The Cement concrete foundations may be for gate support pillars, fencing angle foundations, muffing & concreting of existing structures and foundation for SST pole etc. SST poles/Rail poles as per the directive of the authorized representative of SR.DEE (RS&G)/BSP. The proper curing work shall be done by the contractor. Preferably suitable scroll of PVC pipe or G.I. pipe to be used during foundation casting for pole erection after sufficient time for setting.
35	Supply of Stays & Guys.	The guy set to be supplied shall have a set of Guy wire, Guy insulator, turn buckle & two rail clamps suitable for released rail of different size at both ends. The Guy wire shall be stranded hard drawn galvanized steel wire with tensile strength more than 70 Kgf./sq. mm(12swg) and confirming to IS 2141 : 2000 or relevant IS standard.
36	Erection of Stays & Guys.	For stays and guys (supplied under item no. 35 of schedule-1); Proper size of foundation should be done with fixing of guy clamp, it should be minimum(Lx W x D -1mtrx1mtrx1.5 mtr) of cement concrete of ratio cement:ballast:sand (1:3:6) with 40 mm ballast. The guy insulator shall be fixed at a height more than 4 Meters or as required as per site condition for LT poles. The rail clamp should be fixed on rail pole to counter the tension of wires suitably. The rail clamp should be fixed on guy rail suitably with hole to avoid any slip of clamp. The tension of guy wire should be given with the help of Tirfor/pulling & lifting machine sufficiently so that after tension on wire the rail pole should be straight as far as possible. It should be done as per the directive

		of the authorized representative of SR.DEE (RS&G)/BSP as per relevant IS & site conditions
37	Supply of 11 KV top clamp.	This item includes supply of 11 KV top clamp angle type 65x65x6 mm (approx) made up of hot dip galvanized mild steel and shall be fabricated type.
38	Supply of 11 KV pin insulator with supply of required nut & bolts.	The price shall cover supply of 11 KV Porcelain type Pin insulator with supply of required nut & bolts. The pin insulator shall have the minimum failing load of $\geq 5\text{kN}$ and minimum creepage distance of $\geq 320\text{mm}$. The item shall be confirming to IS 731-1971 or relevant IS standard as amended up to date. The item shall be of make approved by Sr DEE (RS&G)/Bilaspur . Make: Imperial Ceramic, Prime Insulators, Bikaner Ceramics, Earthen Ceramics, Aditya Birla Insulators, Hindustan Chemicals, Adpro Ceramics, R.R. Ind., Topline Industries, Ambica Ceramics, Radiant Ceramic. or equivalent makes conforming to BIS standards shall be accepted.
39	Supply of 11 KV disc insulator with supply of required hardware, nut & bolts.	The price shall cover supply of 11 KV Porcelain type disc insulator disc insulator suitable for 11 KV OH line with supply of required hardware, nut & bolts. The disc insulator shall have the minimum failing load of $\geq 45\text{kN}$ and minimum creepage distance of $\geq 320\text{mm}$. The item shall be confirming to IS 731-1971 as amended up to date or relevant IS standard. The item shall be of make approved by Sr DEE (RS&G)/Bilaspur . Make: Imperial Ceramic, Prime Insulators, Bikaner Ceramics, Earthen Ceramics, Aditya Birla Insulators, Hindustan Chemicals, Adpro Ceramics, R.R. Ind., Topline Industries, Ambica Ceramics, Radiant Ceramic or equivalent makes conforming to BIS standards shall be accepted
40	Fixing of 11 KV top clamp	The price shall cover fixing of 11 KV top clamps (supplied under item no. 37 of schedule-1) as per directive of authorized representative of SR.DEE (RS&G)/BSP.
41	Fixing of HT pin insulator suitable for 11 KV.	The price shall cover Fixing of HT pin insulator suitable for 11 KV. (supplied against item no. 38 of Schedule 1) with pin supplied as above on rail poles as per the directive of authorized representative of SR.DEE (RS&G)/BSP.
42	Fixing of HT disc insulator with hardware.	The price shall cover Fixing of HT disc insulator with hardware (supplied under item no. 39 of schedule 1) on the HT poles with supply of tools & labour.
43	Supply of Aluminium conductor galvanized steel wire 50 sqmm reinforced size 6/3 35 MM ALUMN+ 1/3 35 MM STEEL	The price shall cover supply of Aluminium Conductor, Galvanized Steel Reinforced (ACSR) of 50 sq.mm nominal aluminum area, consisting of 6 strands of 3.35 mm aluminum wire and 1 strand of 3.35 mm galvanized steel wire (6/3.35 + 1/3.35 configuration), conforming to IS:398 (Part II) – latest revision, with minimum breaking load and electrical conductivity as per standard, suitable for 11 kV distribution system, complete with test certificates Make– Sterlite Technologies, Diamond Cables, Elecon Conductors, Hindusthan Vidyut Products, Arfin India, Lumino Ind., Oswal cables, KJV Alloy Conductors or equivalent makes conforming to BIS standards shall be accepted
44	Drawl of 5 conductor LT line	The price shall cover drawing of ACSR conductor (supplied against item No. 43 of schedule-1) for LT line on the rail

		pole/any other pole after fixing the LT shackle/pin insulators after provision of guy arrangement using Tirfor/Pulling & Lifting machine/Pulley Block as per the directive of the authorized representative of SR.DEE (RS&G)/BSP as per relevant IS & site conditions . The rate is for 5 wire LT line in case of any variation proportionate entry shall be made on pro rata basis.
45	Supply & fixing of C.I. clamp for top earth wire with all accessories like MS flat iron 50X8" size , nut - bolt, washer, reel insulator etc.	The price shall cover supply and fixing of Cast Iron (C.I.) Clamp for top earth wire, complete with all accessories such as M.S. flat iron of size 50 mm × 8 mm, galvanized nuts, bolts, spring and plain washers, reel insulator, and other necessary hardware, including fabrication, drilling, fitting, and painting as required, conforming to standard practice and as per direction of the Engineer-in-Charge.
46	Supply of G.I. wire 8 SWG size.	The price shall cover supply of Galvanized Iron (G.I.) Wire of 8 SWG size, hot-dip galvanized, of high tensile strength and uniform coating, conforming to IS: 280 / IS: 4826 latest revision, suitable for earthing and guarding purposes in electrical distribution lines, complete with manufacturer's test certificates and as per direction of Engineer-in-Charge.
47	Drawing of earth wire.	The price shall cover drawing (stringing) of earth wire along the overhead line using 8 SWG G.I wire (supplied under item no 46 of schedule 1), including fixing with poles or cross arms using suitable C.I./M.S. clamps, binding wire, and necessary accessories, maintaining proper tension, sag, and continuity throughout the line, with connection to earthing sets at required intervals, complete with labour, tools, and materials as direction of the Engineer-in-Charge.
48	Supply of LT 5 pin vertical bracket for single circuit including back clamp, nut-bolt and washer.	The price shall cover supply of LT 5 pin vertical bracket for single circuit including back clamp, nut – bolt and washers. The vertical bracket consist of (1) Iron Angle size 65mmx65mmx8mm (2) Clamp Size 50mmx8mm.(3) Full half threaded nut bolt 12mmx8mm (4) Full/Half threaded nut bolts 15mmx6 inches (5) Nut bolt 12mmx3 inches (6) Washer (7) Spring Washer (8) Flat iron/Iron. Angle welded/bolted with Iron angle etc weight approximately 15.3 Kg. All materials have to be supplied/fabricated by the contractor. Two coat of red oxide primer & one coat of Aluminum paint to be done on Angle irons, Flat iron, Clamp etc. Suitable alterations in dimensions are subjected to decision taken by Sr.DEE(RS&G)/BSP. Before fabrication of bracket drawing should be approved by Sr DEE (RS&G)/Bilaspur.
49	Fixing of LT 5 pin vertical bracket including back clamp, nut-bolt and washers.	The price shall cover fixing of L.T. 5 Pin bracket (supplied under item no 48 of schedule 1) shall be fixed on existing/newly erected rail poles with the help of the 02 nos. clamps & nut bolts, washer, check nut (to be supplied by the contractor) as per the directive of the site engineer. The proper tightness shall be done to withstand the load on the bracket.
50	Supply of LT insulator SHACKLE type 90X75 mm.	The price shall cover supply of LT Insulator, Shackle Type, size 90 mm × 75 mm, made of vitrified porcelain, brown glazed, suitable for use on LT distribution lines, conforming to IS: 1445 – latest revision, complete with necessary metal parts (GI straps,

		bolts, and nuts if specified), tested as per IS standards, and as per direction of Engineer-in-Charge of reputed make approved by Sr DEE (RS&G)/Bilaspur
51	Supply of G.I. Bolt Nut 4.5 inch x 1/2 inch with G. I. washers for fixing of LT insulators.	The price shall cover supply of G.I. Bolt Nut 4.5 inch x 1/2 inch with G.I. Supply of G.I. Bolts and Nuts of size 4.5 inch × ½ inch diameter, complete with matching G.I. strap/pipe 1/8 inch and spring washers, fabricated from mild steel and hot-dip galvanized, conforming to IS: 1363 (Part 1 & 3) and IS: 1367 (Part 13) – latest revision, suitable for fixing LT shackle or pin type insulators on pole brackets, complete in all respects as per direction of Engineer-in-Charge of reputed make approved by Sr DEE(RS&G)/Bilaspur for LT insulators SHACKLE type 90x75 mm.
52	Fixing of SHACKLE type insulator after release of old insulator.	Fixing of shackle insulators (supplied under item no 50 of schedule 1) after on LT Bracket with supply of tools & labour. The shackle insulator shall be fixed on vertical brackets (supplied against item no 49 in schedule 1) in proper manner.
53	Dismantling of overhead line	The price shall cover dismantling of overhead line LT 5-conductor /HT- 3-conductor (11/33KV) with all existing old electrical fittings , wires, cables & OH lines etc, infringing the new installation or not of further use as per directives of authorized representative of SR.DEE (RS&G)/BSP. Released materials are to be returned to the SSEE/G/BSP Store without damage ,after the completion of dismantling .One span means 5 Al conductor for LT Line between two poles & one span means 3 Al conductor for 11/33 kv lines with guard wire.
54	Supply of Anticlimbing Device.	The price shall cover supply of Anticlimbing Device comprising of G.I. barbed wire and clamps. The barbed wire shall conform to IS:278 (Grade A1) or relevant IS std. The barbed wires shall be given chromatin dip as per procedure laid down in IS : 1340 or relevant latest IS std. The work shall be done as per the directive of the authorized representative of Sr.DEE (RS&G)/BSP.
55	Fixing of Anticlimbing Device.	The price shall cover fixing of Anticlimbing Device (supplied under item no. 54 of schedule 1) on poles/structures using suitable nuts, bolts, and washers, including positioning, alignment, tightening, and securing firmly around the pole at the specified height, with all labour, tools, and consumables, ensuring proper fit and stability as per direction of authorized representative of Sr.DEE (RS&G)/BSP.
56	Supply of Danger Boards LT	The price shall cover supply of 415V Danger Board suitable for LT line/pole, made of mild steel (MS) sheet of minimum 1.6 mm thickness, enamel-painted/retro-reflective white background with red lettering “DANGER” and skull & bones symbol with inscription in English, Hindi language as per IS:2551 – latest revision, of size not less than 200 mm × 150 mm, complete with two holes for fixing and necessary G.I. bolts, nuts, and washers, as per direction of authorized representative of Sr.DEE (RS&G)/BSP.
57	Fixing of Danger Boards LT	The price shall cover fixing of LT Danger Board (supplied under item no. 56 of schedule-1) on pole or structure at appropriate height (about 2.5 m above ground level), including drilling,

		fixing with suitable size G.I. bolts, nuts, and washers, ensuring firm placement and clear visibility from approach direction, complete in all respects as per IS:2551 and as per direction of authorized representative of Sr.DEE (RS&G)/BSP.
58	Supply of 250 KVA transformer 11/.415 KV outdoor distribution copper wound transformer(pole mounted) , min. warranty: 2years	Supply of 250 kVA, 11/0.415 kV, 3-Phase, 50 Hz, Outdoor Type, Oil Immersed, ONAN cooled, Copper Wound Distribution Transformer, suitable for pole mounting, with HV voltage ratio 11 kV and LV voltage ratio 415 V, vector group Dyn11, off-circuit tap changer on HV side with tap range +5% to -10% in steps of 2.5%, impedance 4.5% (\pm tolerance as per IS), insulation level 75 kVp BIL on HV side, complete with conservator, silica gel breather, oil level gauge, pressure relief device/explosion vent, drain valve, thermometer pocket, lifting lugs, earthing terminals, HV & LV bushings, rating and diagram plate, first filling of mineral insulating oil conforming to IS 335, and all standard accessories. Transformer shall conform to latest editions/amendments of IS 1180 (Part-1), IS 2026 and BIS Energy Efficiency Level-2 (or specified level).min. warranty: 2years Make-Kirloskar/CG/ABBIndia/BHEL/Siemens/Somani Electricals /Vishal Transformer & Mirzapur Electrical Industries Ltd or equivalent makes conforming to BIS standards shall be accepted
59	Rate for erection ,testing & commissioning of 250 KVA transformer 11/.415 KV outdoor distribution copper wound transformer .	Erection, testing and commissioning of out door distribution copper wound of 250 KVA transformer 11/.415 KV (supplies under item no.58 of schedule 1) with all other connected accessories etc as per the direction of authorized representative of SR.DEE (RS&G)/BSPs. All tools & labor required for the work shall be supplied by the contractor.
60	Erection, painting & commissioning of four pole structure complete for 11 KV including AB switch,LA,dropout fuse of 2 set each with allied accessories including supply of all material	Erection ,painting (02 coat of red oxide,02 coat of Al paint) ,testing & commissioning of 4 pole with all required chanel, angles & proper size nut bolts, 02- Set of AB switch, 02- set LA (Lighting arrestor set consisting of 03 nos. of LA confirming to IC-99.2 of Make OBLONG , HPL or similar.), 02- set of dropout fuse (02- set each electrical item at four pole), anti climbing devices including supply of all material for four poles ,with allied accessories including supply of all material such as pin and disc insulators. 4 Pole structure ,Al conductor required for four pole,danger board.
61	Construction of plinth for transformer plinth for out door transformer of size 2.0Mtr X 2.0Mtr X 2.0Mtr with stone/brick masonry with all connected accessories	The price shall cover construction of 2.0 m \times 2.0 m \times 2.0 m transformer plinth in brick/stone masonry (1:6) with all accessories such as cable ducts, earthing and drainage arrangement, complete as per Engineer-in-Charge direction. The complete civil work required for construction of plinth with be done by the contractor. Also any minor items, tools, & labor required for execution of above work shall be provided by the contractor.
62	Excavation of pit for construction of above transformer plinth for outdoor type transformer	The price shall cover excavation of pit for construction of transformer plinth of size 2.0 m \times 2.0 m \times 2.0 m, including removal of excavated earth up to 50 m lead and 1.5 m lift, leveling, dressing of sides and bottom, watering, ramming, and

		disposal of surplus earth as directed by the Engineer-in-Charge, complete in all respects. Also any minor items, tools, & labor required for execution of above work shall be provided by the contractor.
63	Supply of 11 kV Covered Conductor 99 Sqmm XLPE insulation	The price shall cover supply of covered conductor 99 Sqmm, XLPE insulation for 11 KV as per IS:7098 (Part 2): 2011 latest. Make: Polycab, Havells, KEI, Finolex, RR Kabel, Ultracab or equivalent makes conforming to BIS standards shall be accepted
64	Supply of 11kv polymer disc insulator	The price shall cover supply of polymer type disc insulator suitable for 11 KV OH line with supply of required hardware, nut & bolts. The disc insulator shall have the minimum failing load of $\geq 45\text{kN}$ and minimum creepage distance of $\geq 320\text{mm}$. The item shall be confirming to IS 731-1971 as amended up to date or relevant IS standard. The item shall be of make approved by Sr DEE (RS&G)/Bilaspur . Make: BHEL , Prime Insulators ,Aditya Birla Insulators (ABI), Rashtriya Electrical & Engg Corporation, Imperial Porcelain Pvt Ltd, Axis Electricals, Hindustan Chemicals, Rahul Ceramics or equivalent makes conforming to BIS standards shall be accepted
65	Erection of 11kv polymer disc insulator	The price shall 11 KV HT disc insulator (supplied under item no. 64 of schedule 1) with hardware on the HT poles with supply of tools & labor. Any minor item required for execution of above work shall be supplied by contractor.
66	Supply of Strain Hardware for Raccoon & Dog.	The price shall cover supply of Strain Hardware for Raccoon & Dog complete with all accessories.
67	Erection of Strain Hardware for Raccoon & Dog.	The price shall cover erection of Strain Hardware for Raccoon & Dog (supplied under item no. 66 of schedule 1). Any minor item required for execution of above work shall be supplied by contractor.
68	Supply of MS Nut & Bolts size 16x160mm & 16x200mm	The price shall cover supply of MS Nut & Bolts size 16x160mm & 16x200mm with washer if required confirming to IS 1364/IS 1367 or latest relevant IS.
69	Erection of Nuts & bolts	The price shall cover erection of Nuts & bolts.(supplied under item no. 68 of schedule 1) Any minor item required for execution of above work shall be supplied by contractor.
70	Supply of Heat Shrinkable cable termination kit for XLPE cable Size 3 core 95-120 sqmm, 11 KV system	The price shall cover supply of 11 kV Heat Shrinkable Type Cable Termination Kit suitable for 3 Core, 95–120 sq.mm XLPE insulated aluminum conductor armoured cable, conforming to IS 13573 (Part 2), complete with all accessories and tinned copper lugs, suitable for 11 kV system. Make: Raychem/3M/Densons/Compaq/Yamuna or equivalent makes conforming to BIS standards shall be accepted
71	Erection of Jointing kit	The price shall cover erection, testing, and commissioning of 11 kV heat shrinkable straight through joint / end termination kit .(supplied under item no. 70 of schedule 1) suitable for 3 core, 95–120 sq.mm XLPE insulated aluminum armoured cable, including all accessories, lugs, earthing, sealing, and necessary testing as per IS 13573 or latest and manufacturer's

		recommendation, complete in all respects. Any minor item required for execution of above work shall be supplied by contractor.
72	Supply of Jointing Sleeves for Dog conductor	The price shall cover supply of jointing sleeves suitable for ACSR Dog conductor, compression type, made of high-conductivity aluminum alloy with steel insert, confirming to IS 2121 (Part-II) / IS 5561 or latest, including crimping and all accessories complete as required. Make: ACCC / Deepak / Apar / 3D / Denson / Usha / Decon / Gupta Power / Galore / TechnoFlex or equivalent makes conforming to BIS standards shall be accepted
73	Erection of Jointing Sleeves	The price shall cover Erection of compression-type jointing sleeves (supplied under item no. 72 of schedule 1)suitable for ACSR Dog conductor, including proper cleaning of conductor surface, insertion and alignment of sleeve, compression using approved hydraulic crimping tool with correct dies, and application of joint compound as per manufacturer's instructions, complete in all respects.. Any minor item,tools,labor required for execution of above work shall be supplied by contractor.
74	Supply of T-Clamp for Dog Conductor.	The price shall cover supply of T-Clamp suitable for ACSR Dog conductor , aluminum alloy body with galvanized steel bolts and nuts, bimetallic type where required, suitable for 11 kV / 33 kV overhead line tee connection, conforming to IS 5561 or latest, complete with all accessories and as directed by the Engineer-in-Charge. Make: Apar / Deepak / Denson / Comet / Gupta Power / Galore / TechnoFlex / Decon / 3D or equivalent makes conforming to BIS standards shall be accepted
75	Erection of T-Clamp for Dog Conductor.	The price shall cover erection of T-Clamp (supplied under item no. 74 of schedule 1)suitable for ACSR Dog conductor ,including cleaning of conductor surface, fixing of main and branch conductors in position, tightening of galvanized bolts and nuts to the recommended torque, or compression with approved hydraulic tool (for compression type), complete with all labour, tools, and materials as required and as directed by the Engineer-in-Charge.
76	Supply of Stay Set 20 mm (Painted) for 11kv WITHOUT STAY WIRE	The price shall cover supply of 11 kV Stay Set complete (without stay wire), 20 mm dia MS rod with stay plate, turnbuckle, nuts, bolts, thimble, and accessories, all painted with red oxide (2 coats)and aluminum paint(1 coat), conforming to IS 5613 (Part II) or latest, complete in all respects.
77	Erection of Stay Set 20 mm (Painted)	The price shall cover erection of 20 mm dia Stay Set (painted) (supplied under item no. 76 of schedule 1).for 11 kV line, including excavation, fixing of stay rod with plate, turnbuckle assembly, refilling, alignment, and all labor and materials required, complete as per IS 5613 or latest and direction of Engineer-in-Charge.
78	Supply of Stay Wire 7/3.15 mm (7/10 SWG)	The price shall cover supply of supply of Stay Wire 7/3.15 mm (7/10 SWG) galvanized steel strand, high tensile, Class A zinc coated, conforming to IS 2141 or latest, suitable for 11 kV

		overhead line stay sets, complete as required.
SCHEDULE-2		
Electrical portion of the work "Development of Goods Shed as per NGT Guidelines at RIG under the jurisdiction of ADEN/RIG".		
Sn .	Description of Items	Detailed technical specification/ Scope of work of items appearing in schedule- 2
1	Supply of Submersible pump 5HP, Three Phase-Submersible Pump Set, 10/11 stage, 5star rated suitable for 150 mm dia. Bore, suitable head/discharge as per no. of stages above.	Work Procedure shall be same as item no. 1 of schedule-1.
2	Supply of 5 H.P. SEMI AUTOMATIC STAR DELTA starter panel	Work Procedure shall be same as item no. 2 of schedule-1.
3	Installation of pumps supplied	Work Procedure shall be same as item no. 3 of schedule-1.
4	Supply of Submersible cable 3 core PVC insulated Flat with copper conductor 4 sq mm size as per details	Work Procedure shall be same as item no. 4 of schedule-1.
5	Supply of PVC insulated Galvanised Steel wire rope 8 mm size as per details	Work Procedure shall be same as item no. 5 of schedule-1.
6	Supply of SPN Distribution board conforms to IS-13032. DBS are phosphatised and panted With epoxy polyester based powder paint, sheet steel enclosure for flush/surface mounting with neutral link.earth terminal & bus- bar single door 6 way.	Work Procedure shall be same as item no. 6 of schedule-1.
7	supply of MCB sp 6-32 A capacity.	Work Procedure shall be same as item no. 7 of schedule-1.
8	Fixing, connection & commissioning of DB/bus-bar chamber supplied above.	Work Procedure shall be same as item no. 8 of schedule-1.
9	Supply of Crosslinked Polyethylene Insulated PVC Sheathed Armoured Cable 4x25 sqmm with Aluminium conductor, suitable for rated voltage at 1100 volts grade, heat resisting insulation-armoured, armoured type: strip, as per IS:7098(Part 1):1988 latest.	Work Procedure shall be same as item no. 9 of schedule-1.
10	Laying of cable in open air/fixed in wall with supply of all material (Except cable & GI Pipe).	Work Procedure shall be same as item no. 10 of schedule-1.
11	Laying of cable of lower size (upto 4x35 Sq. mm) in Polythene (HDPE) pipe without digging of earth dressing of land including supply of HDPE pipe & all materials . [HDPE pipe 50 mm Diameter, PN 6 or above, conforming to IS 4984 : 2016 or relevant IS standard type: coil/straight as per requirement]	Work Procedure shall be same as item no. 11 of schedule-1.
12	Cable laying across the road/track by using trench-less construction method	Work Procedure shall be same as item no. 13 of schedule-1.

	(HDD)	
13	Trenching/Digging of earth 1 mtr deep for cable laying.	Work Procedure shall be same as item no. 14 of schedule-1.
14	Supply of electric Ceiling Fan BLDC Type Sweep Size (mm):1200, rating: 5star, type of regulator: Electronic/remote	Work Procedure shall be same as item no. 15 of schedule-1.
15	Supply of On delay Electronic Timer suitable for 230V AC, 48V AC/DC, 24V AC/DC, Time range 0-10 sec or 1-100 sec or 0-300 sec	Work Procedure shall be same as item no. 16 of schedule-1.
16	Supply of power contactor 25A rating with 1NO+1NC	Work Procedure shall be same as item no. 17 of schedule-1.
17	Fixing & Connection of Contactor Timer Unit Supplied above.	Work Procedure shall be same as item no. 18 of schedule-1.
18	Concealed Wiring for 6/16 Amps plug points with PVC Pipe and PVC insulated copper conductor 2.5 sq.mm. size with modular board supply of all materials.	Work Procedure shall be same as item no. 19 of schedule-1.
19	Concealed wiring for light fan & 6 Amps plug points with PVC Pipe and PVC insulated copper conductor 1.5 sq.mm. size with modular board with supply of all materials.	Work Procedure shall be same as item no. 20 of schedule-1.
20	Concealed Wiring for Sub-circuits.	Work Procedure shall be same as item no. 21 of schedule-1.
21	Supply of LED Inverter Batten 20 W 6500 K Tubelight polycarbonate body	Work Procedure shall be same as item no. 22 of schedule-1.
22	Fixing of lights/fans supplied as above with supply of flexible wire to connection othe nearest ceiling rose.	Work Procedure shall be same as item no. 23 of schedule-1.
23	Supply of LED Flood Light 100W with die cast aluminium heat sink IP66, colour≥ 6000K with high power LEDs as light source	Work Procedure shall be same as item no. 24 of schedule-1.
24	Fixing & connection of luminaire supplied above.	Work Procedure shall be same as item no. 25 of schedule-1.
25	Earthing arrangement.	Work Procedure shall be same as item no. 26 of schedule-1.
26	Supply,Installation and commissioning including Civil work at site of 16 Meter Height High Mast Tower as per relevant IS complete with Luminaire 12 Nos LED FLOOD LIGHT with steel wire rope double drum winch control panel lantern carriage arrangement etc. with all accessories.	Work Procedure shall be same as item no. 27&28 of schedule-1.
SCHEDULE-3		
Electrical portion of the work "Development of Goods Shed as per NGT Guidelines at Kotarlia(KRL) "		
Sn .	Description of Items	Detailed technical specification/ Scope of work of items appearing in schedule- 3

1	Supply of Submersible pump 5HP, Three Phase-Submersible Pump Set, 10/11 stage, 5star rated suitable for 150 mm dia. Bore, suitable head/discharge as per no. of stages above.	Work Procedure shall be same as item no. 1 of schedule-1.
2	Supply of 5 H.P. SEMI AUTOMATIC STAR DELTA starter panel	Work Procedure shall be same as item no. 2 of schedule-1.
3	Installation of pumps supplied	Work Procedure shall be same as item no. 3 of schedule-1.
4	Supply of Submersible cable 3 core PVC insulated Flat with copper conductor 4 sq mm size as per details	Work Procedure shall be same as item no. 4 of schedule-1.
5	Supply of PVC insulated Galvanised Steel wire rope 8 mm size as per details	Work Procedure shall be same as item no. 5 of schedule-1.
6	Supply of SPN Distribution board conforms to IS-13032. DBS are phosphatised and painted With epoxy polyester based powder paint, sheet steel enclosure for flush/surface mounting with neutral link.earth terminal & bus- bar single door 6 way.	Work Procedure shall be same as item no. 6 of schedule-1.
7	supply of MCB sp 6-32 A capacity.	Work Procedure shall be same as item no. 7 of schedule-1.
8	Fixing, connection & commissioning of DB/bus-bar chamber supplied above.	Work Procedure shall be same as item no. 8 of schedule-1.
9	Supply of Crosslinked Polyethylene Insulated PVC Sheathed Armoured Cable 4x25 sqmm with Aluminium conductor, suitable for rated voltage at 1100 volts grade, heat resisting insulation-armoured, armoured type: strip, as per IS:7098(Part 1):1988 latest.	Work Procedure shall be same as item no. 9 of schedule-1.
10	Laying of cable in open air/fixed in wall with supply of all material (Except cable & GI Pipe).	Work Procedure shall be same as item no. 10 of schedule-1.
11	Laying of cable of lower size (upto 4x35 Sq. mm) in Polythene (HDPE) pipe without digging of earth dressing of land including supply of HDPE pipe & all materials . [HDPE pipe 50 mm Diameter, PN 6 or above, conforming to IS 4984 : 2016 or relevant IS standard type: coil/straight as per requirement]	Work Procedure shall be same as item no. 11 of schedule-1.
12	Cable laying across the road/track by using trench-less construction method (HDD)	Work Procedure shall be same as item no. 13 of schedule-1.
13	Trenching/Digging of earth 1 mtr deep for cable laying.	Work Procedure shall be same as item no. 14 of schedule-1.
14	Supply of electric Ceiling Fan BLDC Type Sweep Size (mm):1200, rating: 5star, type of regulator: Electronic/remote	Work Procedure shall be same as item no. 15 of schedule-1.
15	Supply of On delay Electronic Timer suitable for 230V AC, 48V AC/DC, 24V AC/DC,	Work Procedure shall be same as item no. 16 of schedule-1.

	Time range 0-10 sec or 1-100 sec or 0-300 sec	
16	Supply of power contactor 25A rating with 1NO+1NC	Work Procedure shall be same as item no. 17 of schedule-1.
17	Fixing & Connection of Contactor Timer Unit Supplied above.	Work Procedure shall be same as item no. 18 of schedule-1.
18	Concealed Wiring for 6/16 Amps plug points with PVC Pipe and PVC insulated copper conductor 2.5 sq.mm. size with modular board supply of all materials.	Work Procedure shall be same as item no. 19 of schedule-1.
19	Concealed wiring for light fan & 6 Amps plug points with PVC Pipe and PVC insulated copper conductor 1.5 sq.mm. size with modular board with supply of all materials.	Work Procedure shall be same as item no. 20 of schedule-1.
20	Concealed Wiring for Sub-circuits.	Work Procedure shall be same as item no. 21 of schedule-1.
21	Supply of LED Inverter Batten 20 W 6500 K Tubelight polycarbonate body	Work Procedure shall be same as item no. 22 of schedule-1.
22	Fixing of lights/fans supplied as above with supply of flexible wire to connection othe nearest ceiling rose.	Work Procedure shall be same as item no. 23 of schedule-1.
23	Supply of LED Flood Light 100W with die cast aluminium heat sink IP66, colour ≥ 6000K with high power LEDs as light source	Work Procedure shall be same as item no. 24 of schedule-1.
24	Fixing & connection of luminaire supplied above.	Work Procedure shall be same as item no. 25 of schedule-1.
25	Earthing arrangement.	Work Procedure shall be same as item no. 26 of schedule-1.
26	Supply, Installation and commissioning including Civil work at site of 16 Meter Height High Mast Tower as per relevant IS complete with Luminaire 12 Nos LED FLOOD LIGHT with steel wire rope double drum winch control panel lantern carriage arrangement etc. with all accessories.	Work Procedure shall be same as item no. 27&28 of schedule-1.

SCHEDULE-4 Electrical portion of the work "Provision of Gelvalium sheet , Sprinkler and other allied miscellaneous work at Akaltara Goods Shed".		
Item No.	Description of Items	Detailed technical specification/ Scope of work of items appearing in schedule- 4
1	Supply of Submersible pump 5HP, Three Phase-Submersible Pump Set, 10/11 stage, 5star rated suitable for 150 mm dia. Bore, suitable head/discharge as per no. of stages above.	Work Procedure shall be same as item no. 1 of schedule-1.
2	Supply of 5 H.P. SEMI AUTOMATIC STAR DELTA starter panel	Work Procedure shall be same as item no. 2 of schedule-1.

3	Installation of pumps supplied	Work Procedure shall be same as item no. 3 of schedule-1.
4	Supply of Submersible cable 3 core PVC insulated Flat with copper conductor 4 sq mm size as per details	Work Procedure shall be same as item no. 4 of schedule-1.
5	Supply of PVC insulated Galvanised Steel wire rope 8 mm size as per details	Work Procedure shall be same as item no. 5 of schedule-1.
6	Supply of SPN Distribution board conforms to IS-13032. DBS are phosphatised and painted With epoxy polyester based powder paint, sheet steel enclosure for flush/surface mounting with neutral link.earth terminal & bus- bar single door 6 way.	Work Procedure shall be same as item no. 6 of schedule-1.
7	supply of MCB sp 6-32 A capacity.	Work Procedure shall be same as item no. 7 of schedule-1.
8	Fixing, connection & commissioning of DB/bus-bar chamber supplied above.	Work Procedure shall be same as item no. 8 of schedule-1.
9	Supply of Crosslinked Polyethylene Insulated PVC Sheathed Armoured Cable 4x25 sqmm with Aluminium conductor, suitable for rated voltage at 1100 volts grade, heat resisting insulation-armoured, armoured type: strip, as per IS:7098(Part 1):1988 latest.	Work Procedure shall be same as item no. 9 of schedule-1.
10	Laying of cable in open air/fixed in wall with supply of all material (Except cable & GI Pipe).	Work Procedure shall be same as item no. 10 of schedule-1.
11	Laying of cable of lower size (upto 4x35 Sq. mm) in Polythene (HDPE) pipe without digging of earth dressing of land including supply of HDPE pipe & all materials . [HDPE pipe 50 mm Diameter, PN 6 or above, conforming to IS 4984 : 2016 or relevant IS standard type: coil/straight as per requirement]	Work Procedure shall be same as item no. 11 of schedule-1.
12	Trenching/Digging of earth 1 mtr deep for cable laying.	Work Procedure shall be same as item no. 14 of schedule-1.
13	Supply of electric Ceiling Fan BLDC Type Sweep Size (mm):1200, rating: 5star, type of regulator: Electronic/remote	Work Procedure shall be same as item no. 15 of schedule-1.
14	Supply of On delay Electronic Timer suitable for 230V AC, 48V AC/DC, 24V AC/DC, Time range 0-10 sec or 1-100 sec or 0-300 sec	Work Procedure shall be same as item no. 16 of schedule-1.
15	Supply of power contactor 25A rating with 1NO+1NC	Work Procedure shall be same as item no. 17 of schedule-1.

16	Fixing & Connection of Contactor Timer Unit Supplied above.	Work Procedure shall be same as item no. 18 of schedule-1.
17	Concealed Wiring for 6/16 Amps plug points with PVC Pipe and PVC insulated copper conductor 2.5 sq.mm. size with modular board supply of all materials.	Work Procedure shall be same as item no. 19 of schedule-1.
18	Concealed wiring for light fan & 6 Amps plug points with PVC Pipe and PVC insulated copper conductor 1.5 sq.mm. size with modular board with supply of all materials.	Work Procedure shall be same as item no. 20 of schedule-1.
19	Concealed Wiring for Sub-circuits.	Work Procedure shall be same as item no. 21 of schedule-1.
20	Supply of LED Inverter Batten 20 W 6500 K Tubelight polycarbonate body	Work Procedure shall be same as item no. 22 of schedule-1.
21	Fixing of lights/fans supplied as above with supply of flexible wire to connection the nearest ceiling rose.	Work Procedure shall be same as item no. 23 of schedule-1.
22	Supply of LED Flood Light 100W with die cast aluminium heat sink IP66, colour \geq 6000K with high power LEDs as light source	Work Procedure shall be same as item no. 24 of schedule-1.
23	Fixing & connection of luminaire supplied above.	Work Procedure shall be same as item no. 25 of schedule-1.
24	Earthing arrangement.	Work Procedure shall be same as item no. 26 of schedule-1.
25	Supply of 16 meters High Mast Lighting Tower for large area with LED Flood Lighting System with 12 Nos LED FLOOD LIGHT LUMINAIRE complete with steel wire rope double drum winch control panel lantern carriage arrangement etc. with all accessories.	Work Procedure shall be same as item no. 27 of schedule-1.
26	Erection/Installation, Commissioning, Testing (ICT) with shallow foundation of high mast tower 16 Meter High supplied above.	Work Procedure shall be same as item no. 28 of schedule-1.

SCHEDULE-5

Electrical portion of the work "Provision of Gallvalium Sheet, Sprinkler and other allied miscellaneous work at KHS goods shed."

Item No.	Description of Items	Detailed technical specification/ Scope of work of items appearing in schedule- 5
1	Supply of Submersible pump 5HP, Three Phase-Submersible Pump Set, 10/11 stage, 5star rated suitable for 150 mm dia. Bore, suitable head/discharge as per no. of stages above.	Work Procedure shall be same as item no. 1 of schedule-1.

2	Supply of 5 H.P. DOL starter panel including timer	Supply of 5 HP DOL starter panel comprising of: 1. TP MCB of suitable rating : 01No. 2. Power contractor AC 23 duty 12 Amps. : 01no. 3. On push button with no. element 22.5mm dia : 1no. 4. Off push button with NC element 22.5mm dia : 01no. Ammeter of suitable rating AE : 01no. 5. Indicating LED type R,Y,B 22.5mm dia : 3nos. 6. On indicating lamp LED type 22.5mm dia : 01no. 7. Control MCB : 3nos. 8. Electronic motor protection relay with following protection : 1set (a) Over load protection (b) Current sensing Single phase protection (c) Phase failure protection (d) Dry run protection, dry run can be by pass for general motor if require S2 CMR1 with CTS . 9. Ammeter of suitable rating : 01no. 10 Volt meter 0-500 volt : 01no. 11. Volt meter selector switch : 1 no. 12. Electronic time switch for 24 hours automation operation of pump : 01no. 13. Incoming and outgoing terminal suitable for aluminium cable reputed. : 1set. 14. Star panel made of 16SWG CRCA sheet powder coated , wall mounting type : 1set
3	Installation of pumps supplied	Work Procedure shall be same as item no. 3 of schedule-1.
4	Supply of Submersible cable 3 core PVC insulated Flat with copper conductor 4 sq mm size as per details	Work Procedure shall be same as item no. 4 of schedule-1.
5	Supply of PVC insulated Galvanised Steel wire rope 8 mm size as per details	Work Procedure shall be same as item no. 5 of schedule-1.
6	Supply of SPN Distribution board conforms to IS-13032. DBS are phosphatised and panted With epoxy polyster based powder paint, sheet steel enclosure for flush/surface mounting with neutral link.earth terminal & bus- bar single door 6 way.	Work Procedure shall be same as item no. 6 of schedule-1.
7	supply of MCB sp 6-32 A capacity.	Work Procedure shall be same as item no. 7 of schedule-1.
8	Fixing, connection & commissioning of DB/bus-bar chamber supplied above.	Work Procedure shall be same as item no. 8 of schedule-1.
9	Supply of Crosslinked Polyethylene Insulated PVC Sheathed Armoured Cable 4x50 sqmm with Aluminium conductor, suitable for rated voltage at 1100 volts grade, heat resisting insulstion-armoured, armoured type: strip, as per IS:7098(Part 1):1988 latest.	Supply of Crosslinked Polyethylene Insulated PVC Sheathed Armoured Cable 4x50 sqmm with Aluminium conductor, suitable for rated voltage at 1100 volts grade, heat resisting insulstion-armoured, armoured type: strip, as per IS:7098(Part 1):1988 latest. Make: Polycab, Havells, KEI, Finolex, RR Kabel, Ultracab, Vishal Cables, or equivalent makes conforming to BIS standards shall be accepted.
10	Supply of Crosslinked Polyethylene Insulated PVC Sheathed Armoured Cable 4x25 sqmm with Aluminium conductor,	Work Procedure shall be same as item no. 9 of schedule-1.

	suitable for rated voltage at 1100 volts grade, heat resisting insulation-armoured, armoured type: strip, as per IS:7098(Part 1):1988 latest.	
11	Laying of cable in open air/fixed in wall with supply of all material (Except cable & GI Pipe).	Work Procedure shall be same as item no. 10 of schedule-1.
12	Laying of cable of lower size (upto 4x35 Sq. mm) in Polythene (HDPE) pipe without digging of earth dressing of land including supply of HDPE pipe & all materials . [HDPE pipe 50 mm Diameter, PN 6 or above, conforming to IS 4984 : 2016 or relevant IS standard type: coil/straight as per requirement]	Work Procedure shall be same as item no. 11 of schedule-1.
13	Trenching/Digging of earth 1 mtr deep for cable laying.	Work Procedure shall be same as item no. 14 of schedule-1.
14	Supply of electric Ceiling Fan BLDC Type Sweep Size (mm):1200, rating: 5star, type of regulator: Electronic/remote	Work Procedure shall be same as item no. 15 of schedule-1.
15	Supply of On delay Electronic Timer suitable for 230V AC, 48V AC/DC, 24V AC/DC, Time range 0-10 sec or 1-100 sec or 0-300 sec	Work Procedure shall be same as item no. 16 of schedule-1.
16	Fixing & Connection of Contactor Timer Unit Supplied above.	Work Procedure shall be same as item no. 18 of schedule-1.
17	Concealed Wiring for 6/16 Amps plug points with PVC Pipe and PVC insulated copper conductor 2.5 sq.mm. size with modular board supply of all materials.	Work Procedure shall be same as item no. 19 of schedule-1.
18	Concealed wiring for light fan & 6 Amps plug points with PVC Pipe and PVC insulated copper conductor 1.5 sq.mm. size with modular board with supply of all materials.	Work Procedure shall be same as item no. 20 of schedule-1.
19	Supply of Exhaust Fan non-Capacitor Type Sweep Size (mm):300, No.of pole: 4, Insulation of material class: B	The price shall cover supply of exhaust fan (ventilating fan metal type). The exhaust fan shall be of 300 mm sweep complete with accessories. Suitable for 230Volt, 50Hz single phase AC supply complete with mounting bracket (to be furnished by manufacturer). Make- Khaitan, Havells, Crompton Greaves, Usha, Philips , Polycab or equivalent makes conforming to BIS standards shall be accepted.
20	Supply of Electric Ceiling Fan BLDC Type Sweep Size (mm):1400, rating: 5star, type of regulator: remote	Supply of Electric Ceiling Fan BLDC Type Sweep Size (mm):1400, rating: 5 star , type of regulator: Electronic/remote , with 5 year warranty. Make: Khaitan, Havells, Crompton Greaves, Usha, Philips , Halonix, Polycab, bajaj or equivalent makes conforming to BIS standards shall be accepted.
21	Concealed Wiring for Sub-circuits.	Work Procedure shall be same as item no. 21 of schedule-1.

22	Supply of LED Inverter Batten 20 W 6500 K Tubelight polycarbonate body	Work Procedure shall be same as item no. 22 of schedule-1.
23	Fixing of lights/fans supplied as above with supply of flexible wire to connection othe nearest ceiling rose.	Work Procedure shall be same as item no. 23 of schedule-1.
24	Supply of LED Flood Light 100W with die cast aluminium heat sink IP66, colour $\geq 6000K$ with high power LEDs as light source	Work Procedure shall be same as item no. 24 of schedule-1.
25	Fixing & connection of luminaire supplied above.	Work Procedure shall be same as item no. 25 of schedule-1.
26	Point wiring for fans/exhaust fans/lights etc.	Point wiring for fans/exhaust fans/lights etc with PVC insulated copper conductor single-core FRLS wires of suitable size drawn through heavy-duty PVC conduit / casing-capping, including modular switch, ceiling rose / connector, fan regulator (where applicable), fan box, earthing with green copper wire, fixing of accessories and making connections complete as per site requirement and as per the directive of the authorized representative of SR.DEE (RS&G)/BSP
27	Construction of Cement Concrete foundation containg cement concrete on the proportion 1:3:6 of cement, sand & ballst size of 40mm.	Work Procedure shall be same as item no. 34 of schedule-1.
28	Eraction of Stays & Guys	Work Procedure shall be same as item no. 36 of schedule-1.
29	Supply of Stays & Guys.	Work Procedure shall be same as item no. 35 of schedule-1.
30	Cutting of Rail poles	The work consists of Cutting of Rails/DP etc as per the directive of authorized representative of SR.DEE (RS&G)/BSP from site. All required man and machine for cutting of rail poles shall be arranged by the contractor.
31	Transportation of rail pole from PWI godown/way site station to Work site.	The work consists of transportation of Rails/DP etc as per the directive of authorized representative of SR.DEE (RS&G)/BSP & transportation to above released material etc. from site. The same has to transport and handover to site/office of SSEE (G) store. Contractor has to carry the rail pole from the site indicated by authorized representative of Sr DEE (RS&G)/BSP within the area of 40 Km from Working site.All required man and machine for loading/unloading including transportation of poles by lorry/trailer including all types of taxes to be paid en route shall be arranged by the contractor. The labour required for above transportation work shall be supplied by the contractor. The transportation shall be through vehicle of capacity 9 Ton.
32	Earthing arrangement.	Work Procedure shall be same as item no. 26 of schedule-1.
33	Supply of 16 meters High Mast Lighting Tower for large area with LED Flood Lighting System with 12 Nos LED FLOOD LIGHT LUMINAIRE complete with steel wire rope double drum winch control panel lantern carriage arrangement etc. with all accessories.	Work Procedure shall be same as item no. 27 of schedule-1.

34	Erection/Installation, Commissioning, Testing (ICT) with shallow foundation of high mast tower 16 Meter High supplied above.	Work Procedure shall be same as item no. 28 of schedule-1.
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SCHEDULE-6 Electrical portion of the work "Provision of Galvalium sheet, Sprinkler and other allied miscellaneous work at Kamalpurgram(KLPG) Goods Shed"		
Item No.	Description of Items	Detailed technical specification/ Scope of work of items appearing in schedule- 6
1	Supply of Submersible pump 5HP, Three Phase-Submersible Pump Set, 10/11 stage, 5star rated suitable for 150 mm dia. Bore, suitable head/discharge as per no. of stages above.	Work Procedure shall be same as item no. 1 of schedule-1.
2	Supply of 5 H.P. SEMI AUTOMATIC STAR DELTA starter panel	Work Procedure shall be same as item no. 2 of schedule-1.
3	Installation of pumps supplied	Work Procedure shall be same as item no. 3 of schedule-1.
4	Supply of Submersible cable 3 core PVC insulated Flat with copper conductor 4 sq mm size as per details	Work Procedure shall be same as item no. 4 of schedule-1.
5	Supply of PVC insulated Galvanised Steel wire rope 8 mm size as per details	Work Procedure shall be same as item no. 5 of schedule-1.
6	Supply of SPN Distribution board conforms to IS-13032. DBS are phosphatised and painted With epoxy polyster based powder paint, sheet steel enclosure for flush/surface mounting with neutral link.earth terminal & bus- bar single door 6 way.	Work Procedure shall be same as item no. 6 of schedule-1.
7	supply of MCB sp 6-32 A capacity.	Work Procedure shall be same as item no. 7 of schedule-1.
8	Fixing, connection & commissioning of DB/bus-bar chamber supplied above.	Work Procedure shall be same as item no. 8 of schedule-1.
9	Supply of Crosslinked Polyethylene Insulated PVC Sheathed Armoured Cable 4x25 sqmm with Aluminium conductor, suitable for rated voltage at 1100 volts grade, heat resisting insulation-armoured, armoured type: strip, as per IS:7098(Part 1):1988 latest.	Work Procedure shall be same as item no. 9 of schedule-1.
10	Laying of cable in open air/fixed in wall with supply of all material (Except cable & GI Pipe).	Work Procedure shall be same as item no. 10 of schedule-1.
11	Laying of cable of lower size (upto 4x35 Sq. mm) in Polythene (HDPE) pipe without digging of earth dressing of land including	Work Procedure shall be same as item no. 11 of schedule-1.

	supply of HDPE pipe & all materials . [HDPE pipe 50 mm Diameter, PN 6 or above, conforming to IS 4984 : 2016 or relevant IS standard type: coil/straight as per requirement]	
12	Cable laying across the road/track by using trench-less construction method (HDD)	Work Procedure shall be same as item no. 13 of schedule-1.
13	Trenching/Digging of earth 1 mtr deep for cable laying.	Work Procedure shall be same as item no. 14 of schedule-1.
14	Supply of electric Ceiling Fan BLDC Type Sweep Size (mm):1200, rating: 5star, type of regulator: Electronic/remote	Work Procedure shall be same as item no. 15 of schedule-1.
15	Supply of On delay Electronic Timer suitable for 230V AC, 48V AC/DC, 24V AC/DC, Time range 0-10 sec or 1-100 sec or 0-300 sec	Work Procedure shall be same as item no. 16 of schedule-1.
16	Supply of power contactor 25A rating with 1NO+1NC	Work Procedure shall be same as item no. 17 of schedule-1.
17	Fixing & Connection of Contactor Timer Unit Supplied above.	Work Procedure shall be same as item no. 18 of schedule-1.
18	Concealed Wiring for 6/16 Amps plug points with PVC Pipe and PVC insulated copper conductor 2.5 sq.mm. size with modular board supply of all materials.	Work Procedure shall be same as item no. 19 of schedule-1.
19	Concealed wiring for light fan & 6 Amps plug points with PVC Pipe and PVC insulated copper conductor 1.5 sq.mm. size with modular board with supply of all materials.	Work Procedure shall be same as item no. 20 of schedule-1.
20	Concealed Wiring for Sub-circuits.	Work Procedure shall be same as item no. 21 of schedule-1.
21	Supply of LED Inverter Batten 20 W 6500 K Tubelight polycarbonate body	Work Procedure shall be same as item no. 22 of schedule-1.
22	Fixing of lights/fans supplied as above with supply of flexible wire to connection othe nearest ceiling rose.	Work Procedure shall be same as item no. 23 of schedule-1.
23	Supply of LED Flood Light 100W with die cast aluminium heat sink IP66, colour≥ 6000K with high power LEDs as light source	Work Procedure shall be same as item no. 24 of schedule-1.
24	Fixing & connection of luminaire supplied above.	Work Procedure shall be same as item no. 25 of schedule-1.
25	Earthing arrangement.	Work Procedure shall be same as item no. 26 of schedule-1.
26	Supply of 16 meters High Mast Lighting Tower for large area with LED Flood Lighting System with 12 Nos LED FLOOD LIGHT LUMINAIRE complete with steel wire rope double drum winch control panel	Work Procedure shall be same as item no. 27 of schedule-1.

	lantern carriage arrangement etc. with all accessories.	
27	Erection/Installation, Commissioning, Testing (ICT) with shallow foundation of high mast tower 16 Meter High supplied above.	Work Procedure shall be same as item no. 28 of schedule-1.
28	Laying of cable of in GI pipe including supply of all materials (including G.I. Pipe & except Cable). With supply of G.I. pipe dia. 50mm thickness min. 2mm	Work Procedure shall be same as item no. 12 of schedule-1.

SCHEDULE-7 Electrical portion of the work "Development of KJZ goods shed."		
Item No.	Description of Items	Detailed technical specification/ Scope of work of items appearing in schedule- 7
1	Supply of Submersible pump 5HP, Three Phase-Submersible Pump Set, 25 stage, three phae suitable for 150 mm dia, bore, Discharge range 100 m	Work Procedure shall be same as item no. 1 of schedule-1.
2	Supply of 5 H.P. DOL starter panel including timer.	Work Procedure shall be same as item no. 2 of schedule-5.
3	Installation of pumps supplied	Work Procedure shall be same as item no. 3 of schedule-1.
4	Supply of Submersible cable 3 core PVC insulated Flat with copper conductor 4 sq mm size as per details	Work Procedure shall be same as item no. 4 of schedule-1.
5	Supply of PVC insulated Galvanised Steel wire rope 8 mm size as per details	Work Procedure shall be same as item no. 5 of schedule-1.
6	Supply of SPN Distribution board conforms to IS-13032. DBS are phosphatised and panted With epoxy polyster based powder paint, sheet steel enclosure for flush/surface mounting with neutral link.earth terminal & bus- bar single door 6 way.	Work Procedure shall be same as item no. 6 of schedule-1.
7	supply of MCB sp 6-32 A capacity.	Work Procedure shall be same as item no. 7 of schedule-1.
8	Fixing, connection & commissioning of DB/bus-bar chamber supplied above.	Work Procedure shall be same as item no. 8 of schedule-1.
9	Supply of Crosslinked Polyethylene Insulated PVC Sheathed Armoured Cable 4x25 sqmm with Aluminium conductor, suitable for rated voltage at 1100 volts grade, heat resisting insulstion-armoured, armoured type: strip, as per IS:7098(Part 1):1988 latest.	Work Procedure shall be same as item no. 9 of schedule-1.
10	Laying of cable in open air/fixed in wall with	Work Procedure shall be same as item no. 10 of schedule-1.

	supply of all material (Except cable & GI Pipe).	
11	Laying of cable of lower size (upto 4x35 Sq. mm) in Polythene (HDPE) pipe without digging of earth dressing of land including supply of HDPE pipe & all materials . [HDPE pipe 50 mm Diameter, PN 6 or above, conforming to IS 4984 : 2016 or relevant IS standard type: coil/straight as per requirement]	Work Procedure shall be same as item no. 11 of schedule-1.
12	Cable laying across the road/track by using trench-less construction method (HDD)	Work Procedure shall be same as item no. 13 of schedule-1.
13	Trenching/Digging of earth 1 mtr deep for cable laying.	Work Procedure shall be same as item no. 14 of schedule-1.
14	Supply of electric Ceiling Fan BLDC Type Sweep Size (mm):1200, rating: 5star, type of regulator: Electronic/remote	Work Procedure shall be same as item no. 15 of schedule-1.
15	Supply of On delay Electronic Timer suitable for 230V AC, 48V AC/DC, 24V AC/DC, Time range 0-10 sec or 1-100 sec or 0-300 sec	Work Procedure shall be same as item no. 16 of schedule-1.
16	Supply of power contactor 25A rating with 1NO+1NC	Work Procedure shall be same as item no. 17 of schedule-1.
17	Fixing & Connection of Contactor Timer Unit Supplied above.	Work Procedure shall be same as item no. 18 of schedule-1.
18	Casing-caping Wiring for 6-16Amps plug points with PVC casing caping and PVC insulated copper conductor 2.5 sq. mm. size with supply of all materials.	<p>The Casing capping wiring for 6-16 A plug points, individual or combined switch, socket & fuse shall be through PVC casing - caping/PVC pipe 20/25/32mm size/dia as required . PVC pipe shall be heavy type ISI marked with provision of suitable Tees , bends ,elbows, junction boxes as required . The wiring shall be with PVC insulated stranded individual copper conductor 2.5 sq. mm for one socket, 4 Sq. mm if 2 to 3 sockets, 6 Sq. mm if 4 to 5 sockets in a board. The wires should be 650/1100 volt grade FRLS type of ISI marked with additional properties of FRLS . A separate circuit should be drawn from the main board for the plug point. An earth continuity conductor of 18 SWG PVC copper shall be run from the main board to the plug socket and connected to the earth terminal of the plug socket. Wherever convenient, wiring for light, fan & Plug points shall be done through common pipe. All materials shall be supplied by the contractor. The work shall be done as per the directive of the authorized representative of Sr.DEE (RS&G)/BSP.</p> <p><i>Make for PVC pipe- Polycab/Anchor/Finolex/Bajaj/ Precision /Richa</i></p> <p><i>Make for Switch/Socket - Havells brands/L&T/ Legrand/ Anchor/ ROMA/HPL.</i></p> <p><i>Make for copper wire: Polycab/Havells/KEI/Finolex/RR Kabel/Ultracab.</i></p>

19	Concealed wiring for light, fan & 6 Amps plug points with PVC Pipe and PVC insulated copper conductor 1.5 sq. mm. size with modular board with supply of all materials.	Work Procedure shall be same as item no. 20 of schedule-1.
20	Concealed Wiring for Sub-circuits.	Work Procedure shall be same as item no. 21 of schedule-1.
21	Supply of LED Inverter Batten 20 W 6500 K Tubelight polycarbonate body	Work Procedure shall be same as item no. 22 of schedule-1.
22	Fixing of lights/fans supplied as above with supply of flexible wire to connection other nearest ceiling rose.	Work Procedure shall be same as item no. 23 of schedule-1.
23	Supply of LED Flood Light 200 W Energy saving IP65 flood light with high power LEDs as light source	Work Procedure shall be same as item no. 24 of schedule-1.
24	Fixing & commissioning of LED Flood light fittings	Work Procedure shall be same as item no. 25 of schedule-1.
25	Earthing arrangement.	Work Procedure shall be same as item no. 26 of schedule-1.
26	Supply of 16 meters High Mast Lighting Tower for large area with LED Flood Lighting System with 12 Nos LED FLOOD LIGHT LUMINAIRE complete with steel wire rope double drum winch control panel lantern carriage arrangement etc. with all accessories.	Work Procedure shall be same as item no. 27 of schedule-1.
27	Erection/Installation, Commissioning, Testing (ICT) with shallow foundation of high mast tower 16 Meter High supplied above.	Work Procedure shall be same as item no. 28 of schedule-1.

GUARANTY / WARRANTY:

The materials supplied other than LED based lights and fittings and the workmanship shall carry a guarantee / warranty for a period of 12 months from the certified date of installation or 18 months from the date of supply whichever is earlier. All LED BASED light and fitting (including driver etc.) shall carry a guarantee / warranty for a period of 60 Months from date of commissioning or 72 Months from the date of supply whichever is earlier. Any defects arising out of poor workmanship / defective material in this period shall be attended free of cost by the contractor.

***Following Make** or equivalent makes conforming to BIS standards shall be accepted **for all items of above schedules:**

Item	Make
<i>Switch/Socket/modular board</i>	<i>Havells brands/L&T -Lauritz Knudsen Electrical and Automation (under Schneider Electric) / Anchor/ Legrand/ ROMA/HPL.</i>
<i>Copper wire</i>	<i>Polycab/Havells/KEI/Finolex/RR Kabel/Ultracab</i>
<i>Casing capping</i>	<i>Polycab /Anchor/ Finolex/ Bajaj /Precision /Richa</i>
<i>Ceiling Rose</i>	<i>Polycab/Anchor/Panasonic/Finolex/ Bajaj / Precision /Richa</i>
<i>PVC pipe</i>	<i>Polycab/Anchor/Finolex/Bajaj/ Precision /Richa</i>

<i>MCCB/MCBs:</i>	<i>Siemens, Schneider, Havells, Standard, Crabtree, GE, Indoasian, Control & Switchgear, Legrand, Hager, L&T- Lauritz Knudsen Electrical and Automation (under Schneider Electric), Eaton, Sigma, BCH</i>
<i>GI pipes</i>	<i>SAIL, JINDAL, Surya, TATA, Prakash, PSST</i>
<i>FRLS wire</i>	<i>Polycab/Havells/ KEI/Finolex/ RR Kabel/Ultracab/BCH</i>

Note:

- 1) Firm may submit any other make than specified above after taking approval from Sr.DEE(RS&G)/BSP
- 2) Minor changes in the above LED lights specifications as per latest market scenario may be considered after taking the approval by Sr.DEE(RS&G)/BSP.
- 3) All above supplied item shall confirm to relevant IS standard.
- 4) The hologram marked during RITES inspection shall be marked on all individual items surface instead of carton box.
- 5) Test certificate of items shall be provided by the contractor if asked by the consignee.
- 6) Supply items to be supplied at required site/concern location from store by the contractor at its own cost.
- 7) All electrical appliances and equipment covered under the Bureau of Energy Efficiency (BEE) Standards & Labelling programme shall be of **BEE 5-Star Rating or higher**, wherever applicable. Supplier shall provide valid BEE star-rating certificate(s) and labels as per BEE requirements at the time of delivery.

TECHNICAL DATA SHEET FOR 16M HIGH MAST

A	Height of mast	16 Meter
	Basic wind speed of Mast	50m/Second as per IS 875:2015 part 3 latest
	No. of section of Mast	2
	Material of Mast construction	Steel plates of Grade 355 as per BS-EN I 0025
	Plate thickness (minimum) (mm)	Top -3, Bottom-4
	Cross section of Mast	20 sided regular polygon
	Mast Diameter (minimum) at Base(mm)	360
	Base plate Diameter(minimum) (mm)	520
	Base plate thickness (minimum) (mm)	25
	Hot dipped galvanization of Mast, Base plate	Minimum 86 Microns thickness galvanization both internally & externally with single dipping process as per BIS.
	Size of opening and door at base for clear access and removal of winch, cable, etc.	1050x225 mm or higher as per design
B	Junction box on Carriage Assembly	IP 65 as per JS/IEC: 60529: latest. Lab Test report required.
	Junction box material	Galvanized Iron
	Foundation, Foundation bolt-Type/Size/ Nos	As per manufacturer design.
C	Lantern Carriage (hot dip galvanized) For fixing Luminaries, Control gears, Junction box etc.	
	Construction	In 2 or 3 halves with SS bolted flanges
	Inner lining of Carriage with PVC	To avoid damage to Mast during raising/ lowering of Carriage
	Construction of galvanized Lantern Carriage	Steel tube (also acting as conduits for wire, with holes
	Number of Arms (welded)	12
D	LED Lights Luminary	
	Rating for each luminary	200W
	Quantity of LED Lights	12
E	WINCH/POWER TOOL to lower and raise the lantern carriage assembly	
	Winch arrangement at Mast Base Shall be with	Integral Motor & manual operation with copper cable
	Minimum SWL of Winch including Motor	750 Kg. Winch type test Certificate required
F	Head Frame designed as capping. unit of Mast	
	Head frame of Welded steel construction shall be	Galvanized internally & externally after assembly
	Top pulley Diameter shall be enough	to accommodate Steel wire ropes& electric cable
	Pulley block shall be	Die-cast Aluminium Alloy (LM-6) with Self-lubricating bearing and steel shaft for long life maintenance free work
	The pulley assembly shall be fully protected by	Canopy galvanized internally and externally.
	The head frame shall be provided with	Guides & stop with PVC buffer for locking lantern carriage
	Suspension system with SSWire Rope of more than 6 mm diameter with SS central core	Shall essentially be without any intermediate joint and and made out of AISI 316, 7/19 construction.
	Numbers of ropes	Two

	Braking load capacity (min.)	≥2350Kg x 2 minimum of each rope
G	Electrical System, Cable and Cable Connections	
	Terminal box to terminate the incoming cable	Shall be provided at the base compartment of the Mast
	Junction box (IP66) to terminate trailing cable.	Shall be provided at top of the Mast
	Testing the Luminaries while in lowered position	System shall have in-built facilities.
	Trailing cable from Base Compartment to top of the mast Junction box conforming to	IS:7098(Part I): 1988 latest,
H	FEEDER PANEL	
	Feeder panel shall be suitable for	415V, 3 phase, 4 wire, 50 Hz AC, Stand mounting
	Construction	2mm thick Stainless-steel or Galvanized steel sheet
	IP Class	IP 65 as per IS/IEC: 60529. Test Report required.
	Circuit diagram	Plate shall be fixed inside the door
	Feeder Panel shall have	Top Sloping cover and bottom cable entry
	Incoming & outgoing MCCBs	In quantity as per total no. of circuit in use
	Timer Shall be provided	For automatic ON & OFF of lights with pilot lamps
	Toggle switch for AUTO/OFF/MANUAL mode	Yes
	Bus bars material	Copper
	Power cable upto Base Compartment of mast	IS:7098(Part- I): 1988 Latest
I	Earth Electrode, Earthing leads, Connections	Shall be provided on Base of Mast, Feeder panel
J	All Products shall have marking	As per relevant BIS standard.
K	Onsite warranty other than Luminary	3 Years Test report
L	All the Lab test reports mentioned above	Shall be from NABL/ILAC accredited Lab to latest issue of Referred Standard.

*** Note:** Minor changes in the above specifications (Annexure I) as per latest market scenario may be considered after taking the approval by Sr.DEE(RS&G)/BSP.

ANNEXURE-II

90KVAR APFC PANEL

Supply & fixing of 90 KVAR APFC Panel Board made up of 1.6mm/1.8mm CRCA Sheet duly powder coated with Siemens grey RAL 7032/7035 with locking arrangements, Dust & Vermin proof, Aluminum Busbar with color coded sleeves Indicating Lamps with control fuses, APFC relay 8 stage. (Without Reactor). The automatic power factor controller panel 90 KVar (approximately) capacity shall incorporate microprocessor based digital controller with provision for manual control when the APFC relay fails. During normal automatic operation the microprocessor-controlled relays shall 'pick out' the correct capacitor size by referring to the actual demand of reactive power directly and do the correct 'C/k' adjustment automatically. The controller should be capable of maintaining power factor at 0.99 lagging to unity power factor. Component wise details for major components are as given below: **Configuration: 90 KVAR APFC Panel, 8 stage: (4x5KVAR)+(1x10KVAR) + (3x20KVAR)**

(1.) APFC RELAY : The automatic power factor controller shall be 8 stage type i.e. capable of connecting & disconnecting 4 nos. capacitors of 5KVAR rating, 1 nos. capacitors of 10KVAR and 3 Nos. of capacitors of 20KVAR . The power factor controller shall be flush mounted type with rear plug-in connectors. The APFC relay must incorporate suitable digital display for Power factor, active/reactive/apparent power and other relevant information.

(2.) MCCB 250 AMPS. : The 250A MCCB, TP type shall have adjustable thermal setting from 63% to 100 % & magnetic setting adjustable from 5 to 10 times with breaking capacity Icu= 50 KA. At 415V, 50Hz. 3 phase AC supply with rated current 250 Amps. Conforming to IS : 13947-2 OR RELEVANT IS STD.complete with all accessories.

(3.) MCBs: 4Nos. 16A,TP, 1Nos. 32A,TP and 3Nos.63A, TP type C –class. Suitable for operation with 415V, 50Hz AC supply conforming to IS 8828 or relevant IS std.

(4.)Contactors: 4Nos. Capacitor Duty Contactor for 5kVAr, 1Nos Capacitor Duty Contactor for 10kVAr and 3Nos. Capacitor Duty Contactor for 20kVAr with suitable NO & NC auxiliary contacts for operation with 3 phase, 50Hz, 415V AC supply.

(5.) Aluminium Bus-bar : Three nos. of phase bars of cross section 40 cm. x 10 cm. of length approximately 1.5 Mtrs. Each & one neutral bar of 40cm x 5 cm of length 0.5 Mtr. For connection of relays.

(6.) (i)Capacitor 20 KVAR , 03 Nos. : Metallic poly propylene (MPP) type heavy duty , delta connected power capacitors suitable for operation with 415 volt , 3 phase , 50 Hz. AC supply with in-built discharge resistance.

(6.)(ii)Capacitor 10 KVAR , 01 No. : Metallic poly propylene (MPP) type heavy duty ,delta connected power capacitors suitable for operation with 415 volt , 3 phase , 50 Hz. AC supply with in-built discharge resistance.

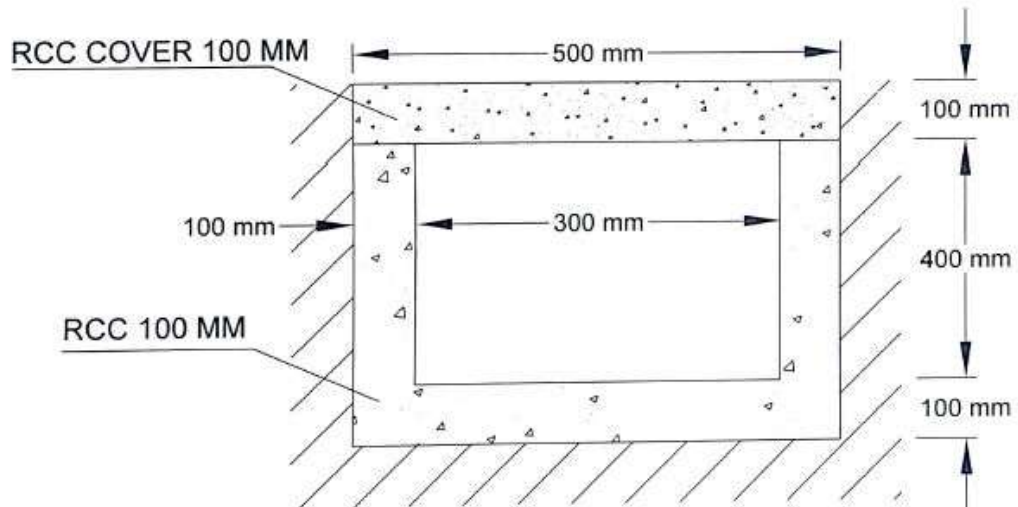
(6.)(iii) Capacitor 5 KVAR , 04 No. : Metallic poly propylene (MPP) type heavy duty ,delta connected power capacitors suitable for operation with 415 volt , 3 phase , 50 Hz. AC supply with in-built discharge resistance.

. (7.) ENCLOSURE: The enclosure shall be made of sheet steel, perfectly powder painted with thickness 16 SWG of approximate size 1.5 M x 1.3 M x 0.6 M .

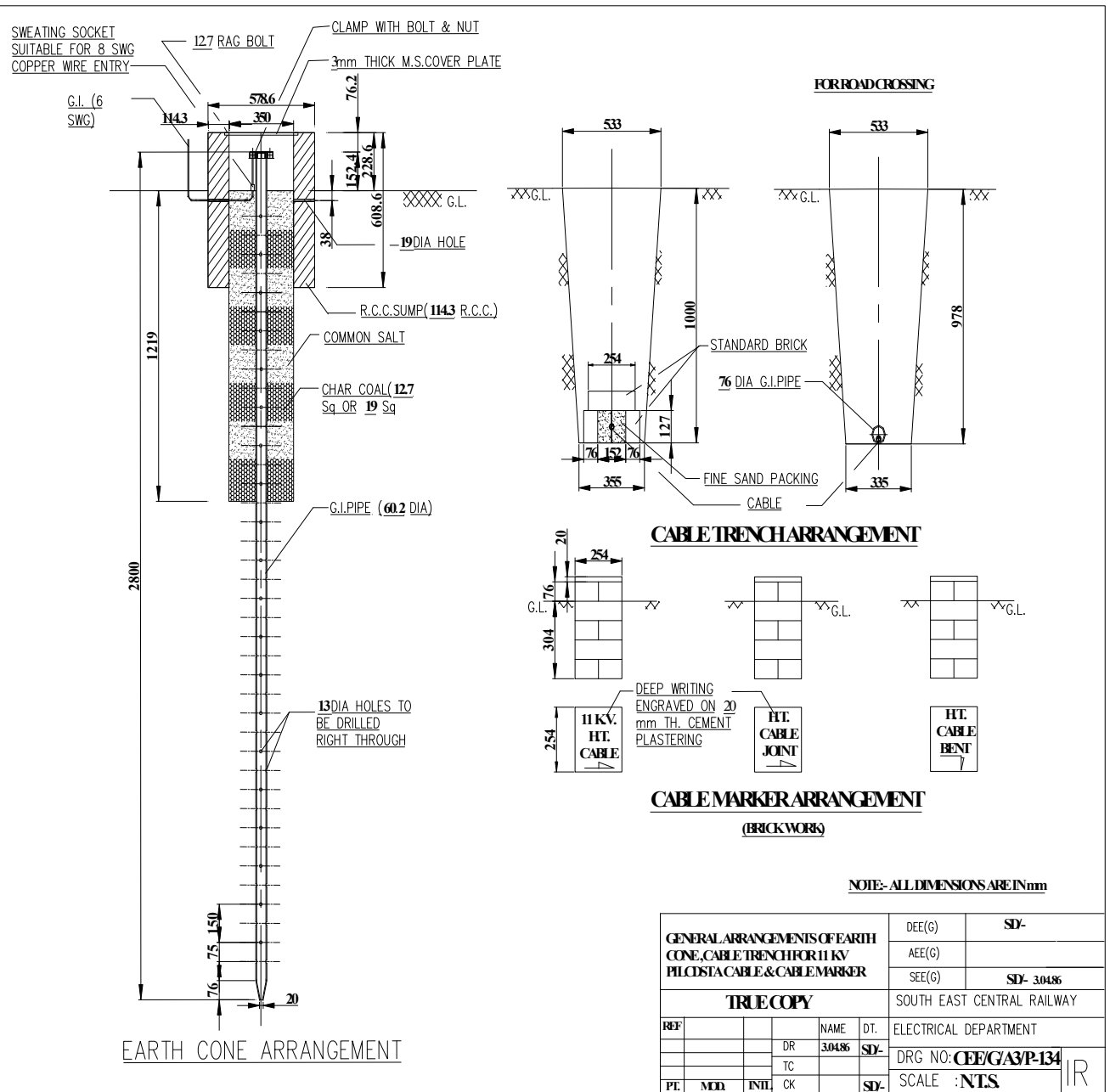
(8.) ACCESSORIES: (i) Amps. Meter (ii) Voltmeter (iii) ASS (Ampere meter Selector Switch) (iv) VSS (Voltmeter Selector Switch) (v) Indicating lamp LED type (vi) Fuse button: (vii) Control fuse: (viii) Current transformers (ix) Supporting insulators, Bus bar sleeve wire, Lugs & other control accessories shall be of reputed make with ISI/ISO 9001 certification.

(9.) LAY OUT OF COMPONENTS: The panel shall contain one vertical compartment in the middle for bus bar . Both sides of the bus-bar compartment shall be divided into 5 compartments each (total 10 smaller compartments).The topmost compartments on both sides shall be larger in size , the left compartment shall carry the 250 Amps MCCB & the right compartment the APFC . Total 8 compartments in both side are meant for 4 nos. capacitors of 5KVAR rating, 1 nos. capacitors of 10KVAR and 3 Nos. of capacitors of 20KVAR. Each compartment shall carry one ON & one OFF switch for manual operation with LED indicator for ON & OFF . Each capacitor shall be connected to the panel through corresponding contactors and MCBs . Two compartments shall be without any capacitor .

SKETCH SHOWING COVERED CABLE TRENCH



Agarwal
SR. DEE (RS & G)





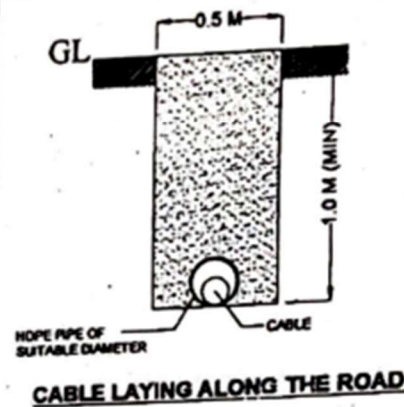
क्र. ELECT (RS & G)/ PL/TECH/ 2023/

कार्यालय
वरिष्ठ मंडल विद्युत इंजीनियर (आर एस एंड जी)
बिलासपुर - 495 004
दिनांक : 29.12.2023

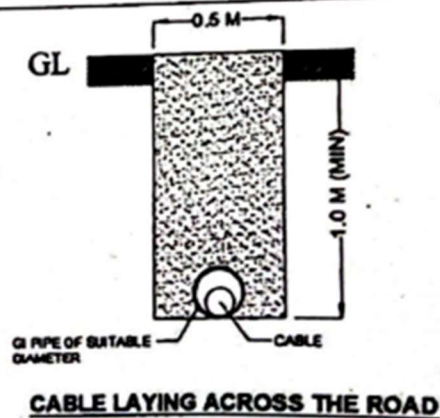
**TECHNICAL CIRCULAR-3
PROCEDURE FOR ELECTRICAL CABLE LAYING**

With reference to the above, the following guidelines are issued for underground laying of electrical cables.

- Cable laying along the road/ Track should be done in minimum one meter deep trench only through HDPE pipe of suitable diameter.
- The length of HDPE pipe & cable to be included in the estimate should be equal.
- Each cable should be laid through separate HDPE pipe



- Cable laying across the road/Track should be done minimum one meter deep trench only through GI pipe of suitable diameter & wall thickness.
- Each cable should be laid through separate GI pipe



This is for information & necessary action of all concerned

Sr. Divl. Elect. Engineer (RS & G)
S.E.C. Railway, Bilaspur

Copy to: All PL unit in-charges for information & necessary action.

END OF TENDER SCHEDULE