

**SOUTH EAST CENTRAL RAILWAY  
SCHEDULE OF MATERIAL, QUANTITY AND RATES**

(Annexure –A including Scope of work and detailed technical specification & shall be read minutely before quoting rates in Schedule)

**NAME OF WORK:- “Electrical(G) portion of work for:- (i) Augmentation of laundry at coaching depot Durg and other facilities at coaching depot Durg (ii)Redevelopment work at passenger interface area of Raipur station.”**

Sr. No	Description	Unit	Qty of work-1	Qty of work-2	Total Qty	Rate	Amount
	<b>Schedule-A</b>						
1	Rate for supply of semicircular RCC Pipe	mtr	600	100	700	164	114800
2	Supply of 63 amps TPNMCB, HRC fuse with enclosure	Nos.	6	0	6	2530	15180
3	supply and fixing of modular board consist of 2 nos.6/16Amp switch and socket (modular type)	Nos	20	0	20	950	19000
4	Supply of Metallic Pillar Box consisting of One No. 200A 4P MCCB & 04nos. 63A TPN MCB, 04Nos. 32A SP MCB, 04nos. 16SP MCB as outgoing with Bus Bar ,Backup fuses & neutral link including locking arrangement.	nos	1	0	1	34882	34882
5	Rate for supply of floor mounted LT Control Panel consist with 2x400A 4P MCCB 50kA breaking capacity for incoming, 4nos.4P 200A 4P MCCB 50KAbreakingcapacity, 12nos.4P 100A 4PMCCB 35KAbreakingcapacity, 12nos.32A TPN MCB for out going complete with three phase busbar distribution system and backup HRC fuse, & Metering arrangement and indication.	nos	3	0	3	380784	1142352
6	Rate for supply of LT control panel consists of 2x200A4P MCCB for incoming and 2X100A 4P MCCB, 6x63A TPN MCB, 2x32A TPN MCB, 2x20A DP MCB for outgoing complete with busbar , HRC fuse as back up & metering arrangement.	nos	2	0	2	79939	159878
7	Supply of 400A Automatic changeover.	Nos	1	0	1	198240	198240
8	Supply of 5-7.5 meter single/double arm octagonal pole.	Nos.	10	0	10	7369	73690
9	Rate for supply of IP-65, IK07 thermoplastic pole mounting Junction Box 200x160x98MM (approx.) size with connecting terminals & two nos. 20 amp HRC fuse.	Nos	10	0	10	2443	24430
10	Supply of outdoor type 40 watt(appx.) LED based cool white street light type fitting	Nos	25	0	25	2000	50000
11	Supply of class A G.I pipe 40mm dia.	Mtr	30	0	30	526	15780
12	Supply of 4-way metallic sub-distribution board with 01 no. 32A, 04nos 250V, 16A SP MCB ,busbar, neutral and earthing arrangement etc.	Nos	8	0	8	3012	24096
13	Supply of wall mounted 4-way metallic sub-distribution board with 04nos 250V, 16A SP MCB ,busbar, neutral and earthing arrangement etc.	Nos	2	2	4	1632	6528

14	supply of wall mounted 8-way metallic sub distribution board with 01no 63A TPN MCB, 6nos16A SPMCB ,busbar and neutral link arrangement etc.	nos.	2	0	2	20530	41060
15	Supply of Exhaust fan 300 mm including all accessories.	nos	10	15	25	2009	50225
16	Supply of Exhaust fan 450 mm including all accessories.	nos	22	15	37	2691	99567
17	Supply of electronic step regulator for fan.	nos	47	10	57	526	29982
18	Rate for supply of control pannel suitable for 10HP submersible dewatering pump including automation equipment , suitable type starter ,timer ,single phase preventor cum dry sensor with probe element ,Over & Under voltage protection ,reverse current protection, ampere meter, voltmeter, indictor, rotory switch and indicator arrangement etc.	Set	2	0	2	7900	15800
19	supply of 32 amps TPN MCB with enclosure	Nos	2	0	2	755	1510
20	Supply of Metallic Pillar Box consisting of One No. 63A TPN MCCB incoming & 04Nos. 32A SP MCB as outgoing with Bus Bar ,Backup fuses & neutral link including locking arrangement.	nos	1	0	1	34882	34882
21	Supply of 2 HP 5 star rated submersible pump set of 100 mtr discharge head.	nos	1	0	1	23899	23899
22	Rate for supply and installation of LT APFC (Automatic Power Factor Corrector) control panel for 90KVAR.	nos	1	0	1	117202	117202
23	Supply of Megger 2500V.	nos	2	0	2	16389	32778
24	Supply of Earthtester Digital (0-100 Ohm).	nos	2	0	2	3376	6752
25	Supply of Digital clamp meter.	nos	2	0	2	3963	7926
26	Design, manufacture, display of wall / hanging / floor mounting type LED illuminated sign /direction boards in half elliptical shape. The display sheet shall be of unbreakable 040 translucent polycarbonate sheet of 2 mm thickness. The text / graphics matter visibility shall not be less than 160 deg. The approved colour text and graphics shall be printed / router cut on monomeric calendered vinyl of70mm thickness and shall be firmly pasted on display sheets. The mounting arrangement shall be hanging, wall mounting, ceiling mounting, pole mounting or floor mounting and as per site requirement. The signage shall have the integral mounting arrangements with sturdy structural frame and ACP cladding on the back side of the signage to avoid rusting and entry of dust. The LED board shall have uniform illumination with 4-8 W / sq. ft and with brightness more than ambient light. Suitable size end cap of 1.5mm thick SS 304 should be provided.	sq.ft	64	0	64	3062	195968
27	Supply of circular RCC Pipe 150 mm inside dia, 30 mm thickness	mtr	0	10	10	153	1530

28	Supply of 4 blade ceiling fan 1200 mm sweep complete.	nos	0	20	20	3789	75780
29	Supply of 400 mm bracket mounted fan for wall mounting.	Nos	0	20	20	1600	32000
30	Supply, testing, fixing & commissioning of GI perforated type cable tray made out of 2.0mm thick sheet in standard length of 2.5mtr. Duly hot dip galvanized (as per IS 2629 & IS 4759) including coupler plate with suitable GI nut, bolt & washer of 250mm W x75mm H including erection the same with PF shelter structure by bracketing arrangement made of 50mm x10mm MS flat & fastening with shed structure.	mtr	0	200	200	799	159800
31	supply of wall mounted 8-way metallic sub distribution board with 01no 63A TPN MCB, 4nos 32A DPMCB , 06 nos. 16A SP MCB busbar and neutral link arrangement etc..	nos.	0	2	2	20530	41060
32	Supply of heavy duty air circulator fan 450 mm including all accessories.	nos	0	20	20	6800	136000
33	Design, manufacture, display of wall / hanging / floor mounting type LED illuminated signage & name board	sq.feet	0	100	100	3062	306200
34	Supply of 36 watt 2x2 warm white LED based recess mounting fitting.	Nos	0	50	50	2143	107150
35	Supply of 36 watt 2x2 LED based inveter type recess mounting fitting.	Nos	0	20	20	6128	122560
<b>Sub total schedule-A</b>							<b>3518487</b>
<b>Schedule-B</b>							
36	Excavation of cable trench , laying of semicircular RCC Pipe- and refilling of excavated earth	mtr	600	100	700	86	60200
37	Rate for laying of Cable along the Track/Road/Drain through semicircular RCC Pipe including all materials	mtr	1200	200	1400	43	60200
38	Rate for laying of cable in open air/Duct with proper fixing arangement in supporting structure.	mtr	900	500	1400	45	63000
39	Installation of 63 amps TPNMCB, HRC fuse with enclosure	Nos.	6	0	6	129	774
40	Erection of Metallic Pillar Box consisting of One No. 200A 4P MCCB & 04nos. 63A TPN MCB, 04Nos. 32A SP MCB, 04nos. 16SP MCB as outgoing with Bus Bar ,Backup fuses & neutral link including locking arrangement.	nos	1	0	1	3708	3708
41	Cutting of existing poles & dismantling of OH/UG conductor and handing over released materials to concerned SSE/G.	nos.	10	0	10	262	2620

42	Rate for installation of floor mounted LT Control Panel consist with 2x400A 4P MCCB 50kA breaking capacity for incoming, 4nos. 4P 200A 4P MCCB 50KAbreakingcapacity, 12nos. 4P 100A 4P MCCB 35KAbreakingcapacity, 12 nos. 32A TPN MCB for out going complete with three phase busbar distribution system and backup HRC fuse, & Metering arrangement and indication.	nos	3	0	3	9553	28659
43	Rate for installation of of LT control panel consists of 2x200A 4P MCCB for incoming and 2x100A 4P MCCB, 6x63A TPN MCB, 2x32A TPN MCB, 2x20A DP MCB for outgoing complete with busbar , HRC fuse back up & metering arrangement.	nos	2	0	2	471	942
44	Installation of 400A Automatic changeover.	Nos	1	0	1	9912	9912
45	Rate for erection of 5-7.5 meter single/ double arm octagonal pole	Nos.	10	0	10	1997	19970
46	Earth excavation and PCC foundation for pole.	Nos.	10	0	10	6272	62720
47	Rate for fixing of pole mounted thermoplastic pole mounting Junction Box 200x160x98MM (approx.) size with connecting terminals & two nos. 20 amp HRC fuse	Nos	10	0	10	58	580
48	Fixing of street light type fitting with all accessories	nos	25	0	25	421	10525
49	Rate for fixing of LED TL fittings supplied above as per details	nos	250	0	250	52	13000
50	Concealed wiring for light fan & 6 Amps plug points with PVC Pipe and PVC insulated copper conductor 1.5 sq. mm. size with supply of all materials.	nos	425	50	475	677	321575
51	Concealed Wiring for 6/16Amps plug points with PVC Pipe and PVC insulated copper conductor 2.5 sq. mm. size with supply of all materials.	nos	50	10	60	890	53400
52	Concealed wiring for Sub-Service connection from main DB to Sub DB with 6sqmm insulated copper conductor including with supply of all materials.	Meter	500	500	1000	140	140000
53	Fixing of 4-way metallic sub-distribution board with 01 no. 32A, 04nos 250V, 16A SP MCB ,busbar, neutral and earthing arrangement etc.	Nos	8	0	8	114	912
54	Rate for PVC conduit wiring for lighting, With proper clamping arrangement	Nos	10	0	10	90	900
55	Fixing of wall mounted 4-way metallic sub-distribution board with 04nos 250V, 16A SP MCB ,busbar, neutral and earthing arrangement etc.	Nos	2	2	4	62	248
56	Installation wall mounted 8-way metallic sub distribution board with 01no 63A TPN MCB, 6nos 16A SPMCB ,busbar and neutral link arrangement etc..	mtr	2	0	2	72	144

57	Fixing of 300 mm Exhaust fan with all accessories.	nos	10	15	25	200.9	5023
58	Fixing of 450 mm Exhaust fan with all accessories.	nos	22	15	37	269.1	9957
59	Fixing of energy efficient ceiling fan 1200 mm sweep as per details	nos	47	10	57	62	3534
60	Fixing of electronic step regulator for fan.	nos	47	10	57	26	1482
61	Rate for installation of above supplied dewatering submersible pump with all accessories as per details	set	2	0	2	1951	3902
62	Rate for installation of control pannel including automation equipment including like suitable type starter ,timer ,single phase preventer cum dry sensor with probe element ,Over & Under voltage protection ,reverse current protection, amperemeter, voltmeter, indicator, rotory switch and indicator arrangement etc as per details	set	2	0	2	1535	3070
63	Rate for erection of TPN MCB with enclosure	Nos	2	0	2	162	324
64	Supply, erection, connection & testing of earth cone.	Nos.	4	4	8	4157	33256
65	8 SWG GI wire: Supply, fabrication, laying, welding and connection from earth pit with GI nut bolt of suitable size.	kg	80	80	160	75	12000
66	Provision of Maintenance Free earthing arrangement.	Nos.	10	1	11	9729	107019
67	Supply, fabrication, laying, welding and connection of GI Flat of size 25x3 mm from earth pit with GI nut Bolt suitable size.	kg	20	20	40	77	3080
68	Erection of Metallic Pillar Box consisting of One No. 63A TPN MCCB incoming & 04Nos. 32A SP MCB as outgoing with Bus Bar ,Backup fuses & neutral link including locking arrangement.	nos	1	0	1	3708	3708
69	Rate for installation of above submersible pump	nos	2	0	2	5500	11000
70	Rate for installation of 2 HP submersible pump	nos	1	0	1	4779.8	4780
71	Fixing of 16 watt 1x1 cool white LED recess mounting fitting.	nos	0	50	50	340	17000
72	Excavation of cable trench , laying of circular RCC Pipe- and refilling of excavated earth	mtr	0	10	10	52	520
73	Laying of Cable along the Track/Road/Drain through circular RCC Pipe including all materials.	mtr	0	20	20	34	680
74	Cutting of trench across/on the platform for a depth of 20cm and a width of 20cm with marble cutting machine and filling the trench after cable laying and restoring the surface with plaster to give original status	mtr	0	20	20	124	2480

75	Supply & laying of HDPE pipe(PE-80, 90 mm dia, 10 mm thick @ density:0.954)) and cable (supplied by Railway) by pipe pushing method including all associated work.	Meter	0	30	30	3033	90990
76	Fixing of 400 mm bracket mounted fan for wall mounting.	Nos	0	20	20	160	3200
77	Fixing of high air circulator speed 600mm, 1440 rpm with all accessories.	Nos	0	20	20	248	4960
78	Installation wall mounted 8-way metallic sub distribution board with 01no 63A TPN MCB, 6nos16A DPMCB ,busbar and neutral link arrangement etc..	mtr	0	2	2	72	144
79	Fixing of Exhaust fan & Air circulator fan with all accessories.	nos	0	20	20	680	13600
80	Installation of 15 litre geyser.	Nos	0	8	8	430	3440
81	Installation of 3 ton 5 star rated ceiling mount type(casset) split AC.	Nos	0	4	4	9890	39560
82	Installation of 1.5 ton split air conditioner	Nos	0	12	12	3697	44364
83	Concealed wiring for AC point with 4sqmm insulated copper conductor including with supply of Ray-roll socket with 30A SPMCB and all materials	Nos	0	8	8	1398	11184
84	Fixing of 36 watt 2x2 white LED based recess mounting fitting.	Nos	0	70	70	198	13860
	<b>Subtotal schedule-B</b>						<b>1302105</b>
	<b>Total schedule-A+B (including all taxes and GST)</b>		<b>3302705</b>	<b>1517887</b>	<b>4820592</b>		<b>4820592</b>

#### Annexure –A

#### SOUTH EAST CENTRAL RAILWAY

#### **(DETAILED TECHNICAL SPECIFICATION & SCOPE OF WORK APPEARING IN SCHEDULE OF MATERIALS AND RATE VIDE SCHEDULE –A)**

**SCOPE OF WORK:** The scope of work for **Electrical(G)** portion of work for:- (i) Augmentation of laundry at coaching depot Durg and other facilities at coaching depot Durg (ii)Redevelopment work at passenger interface area of Raipur station covers as per the following details.

#### **Schedule A:-**

Item no-1	The rate shall cover the supply & transporting of Semicircular RCC pipe having inner dia 150mm, 30mm thick and Suitable long pieces. The surface of the pipe shall be of good finishing.
Item no-2	The rate quoted shall cover the Supply of 63A TPN C-curve MCB, 415 Volts AC 50 HZ, with breaking capacity 10 KA with suitable metallic enclosure. <b>Make:</b> Any reputed make confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.
Item no-3	The rate quoted shall cover supply and fixing of modular board consist of 2 nos.6/16Amp switch and socket (modular type), along with concealed wiring for 6-16 A plug points, individual or combined switch, socket & fuse shall be through PVC pipe 20/25/32 mm 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/individual socket , 4 Sq. mm if 2 to 3 sockets(i.e. first point 4sqmm and looped other two socket by 2.5sqmm from first point), 6 Sq. mm if 4 to 5 sockets in a board in looping system(i.e. first point 6sqmm and looped other two socket by 4 sqmm second and third point and 2.5sqmm from second and third point to fifth and sixth point) . 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

	<p>points shall be done through common pipe. The all switch, socket and other accessories shall be modular type and confirming to relevant IS specification All required materials and man power shall be supplied by the contractor.  <b>Make:</b> All wiring accessories confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.</p>
Item no-4	<p>The rate shall cover the supply of out door type metallic feeder pillar panel board made out of 2mm (Approx.) thick CRCA sheet with gray powder coated paint, front open able with locking arrangement and consisting of-</p> <ul style="list-style-type: none"> <li>(i) 01 nos 4P MCCB 200AMPS, 50KA breaking capacity conforming to latest IS specification as incoming</li> <li>(ii) 4 nos 63 A TPN MCB C-Curve as outgoing properly mounted on channel inside the board</li> <li>(iii) 4 nos 16 A SP MCB C-Curve as outgoing properly mounted on channel inside the board</li> <li>(iv) 19 nos. HRC fuse units complete with base suitable capacity for backup of MCB/MCCB.</li> </ul> <p>Three phase with Neutral Aluminum bus bar suitable for 200 Amps, 3 phase 415 Volts, 4 wire distribution system complete with earthing arrangement.</p> <p>MCCB's shall be fixed in the box properly for easy operation. The wiring between MCCB/MCB and the fuses shall be done by PVC insulated copper wire suitable capacity and rating with lugs, nuts, bolts etc., and the HRC fuse shall be on the outgoing side of the MCCB &amp; MCB. There shall be eight knockouts with gland arrangement in the box for allowing 4X35, 4 x50sqmm, 2x10sqmm &amp; 2 x25sqmm PVC armored incoming cable and outgoing cable entry. These shall be adequate free space in the box for proper access to fuses, connections, accommodating the leads of cable etc.</p> <p><b>Note</b> - Wiring diagram for the panel shall get be approval from Sr.DEE/G/R before fabrication.  <b>Make:</b> MCB, MCCB and HRC fuse confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R</p>
Item no-5	<p>The rate shall cover the supply of outdoor type LT control panel made out of 2mm thick CRCA sheet with gray powder coated paint, front open able with locking arrangement and consisting of</p> <ul style="list-style-type: none"> <li>(i) 2 nos 400A 4P MCCB 50kA breaking capacity having Ics=100% Icu conforming to latest IS specification , complete with all accessories as incoming properly mounted on channel inside the panel.</li> <li>ii) 4 nos 200A 4P MCCB 50kA breaking capacity, having Ics=100% Icu conforming to latest IS specification , complete with all accessories as outgoing properly mounted on channel inside the panel.</li> <li>iii) 12 nos 100A 4P MCCB 35kA breaking capacity, having Ics=100% Icu conforming to latest IS specification , complete with all accessories as outgoing properly mounted on channel inside the panel.</li> <li>iv) 12 nos 32A TPN MCB conforming to latest Indian standard specification complete with all accessories as outgoing properly mounted on channel inside the panel.</li> <li>v) HRC fuse units complete with base suitable capacity for backup of outgoing MCCB &amp; MCB should be provided in all outgoing circuits.</li> <li>vi) Three phase with Neutral Copper bus bar distribution system complete with earthing arrangement and metering arrangement (voltmeter, Ammeter, three phase Energy meter with CTs of suitable capacity for incoming) and Indicator lamps etc in incoming feeder and ammeter in each outgoing feeder. All metering device should be digital type.</li> </ul> <p>MCB sand MCCB"s shall be fixed in the box properly for easy operation. The wiring between MCCB/MCB and the fuses shall be done by PVC insulated copper wire suitable capacity and rating with lugs, nuts, bolts etc., and the HRC fuse shall be on the outgoing side of the MCCB&amp;MCB. There shall be twelve knockouts in the box for allowing 4X150, 4x120Sqmm, 4x50sqmm, 2x25Sqmm PVC armored incoming cable and outgoing cable entry.</p> <p>These shall be adequate free space in the box for proper access to fuses, connections, accommodating the leads of cable etc., All the material shall be provided by the contractor as per the latest IS specification.</p> <p><b>Note-</b> Panel &amp; Wiring diagram for the panel shall get be approval from Sr.DEE/RS&amp;G/R before fabrication.  <b>Make:</b> MCCB, MCB &amp; HRC fuse: Any reputed make confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/RS&amp;G/R.</p>
Item no-6	<p>The rate shall cover the supply of <b>outdoor/indoor ( as per site requirement)</b> floor mounted metallic feeder pillar panel board made out of 2mm thick CRCA sheet with gray powder coated paint, front open able with locking arrangement and consisting of</p> <ul style="list-style-type: none"> <li>(i) 2nos 4Pole MCCB 200A, 50 KA having Ics=100% Icu conforming to latest RDSO/IS/IEC specification complete with all accessories as incoming properly mounted on channel inside the panel.</li> <li>(ii) 2 nos 4Pole MCCB 100A, 35KA having Ics=100% Icu conforming to latest RDSO/IS/IEC specification complete with all accessories as outgoing properly mounted on channel inside the panel.</li> <li>(iii) 6 nos TPN MCB 63A 10KA C-Curve conforming to latest RDSO/IS/IEC specification as outgoing properly mounted on channel inside the board</li> <li>(iv) 2 nos TPN MCB 32A 10KA C-Curve conforming to latest RDSO/IS/IEC specification as outgoing properly mounted on channel inside the board</li> <li>(v) 2 nos DP MCB 20A 10KA C-Curve conforming to latest RDSO/IS/IEC specification as outgoing properly mounted on channel inside the board</li> <li>(vi) Three phase with Neutral Copper bus bar distribution system complete with earthing arrangement for suitable capacity.</li> <li>(vii) Panel should be provided with 2 nos. KWH meter in incoming feeder, Voltmeter and ammeter in outgoing feeder. All the metering equipments shall be digital type.</li> </ul>

	<p>MCB and MCCB's shall be fixed in the box properly for easy operation. The wiring between MCCB/MCB and the fuses shall be done by PVC insulated copper wire suitable capacity and rating with lugs, nuts, bolts etc., and the HRC fuse shall be on the outgoing side of the MCCB&amp;MCB. There shall be twelve knockouts in the box for allowing 4X35, 4 x50sqmm, 4 x120sqmm &amp; 6x25sqmm PVC armored incoming cable and outgoing cable entry. There shall be adequate free space in the box for proper access to fuses, connections, accommodating the leads of cable etc., All the material shall be provided by the contractor as per the latest RDSO/IS/IEC specification.</p> <p>Wiring diagram for the panel shall be get approval from Sr.DEE/G/R before fabrication.</p> <p><b>Make:</b> MCCB, MCB &amp; HRC fuse is of any reputed make confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R</p>
Item no-7	<p>Supply of Auto Mains Failure Control Panel (AMF) made of 16 SWC CRCA Sheet Steel Enclosure With Good Finish Coated paint, Floor/wall mounted, with front openable door, with angle iron stand and the following accessories:- Incoming 400A 4pole 36KA MCCB- 02 Nos , Aluminium Bus Bar- 400A 4Pole ,Motorised Changeover Switch-400A 4Pole ,Auto Mains failure Controller -01 Nos, D.G. Set Controller-01 No, RYB Indicator-01 Set ,Volt AMP ,HZ Meter-01No. , Control Cable 2.5sqmm 4 core copper flexible cable- 10mtr.</p> <p><b>Note-</b> Panel &amp; Wiring diagram for the panel shall get be approval from Sr.DEE/RS&amp;G/R before fabrication.</p> <p><b>Make:</b> MCCB, MCB &amp; HRC fuse: Any reputed make confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/RS&amp;G/R.</p>
Item no-8	<p>The rate quoted shall cover supply of Octagonal poles for street light fittings, 5-7.5 M long with single arm/double arm brackets suitable for fixing street light fitting as per site requirement and suitable fixing arrangement for metallic junction box with hinged door and earthing terminal shall be provided at a height of above 1.5M from the ground level suitable for termination of 4x16sq.mm PVC armoured incoming and outgoing cables and provision of 16A fuse cut out. The design, size and make of the octagonal pole and brackets are to be got approved by Sr.DEE/RS&amp;G/R before fabrication and supply. The octagonal pole should have provision of base plate with nut bolts and one M.S. clamp for support electrician to work as octagonal pole at a suitable height.</p> <p><b>Note:</b> Sample and model needs to get approval by Sr.DEE/RS&amp;G/R before supply of materials.</p>
Item no-9	<p>The rate quoted shall cover the fixing of MS Junction Boxes shall be thermoplastic pole mounting Junction Box 200x160x98MM (approx.) size with suitable connecting terminals &amp; two nos. 20 amp HRC fuse. The fixing of above item junction box shall be fixed on the newly erected /existing rail pole/SST pole at a height of not less than 1.5 m with proper clamps &amp; nut bolts. Connections and looping inside the box shall be done as per the directives of the representative of Sr.DEE/RS&amp;G/R.</p>
Item no-10	<p>The rate quoted includes supply of outdoor type 40 watt (appx.) 230V, 50Hz LED based cool white street light type fitting with all accessories as per site requirement and as approved by Sr.DEE/G/R. The type of LED fitting i.e. Street light will be decided as per site requirement by the authorized representative of Railway.</p> <ul style="list-style-type: none"> <li>• LED Luminaire conformity to IS: 10322/Part 5/Section 3/2012 latest and IS: 16107 (Part 2/Sec 1):2012 latest</li> <li>• Photo biological safety of LEDs used shall be as per IS:16108/2012 (exempt group)</li> <li>• Types of LED Luminaire as per the IS: 16107(Part-2/ Sec.-1)/2012:- Type-B</li> <li>• Types of LED Modules as per the IS:IS: 16103(Part-2)/2012:- Type-3</li> <li>• LED Rating (in Watts)/System Wattage/Rated Power:- 40Watt (appx.)</li> <li>• Luminaire System Efficacy (Lumen/watt):- &gt;= 120 Lm/Watt (appx.)</li> <li>• Ingress Protection (IP Rating) as per IS:10322 (Part 1):1982 latest:- IP66</li> <li>• Warranty for free replacement (in years):- 5 Years</li> <li>• Input operating Voltage and frequency :- AC 70 - 440V, 50 90 to 300 Volts AC at 50 Hz <math>\pm</math>2,140 to 270 Volts AC at 50 Hz <math>\pm</math>2 with auto cuts off at below 120V</li> <li>• LED chip Efficacy:- <math>\geq</math> 120 Lm/watt (appx.)</li> <li>• Colour temp:- 6000<math>\pm</math>500K</li> <li>• Operating temp range:- -10°C to +55° C</li> </ul> <p>Report to be mandatory submitted along with the offer:</p> <ul style="list-style-type: none"> <li>• LM 79 Test report in respect of the luminaries test certificates should be from ILAC/MRA/KOLAS/NVLAP/ EPA/NABL accredited manufacturer.</li> <li>• LM 80 Test report in respect of the LED used in the offered luminaries should be from ILAC/MRA/KOLAS/NVLAP/EPA/ NABL accredited manufacturer.</li> </ul> <p><b>Make:-</b> any reputed make as approved by Sr.DEE/RS&amp;G/R.</p>



Item no-11	<p>The rate quoted shall cover the supply of 40 mm dia Class-A, G.I. Pipe conforming to relevant IS/IEC specification.  <b>Make:</b> any reputed make confirming to IS/IEC specification and as approved by Sr.DEE/G/R.</p>
Item no -12	<p>The rate quoted shall cover Supply of wall mounting type single/double door metallic distribution box with suitable cable glands for cable entry, including 1no 32A DP MCB, 10KA, C-Curve as incoming &amp; 4nos.16A , SPMCB, 10KA C-Curve, as outgoing with a common copper bus complete with neutral terminal, earthing arrangement with hinged front openable cover with knock out for cable entry conforming to relevant IS Specs and painted properly.</p> <p><b>Make:</b> Any reputed make confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.</p>
Item no-13	<p>The rate shall cover the supply and wall mounted 4 way metallic sub distribution board with 16amps, 250volts, SP MCB. Panel board made out of suitable thickness CRCA sheet with gray powder coated paint, front open able and consisting of 4 nos. SPMCB, bus-bar and neutral link confirming to the IS specification.</p> <p><b>Make:</b> SPMCB confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/RS&amp;G/R.</p>
Item no -14	<p>The rate quoted shall cover Supply of 8 way -wall mounting type metallic distribution box with suitable cable glands for cable entry, including 1no 63A 10KA C-Curve TPN MCB conforming to latest RDSO/IS/IEC specification &amp; 6nos. 16A , SP MCB as outgoing with a common copper bus complete with neutral terminal, earthing arrangement with hinged front openable cover with knock out for cable entry conforming to relevant RDSO/IS/IEC Specs and painted properly.</p> <p><b>Make:</b> Any reputed make confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.</p>
Item no -15	<p>The rate shall be quoted for supply of Exhaust Fan 300 mm sweep size of Powder coated metallic finish body with metal blade suitable for operation on 230Volt, 50Hz. AC supply complete with mounting bracket, protective guard and all accessories conforming to IS specification.</p> <p><b>Make:</b> any reputed make as approved by Sr.DEE/RS&amp;G/R</p>
Item no -16	<p>The rate shall be quoted for supply of Exhaust Fan 450 mm sweep size of Powder coated metallic finish body with metal blade suitable for operation on 230Volt, 50Hz. AC supply complete with mounting bracket, protective guard and all accessories conforming to IS specification.</p> <p><b>Make:</b> any reputed make as approved by Sr.DEE/RS&amp;G/R</p>
Item no-17	<p>The rate shall be quoted for supply of two module 5- step fan electronics regulator suitable for operation on 120/280 Volt, 50Hz. AC.</p> <p><b>Make:</b> Any reputed make as approved by Sr.DEE/RS&amp;G/R.</p>
Item no-18	<p>The rate quoted includes supply of Control panel suitable for 10HP submersible dewatering pump including automation equipment, suitable type starter, timer, single phase preventer cum dry sensor with probe element, Over &amp; Under voltage protection, reverse current protection, ampere meter, voltmeter, indicator, rotary switch and indicator arrangement etc. All equipment and devices must comply the relevant IS specifications.</p> <p><b>Make:</b> Any reputed make confirming to relevant IS/ISI/IEC specification and as approved by Sr.DEE/RS&amp;G/R.</p>
Item no-19	<p>The rate quoted shall cover the Supply of 32A TPN C-curve MCB, 415 Volts AC 50 HZ, with breaking capacity 10 KA with suitable metallic enclosure.</p> <p><b>Make:</b> Any reputed make confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.</p>
Item no-20	<p>The rate shall cover the supply of out door type metallic feeder pillar panel board made out of 2mm(Approx) thick CRCA sheet with gray powder coated paint, front open able with locking arrangement and consisting of-</p> <ul style="list-style-type: none"> <li>(i) 01 nos TPN MCCB 63AMPS, 10KA breaking capacity conforming to latest IS specification as incoming</li> <li>(ii) 04 nos 32A SP MCB C-Curve as outgoing properly mounted on channel inside the board</li> <li>(iii) 7 nos. HRC fuse units complete with base suitable capacity for backup of MCB/MCCB.</li> </ul> <p>Three phase with Neutral Aluminum bus bar suitable for 63 Amps, 3 phase 415 Volts, 4 wire distribution system complete with earthing arrangement.</p> <p>MCCB's shall be fixed in the box properly for easy operation. The wiring between MCCB/MCB and the fuses shall be done by PVC insulated copper wire suitable capacity and rating with lugs, nuts, bolts etc., and the HRC fuse shall be on the outgoing side of the MCCB &amp; MCB. There shall be eight knockouts with gland arrangement in the box for allowing 4X35 sqmm, 4x50sqmm, 2x10sqmm &amp; 2 x25sqmm PVC armored incoming cable and outgoing cable entry. These shall be adequate free space in the box for proper access to fuses, connections, accommodating the leads of cable etc.</p> <p>Note - Wiring diagram for the panel shall get be approval from Sr.DEE/G/R before fabrication.</p> <p><b>Make:</b> MCB, MCCB and HRC fuse confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R</p>
Item no-21	<p>The rate quoted include supply of 2 HP, Single Phase, 230V, 50Hz, BEE 5-Star Rated Submersible Pump Set suitable for minimum 100 metre total head &amp; 4000-5000 LPH discharge, multistage complete with submersible motor, stainless steel pump assembly, 3 m flat submersible copper cable, accessories, test certificates, conforming to IS 8034, IS 9283 and latest applicable Indian Standards, complete in all respects.</p>

	<p><b>Make:</b> Any reputed make confirming to relevant IS/ISI/IEC specification and as approved by Sr.DEE/RS&amp;G/R.</p>
Item no-22	<p>The rate shall cover the supply of 90KVAR Automatic Power factor corrector metallic distribution panel board made out of 16 SWG MS sheet with gray powder coated paint, front open able with locking arrangement and consisting of</p> <ul style="list-style-type: none"> <li>• TP MCCB 200Amps. 35KA, 415V breaking capacity complete with over load and short circuit protection as incoming.</li> <li>• 8nos three phase 100 AMPS mounting type 2NO-2NC type Contactor shall be mounting at channel. Channel shall be rigidly fixed in the box.</li> <li>• 1no three phase Thermal over load Relay for suitable capacity shall be connected for controlling main supply.</li> <li>• 21nos. of HRC fuse units complete with base as backup protection to contactors for suitable capacity.</li> <li>• 3nos 20KVAR, 2nos 10KVAR and 2nos. 5KVAR double dielectric advanced electrolytic (Polypropylene) type capacitors three phase power capacitor shall mounting in panels and connected in parallel, .single capacitor shall be controlled single contactor respectively.</li> <li>• Eight step automatic digital power factor corrector sensor/relay cum meters with suitable capacity CT,s and all accessories with 3nos. HRC fuse units complete with base as backup protection to meter.</li> <li>• One Exhaust/Ventilation purpose heavy duty Fan suitable for operation on 230Volt, 50Hz. AC supply complete with mounting bracket shall be mounting on inside the panels for exhaust the heat of panels.</li> <li>• 08 nos each push button on and off switch for manually operation of capacitor shall be mounting at panel and projected out of the front cover for operation.</li> <li>• 1 no. two way rotary switch shall be provided to operate the panel in manual/Auto mode and projected out of the front cover for operation.</li> <li>• MCCBs, MCBs, Auto/Manuals switch ,push button switch and PF Regulator meter shall be fixed in the box such that knob projected out of the front cover for operation. The internal wiring of panels between MCCB , MCB,CONTACTOR,CAPACITOR and HRC Fuses and others elements shall be done by PVC insulated copper wire of suitable capacity and Rating with lugs, nuts, bolts etc., and the HRC fuse shall be on the outgoing side of the contactor.</li> <li>• There shall be two knockouts in the box for allowing 4x70sqmm &amp; 4x120sqmm PVC armored incoming cable entry. There shall be adequate free space in the box for proper access to fuses, connections, accommodating the leads of cable etc.,</li> </ul> <p><b>Approval of drawing must be taken from Sr.DEE/G/R before fabrication of APFC panel.</b></p> <p><b>Make:</b> APFC sensor/relay MCCB, MCB and HRC fuse: Any reputed make confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.</p> <p>The rate shall cover installation of LT APFC (Automatic Power Factor Corrector) control panel supplied above. The APFC panel shall be fixed with suitable channels, nut, bolts, foundation etc. at specified locations as per the direction of representative of Sr.DEE/RS&amp;G/Raipur at site. All required material and man power for installation (except incoming/ outgoing cable) supplied by contractor</p>
Item no-23	<p>The rate quoted shall cover Supply of Hand Driven Megger (Insulation Tester) Analogue 2500Volts/ 0-300 MEGA Ohms Metal Body- Housed in Anti- magnetic aluminum body, WITH KIT includes test leads, clips, test probe, Confirms to IS: 2992/1987, High sensitive cross coil indicator, Collapsible Driven Handle-fold back flush into casing when not in use, Chuck nut locking arrangement to prevent anti Clock-Wise Rotation, Guard Terminal &amp; an externally accessible infinity adjuster are provided for instrument having insulation range 100megohms &amp; above. Megger should be a compact portable unit incorporating most modern features.</p> <p><b>Make:</b> Any reputed make confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.</p>
Item no-24	<p>The rate quoted shall cover Supply of Digital earth resistance tester, Rugged abs body, easy to use hand held meter. Ni-cd re- chargeable cells, Insulation resistance Test-More than 25 Megaohms at 500VDC between electrical circuit &amp; containing case Dual Ranges (a) 0 - 10 - 1000 OHM (b) 0 - 5 - 500 OHM, Display: 3 1/2 Digits. Four terminals e1, p1, p2, e2 (to measure earth resistance as well as specific soil resistivity) Testing Kit Contains:- 4 Nos. M. S. Spike (18 Inch Length) • 1 Nos. Hammer • 4 Nos. Cable (25 feet) • 1 Nos. Screwdriver, all packed in one earth testing kit bag specially designed for Earth Testers.],Accessories- i) Carrying Case,ii) Charging Cord iii) Instruction manual</p> <p><b>Make:</b> Any reputed make confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.</p>
Item no-25	<p>The rate quoted shall cover Supply of Digital Clamp Meter 3.5 digits. large LCD, 1999 digits, DC Volt-1000V, AC volt-750V, AC Current-1000A,Resistance-2000ohm . Digital Clamp Meter performs functions like ohm, diode test, continuity and back light measuring, 9V Battery power supply. The clamp meter comes with a 45 mm jaw diameter with Accessories- Carrying case, Manual, Test leads &amp;Battery.</p> <p><b>Make:</b> Any reputed make confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.</p>
Item no-26	<p>The rate quoted shall cover the Design, manufacture, display of wall / hanging / floor mounting type LED illuminated sign / direction boards in half elliptical shape. the display sheet shall be of unbreakable 040 translucent polycarbonate sheet of 2 mm thickness. The text / graphics matter visibility shall not be less than 160 deg. The approved colour text and graphics shall be printed / router cut on monomeric calendered vinyl of 70 mm thickness</p>

	<p>and shall be firmly pasted on display sheets. The mounting arrangement shall be hanging, wall mounting, ceiling mounting, pole mounting or floor mounting and as per site requirement. The signage shall have the integral mounting arrangements with sturdy structural frame and ACP cladding on the back side of the signage to avoid rusting and entry of dust. The LED board shall have uniform illumination with 4-8 W / sq. ft and with brightness more than ambient light. Suitable size end cap of 1.5 mm thick SS 304 should be provided. All required material &amp; manpower shall be supplied by the contractor</p> <p><b>The above work will be executed as per details attached (Annexure-Z) in Signage for Amrit Bharat Station. As per HQ letter No. Elect/413/740 Dated 16.03.2023.</b></p> <p><b>Note: The size, shape, quantity and design will be got approved by Sr.DEE/RS&amp;G/R before supply and installation.</b></p>																														
Item no-27	The rate shall cover the supply & transporting of Circular RCC pipe having inner dia 150mm, 30mm thick and Suitable long pieces. The surface of the pipe shall be of good finishing.																														
Item no-28	The rate shall be quoted for supply of energy efficient 4 Blade ceiling fan 1200 mm sweep complete, suitable for operation on 120/280 Volt, (25W-30W approx) 50Hz AC power Supply. <b>Make:</b> any reputed make as approved by Sr.DEE/RS&G/R.																														
Item no-29	<p>The rate shall be quoted for Supply of 400 mm sweep wall mounted oscillating fan fitted with motor, operating on 230V AC, 50Hz single phase supply, having minimum air delivery of 65 m<sup>3</sup>/min, complete with ABS blades, oscillation mechanism, guard, mounting bracket, speed control, power cord, plug top and all accessories, conforming to IS 555, IS/IEC 60335 series and other applicable Indian Standards having following specification-</p> <table><tr><th>Description</th><th>Requirement</th></tr><tr><td>Type</td><td>Wall Mounted/Bracket Fan</td></tr><tr><td>Sweep Size</td><td>400 mm</td></tr><tr><td>Motor Type</td><td>Capacitor Type AC Motor OR Better</td></tr><tr><td>Supply Voltage</td><td>230 V AC, 50 Hz, Single Phase</td></tr><tr><td>Enclosure</td><td>Totally Enclosed</td></tr><tr><td>Number of Blades</td><td>03 Nos.</td></tr><tr><td>Blade Material</td><td>High Grade ABS Plastic</td></tr><tr><td>Oscillation/Angular Movement</td><td>Minimum 120°</td></tr><tr><td>Vertical Tilt Adjustment</td><td>Available</td></tr><tr><td>Speed Control</td><td>Rotary Switch/Pull Cord Type</td></tr><tr><td>Number of Speed Steps</td><td>Minimum 03</td></tr><tr><td>RPM at Maximum Speed</td><td>Approximately 1320 RPM</td></tr><tr><td>Fan Guard</td><td>Provided</td></tr><tr><td>Guard Material</td><td>Powder Coated Metal Wire</td></tr></table> <p><b>Make:</b> any reputed make as approved by Sr.DEE/RS&amp;G/R.</p>	Description	Requirement	Type	Wall Mounted/Bracket Fan	Sweep Size	400 mm	Motor Type	Capacitor Type AC Motor OR Better	Supply Voltage	230 V AC, 50 Hz, Single Phase	Enclosure	Totally Enclosed	Number of Blades	03 Nos.	Blade Material	High Grade ABS Plastic	Oscillation/Angular Movement	Minimum 120°	Vertical Tilt Adjustment	Available	Speed Control	Rotary Switch/Pull Cord Type	Number of Speed Steps	Minimum 03	RPM at Maximum Speed	Approximately 1320 RPM	Fan Guard	Provided	Guard Material	Powder Coated Metal Wire
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Item no-30	The rate shall cover the supply , testing, fixing & commissioning of GI perforated type cable tray made out of 2.0mm thick sheet in standard length of 2.5mtr x width of 250mm x Height of 75mm Duly hot dip galvanized (as per IS 2629 & IS 4759) including coupler plate with suitable GI nut, bolt & washer including erection the same with PF shelter /workshop shed structure by bracketing arrangement made of 50mm x10mm MS flat & fastening with shed structure, as per the direction of representative of Sr.DEE/RS&G/R at site. All materials and man power as per requirement of site shall be supplied by contractor.																														
Item no-31	<p>The rate quoted shall cover Supply of 8/10 way -wall mounting type metallic distribution box with suitable cable glands for cable entry, including 1no 63A 10KA TPN MCB breaking capacity conforming to latest IS specification, 04nos. 32A TPN MCB C-Curve , 06nos16A SP MCB C-Curve as outgoing with a common copper bus complete with neutral terminal, earthing arrangement with hinged front openable cover with knock out for cable entry conforming to relevant RDSO/IS/IEC Specs and painted properly.</p> <p><b>Make:</b> Any reputed make confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.</p>																														
Item no-32	<p>The rate shall be quoted for supply of wall mounted high speed air circulator fan 450mm sweep, 1440rpm approx. of metallic finish body with metal blade suitable for operation on 230Volt, 50Hz. AC supply complete with all accessories conforming to IS specification.</p> <p><b>Make:</b> any reputed make confirming to IS specification and as approved by Sr.DEE/RS&amp;G/R.</p>																														
Item no-33	<p>The rate shall be cover the supply, installation and commissioning of bilingual LED signage board having following specification-</p> <table><tr><th>Sn.</th><th>Part name</th><th>Specification</th></tr><tr><td>1</td><td>Board frame</td><td>MS Angle, 40mmx40mmx05mm</td></tr></table>	Sn.	Part name	Specification	1	Board frame	MS Angle, 40mmx40mmx05mm																								
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2	Acrylic sheet	Milky white, thickness 03mm	
3	ACP sheet	Dark Blue, thickness 03mm	
4	Powder coated sheet for base of embossed letters	0.4 & 0.25 mm white coloured PPGI sheet	
5	Supportive MS structure for installation of board	Should be sturdy & able to withstand wind & atmospheric pressure as per site requirement	
6	Internal & external wirings	Sizes 1.5, 2.5 & 4 sqmm ISI marked multistranded copper wire as per load requirement	
7	LED module	78mm x 15mm size comprising of 4 wire bus, 03 nos. seol semiconductor make 12v DC Single/Multicolours LED	
8	Controller	1.6mm PCB having 01no. Atmel make microcontroller 89C205, 03nos. ST make MOSFET P60NF06, 03 nos. Fuses & 6amps, 440 v Kaycee make 04 position rotary switch, controller bypassing toggle switch fabricated in a proper enclosure	Controller & SMPS will be mounted in separate panel having proper locking arrangement & protections
9	SMPS	Mean well or any reputed make I/P 100-240V AC & O/P 12 v DC of appropriate rating as per load requirement	
10	Letters FONT	English- ARIAL, Hindi-Narad	
11	Board size	List will be provided as per Sr.DEE(G)/R's instruction	
12	Language pattern	Hindi- IR logo – English ( left to right as per front view	
13	Protections	Proper measures shall be adopted to make the board dust & water proof	
14	Guaranty/Warranty	The LED signage board and the workmanship shall carry a guaranty/ warranty for a period of 60 months from date of commissioning or 72 months from the date of supply whichever is earlier.	

Along with fabrication & installation of suitable supportive iron structure frame for proper installation supplied boards with necessary anticorrosion paint(including supply of all materials, tools& manpower) as per site requirement, to make the subjected job complete in all respect. The LED signage board shall be fixed with shed roof of station building with suitable channels, nut and bolts etc. at specified locations as per the direction of representative of Sr.DEE/G/Raipur.

**Note** – Approval of LED signage board to be taken from SrDEE/G/R before supply of material

Item no- 34	Supply of 36 watts 2x2 feet cool white light LED base recess mounting fittings :-	
	<b>Rating of Recess type LED Luminaire/System Wattage/Rated Power (in Watt)</b>	36
	<b>Colour temperature (in K) (+/- 500 K)</b>	6000
	<b>Light Intensity (System Lumens) (in lm/watt)</b>	100 or above
	<b>LED Chip Efficacy (in lm/watt)</b>	>/=130
	<b>Shape of the Fixture</b>	Square
	<b>Input Operating Voltage Range and Frequency</b>	170V to 270 V at 50 Hz AC
	<b>Rated Voltage</b>	230 V, 50 Hz, AC
	<b>AC Power Factor</b>	>/=0.90
	<b>Driver Efficiency</b>	>/=85 %
	<b>Total Harmonics Distortion</b>	</=20% (for up to 20W)
	<b>Reflector Type</b>	Diffuser
	<b>Diffuser Material</b>	Poly carbonate (PC) (UV Stabilized),Poly Styrene (PS)
	<b>The luminaire body must be corrosion resistant epoxy powder coated / anadozing</b>	Yes
	<b>All fasteners must be of nickel/chrome plated</b>	Yes
	<b>Number of electronic control gear (power supplies)</b>	1
	<b>Working life for LED (in Hours) (Burning hours as per LM-80 and LM 21 Reports) -</b>	50000 Minimum
	<b>Colour Rendering Index (CRI)</b>	>/=80
	<b>Beam Angle</b>	>/=120
	<b>Fixture / Luminaire</b>	CRCA

	<b>Ingress Protection (Minimum)</b>	IP20
	<b>Short Circuit Protection, Over Load Protection, High Voltage Test (1.5 KV for one minute between supply terminals and body of the unit), Insulation Resistance Between Earth and Current Carrying Part</b>	Yes
	<b>The luminaire protected against surges and transients, Internal, (in KV, Minimum)</b>	2.5
	<b>Guarantee/ warranty of complete luminaries</b>	60 months
<b>Make:</b> any reputed make as approved by Sr.DEE/RS&G/R. <b>Note:</b> Sample and model needs to get approval before supply of materials.		
Item no-35	Supply of LED 36W inverter (with Battery Backup) 2x2 panel light with main housing duly power coated CRCA sheet steel front cover PMMA, IP20, Switch ON-Light ON and inverter function enable.	
	<b>Rating of Recess type LED Luminaire/System Wattage/Rated Power (in Watt)</b>	36 ( Inverter type)
	<b>Colour temperature (in K) (+/- 500 K)</b>	6000
	<b>Light Intensity (System Lumens) (in lm/watt)</b>	100 or above
	<b>LED Chip Efficacy (in lm/watt)</b>	>/=130
	<b>Shape of the Fixture</b>	Square
	<b>Input Operating Voltage Range and Frequency</b>	170V to 270 V at 50 Hz AC
	<b>Rated Voltage</b>	230 V, 50 Hz, AC
	<b>AC Power Factor</b>	>/=0.90
	<b>Driver Efficiency</b>	>/=85 %
	<b>Total Harmonics Distortion</b>	</=20% (for up to 20W)
	<b>Reflector Type</b>	Diffuser
	<b>Diffuser Material</b>	Poly carbonate (PC) (UV Stabilized ),Poly Styrene (PS), PMMA
	<b>The luminaire body must be corrosion resistant epoxy powder coated / anodizing</b>	Yes
	<b>All fasteners must be of nickel/chrome plated</b>	Yes
	<b>Number of electronic control gear (power supplies)</b>	1
	<b>Working life for LED (in Hours) (Burning hours as per LM-80 and LM 21 Reports) -</b>	50000 Minimum
	<b>Colour Rendering Index (CRI)</b>	>/=80
	<b>Beam Angle</b>	>/=120
	<b>Fixture / Luminaire</b>	CRCA
	<b>Ingress Protection (Minimum)</b>	IP20
	<b>Emergency Time</b>	2 Hrs (minimum)
	<b>Short Circuit Protection, Over Load Protection, High Voltage Test (1.5 KV for one minute between supply terminals and body of the unit), Insulation Resistance Between Earth and Current Carrying Part</b>	Yes
	<b>The luminaire protected against surges and transients, Internal, (in KV, Minimum)</b>	2.5
	<b>Guarantee/ warranty of complete luminaries</b>	60 months
<b>Make:</b> any reputed make as approved by Sr.DEE/RS&G/R. <b>Note:</b> Sample and model needs to get approval before supply of materials.		

#### **Schedule B:-**

Item no-36	The rate shall cover the excavation of cable trench laying of semicircular pipe and refilling of excavated earth. The excavation of cable trench shall be done in all sorts of soil 100 cm deep and 30-50cm wide( for single cable 30CM & for more than one cable 50CM as per site requirement), laying of semicircular pipe shall be done as per drawing and back filling and properly dressing of land thereafter. If any road is cut for trenching, the same shall be restored after laying of cable with cement concrete /Bitumen properly to the
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	original condition. The cable trenching shall be done without causing any damaged of existing electrical /signal cable or any other railway property. As per Joint procedure order by SECR vide no-SECR/S&T/Policy/889,Dt-05.07.2012 the contractor must follow special condition "The contractor shall take utmost care while carrying out the works including excavation so as not to cause any damaged by the contractor due to fault of his personnel, he is liable for a penalty of Rs. ONE LAKH ONLY for each case, for the loss caused to the Railway. His work is also liable to be stopped till such time he takes measures which are certified to be satisfactory by the executing supervisor." All other material shall be supplied by the contractor. The path and type of cable to be laid on that path shall be decided by Sr.DEE / G / R authorized representative at site. The cable shall be transported to the laying site from Railway store by the contractor on his own cost.
Item no-37	The rate shall cover the transporting and laying of cable in trench along the Track/Road/Drain through Semicircular RCC pipe including all materials . The cable shall be transported to the site from Railway store by the contractor on his own cost.
Item no-38	The rate shall cover the laying of cable as per requirement (Supplied by departmentally) in open air along the channel / wall / pit /pole with/without GI Pipe with proper clamping arrangement Clamps made out of M.S flat iron. In between open joint's is not permissible if required proper joint as per standard should be done . Cable should be terminated at required locations OH line/distribution board with proper lugs and glands. The cable shall be transported to the site from Railway store by the contractor on his own cost.
Item no-39	The rate shall be quoted for erection/ fixing of TPN MCB supplied above at SI No.02 with enclosure as per the direction of authorized representative of Sr.DEE/G/R. All required material and man power as per site requirement shall be supplied by contractor.
Item no-40	The rate shall be quoted for erection/ installation of Metallic Pillar Box supplied above at SI No.04 consisting of One No. 200A 4P MCCB & 04nos. 63A TPN MCB, 04Nos. 32A SP MCB, 04nos. 16SP MCB as outgoing with Bus Bar ,Backup fuses & neutral link including locking arrangement complete as per the direction of representative of Sr.DEE/RS&G/Raipur at site. The work of installation panel shall be done by the contractor with supply of labour & tools. Necessary foundation/frame 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. All materials required shall be supplied by the tenderer.
Item no-41	The rate shall be quoted for cutting of existing poles & dismantling of OH/UG conductor and handing over released materials to concerned SSE/G. All required material & manpower shall be supplied by the contractor.
Item no-42	The rate quoted shall cover for erection/ installation of LT control panel as supplied in above at SI No. 5 as per the direction of representative of Sr.DEE/RS&G/Raipur at site. The work of installation panel shall be done by the contractor with supply of labour & tools. Necessary foundation/frame 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. All materials required shall be supplied by the tenderer. After charging the LT panel shall be put to continuous testing for 72 hrs. & a joint report regarding performance of the LT panel shall be prepared by the tenderer & the authorized representative of Sr.DEE/RS&G/Raipur.
Item no-43	The rate shall be quoted for erection/ installation of LT control panel as supplied in above at SI No. 6 consists of 2x200A 4P MCCB for incoming and 2X100A 4P MCCB, 6x63A TPN MCB, 2x32A TPN MCB, 2x20A DP MCB for outgoing complete as per the direction of representative of Sr.DEE/RS&G/Raipur at site. The work of installation panel shall be done by the contractor with supply of labour & tools. Necessary foundation/frame 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. All materials required shall be supplied by the tenderer.
Item no-44	The rate shall be quoted for installation, testing and commissioning of the Auto Mains Failure (AMF) Control Panel supplied under Schedule Item No. 07, including connection of power and control cables between the DG Set and the AMF Control Panel. The power cable shall be supplied departmentally. The scope of work shall include providing and constructing a suitable foundation/frame/base structure as per the dimensions and weight of the new panel, including supply of all required materials, labour, tools and tackles. Connection of incoming and outgoing power cables to the AMF panel, including re-socketing/re-termination of each cable with suitable lugs, glands and accessories as required. Earthing of the AMF panel with 8 SWG GI wire and connection to the existing earthing system, complete in all respects. The rate shall include all materials required for installation (except departmental supply items), labour, supervision, tools, tackles, testing instruments, transportation, loading/unloading, handling, fixing, termination, earthing, testing and commissioning charges, complete in all respects for successful and trouble-free operation of the AMF system.
Item no-45	The rate quoted shall cover the cost of erection of SST poles in correct alignment, wiring(As per IS standard) and erection of street light fittings. All required material and man power as per site requirement shall be supplied by contractor.

Item no-46	The rate quoted shall cover excavation of pit in all types of soil and concreting foundation for Rail posts/Guy posts/Uprights for fencing/SST pole/Solar light pole/Cable route indicator and plinth for transformers or other structure etc. The rate quoted shall cover the cost of materials such as cement, ballast, sand etc. The concrete mixture shall be of 1:3:6. The size & design of foundation will be indicated at site. The concreting shall be done in presence of representative of Sr.DEE/RS&G/R at site. The portion of foundation/muffing/plinth above ground level shall be plastered with 12mm thick cement and neatly finished.
Item no-47	The rate quoted shall cover the fixing of MS Junction Boxes shall be thermoplastic pole mounting Junction Box 200x160x98MM (approx.) size with suitable connecting terminals & two nos. 20 amp HRC fuse. The fixing of above item junction box shall be fixed on the newly erected /existing rail pole/SST pole at a height of not less than 1.5 m with proper clamps & nut bolts. Connections and looping inside the box shall be done as per the directives of the representative of Sr.DEE/G/R.
Item no-48	The rate shall be quoted for fixing of LED street light fitting. The fitting should be fixed on existing or newly erected SST pole/ Rail pole on G.I. pipes as per design of the fitting pipe shall be bend at 45 degree above the horizontal clamped to the pole with two sets of suitable clamps made M.S. flat painted properly & 10mm dia nuts & bolts etc. The fittings shall be connected to the street light control wire through PVC insulated copper cable 2.5sqmm size (two leads) of 650/1100Volts FRLS grade confirming to IS 694 or latest amendment drawn through PVC flexible pipe. The wire shall be drawn directly in to the fitting without joints. After connection the fittings shall be continuously tested for six(06) hours jointly by the tenderer & representative of Sr.DEE/RS&G/Raipur at site. Tenderer shall transport LED street light at own cost to the location of installation. All required materials, labour shall be supplied by contractor. <b>Make:</b> Copper conductor is of any reputed make confirming to IS standard and as approved by Sr.DEE/G/R.
Item no-49	The rate quoted shall cover fixing of LED Tube light. LED tube light shall be fixed on the suitable clamp/nut/bolts etc. at specified locations as per the direction of authorized representative of Sr.DEE/G/Raipur at site on suitable Height by using suitable size of clamps, nut bolts etc. Connection of the fittings shall be done using PVC insulated stranded twin copper conductor 1.0 sq mm 650/1100Volts FRLS grade confirming to IS 694 or latest amendment from the ceiling point drawn through PVC flexible pipe properly clamped to the wall/ sheds channel. Tenderer shall transport departmentally supplied LED tube light at own cost to the location of installation. All required materials ,labour shall be supplied by contractor.
Item no-50	The rate quoted shall cover concealed wiring of light, ceiling fan & plug 6 amps point shall be done through PVC pipe ¾" or 1" and PVC insulated multi core stranded copper conductor 1.5 sqmm 650/1100Volts FRLS grade confirming to IS 694 or latest amendment for operating light, ceiling fan & exhaust fan with a modular type switch of 6 Amps rating of with ISI marked. The wiring shall be terminated, into ceiling rose for ceiling fan, exhaust fan and tube light fittings and to PVC angular batten holder for ordinary light points fixed on a suitable size of modular board. The board to board looping (up to 5 mtrs distance) by 2.5 sqmm 650/1100Volts FRLS grade confirming to IS 694 or latest amendment .The switches shall be fixed on to a concealed board made of sheet steel frame with modular plate of suitable size. An earth continuity conductor of 14 SWG copper wire shall be run all along the wiring and shall be connected all part, socket earthing point and down rod of the fan. The wiring through walls shall pass through PVC pipes 20 mm dia& heavy type. The switches provided verandah, kitchen and rooms shall be fixed on suitable size boards at proper location. All materials required for wiring shall be supplied by the contractor. The boards shall be fixed on to the walls rigidly by using suitable screws. For convenience wiring for light, fan and plug points shall be drawn through common PVC pipe. All required material like board, switches, socket, wires, pvc pipes, screw etc and labour shall be supplied by contractor. The all switch, socket and other accessories shall be modular type and confirming to relevant IS specification. <b>Make:</b> Any reputed make confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.
Item no-51	The concealed wiring for 6-16 A plug points, individual or combined switch, socket & fuse shall be through PVC pipe 20/25/32 mm 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/individual socket , 4 Sq. mm if 2 to 3 sockets(i.e. first point 4sqmm and looped other two socket by 2.5sqmm from first point), 6 Sq. mm if 4 to 5 sockets in a board in looping system(i.e. first point 6sqmm and looped other two socket by 4 sqmm second and third point and 2.5sqmm from second and third point to fifth and sixth point) . 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. The all switch, socket and other accessories shall be modular type and confirming to relevant IS specification All required materials and man power shall be supplied by the contractor. <b>Make:</b> All wiring accessories confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.
Item no-52	The Concealed 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 sub-circuit. The sub-circuits shall be run through PVC Pipe 20/25 /32 mm size as required. PVC Pipe shall be heavy type ISI marked. The wiring

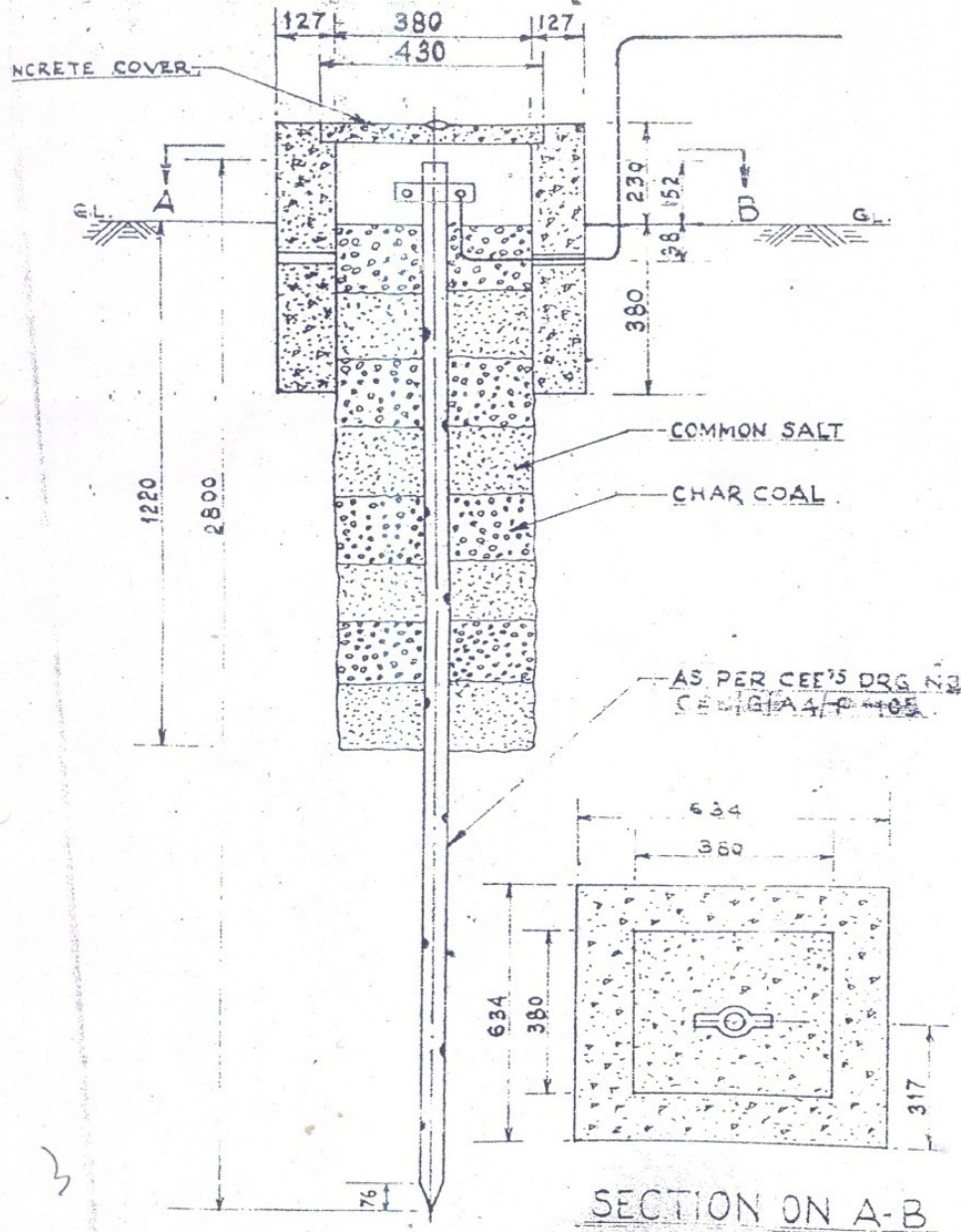
	through walls shall pass through PVC pipes 20/25/32 mm. dia/size & heavy type ISI marked. PVC insulated copper stranded conductor 6.0 sq. mm size, 650 – 1100 volts grade of ISI marked FRLS type shall be used. A number of sub-circuits may be run through one PVC pipe for convenience of wiring. One sub- 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 18 SWG PVC copper wire shall be run along the sub-circuit wires & shall be connected to DBs. <b>Make:</b> All wiring accessories confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.
Item no-53	The rate shall be quoted for erection/ installation of wall mounted 4-way metallic sub-distribution board with 01no32A DP MCB , 04nos 250V,16A SP MCB. All required material and man power as per site requirement shall be supplied by contractor.
Item no-54	The Rate shall be quoted for PVC conduit wiring for lighting with proper clamping arrangement of PVC flexible pipe, Junction box Pipe Bend and wiring done (PVC flexible conduit pipe and wire will be supplied as above). All other material like shaddle, clamp, binding wire and other all required material shall be supplied by the contractor. The wiring shall be done as per direction of Sr.DEE/RS&G/ R's authorized representative.
Item No-55	The rate shall be quoted for erection/ installation of wall mounted 4-way metallic sub-distribution board with 04nos 250V,16A SP MCB. All required material and man power as per site requirement shall be supplied by contractor.
Item no-56	The rate shall be quoted for erection/ installation of wall mounted 8-way metallic sub-distribution board as supplied in above at item no. 14. All required material and man power as per site requirement shall be supplied by contractor.
Item no-57	The rate shall be quoted for the fixing of 300mm exhaust fan at location directed by Sr.DEE (G)/ Raipur authorized representative at site with suitable frame, bolts, etc. fixed on the wall and grouted firmly. The Exhaust fan shall be connected to the ceiling rose with twin flexible PVC insulated copper wire 1.5 sq. mm size of. All required material & manpower shall be supplied by the contractor. <b>Make:</b> All wiring accessories confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.
Item no-58	The rate shall be quoted for the fixing of 450mm exhaust fan at location directed by Sr.DEE (G)/ Raipur authorized representative at site with suitable frame, bolts, etc. fixed on the wall and grouted firmly. The Exhaust fan shall be connected to the ceiling rose with twin flexible PVC insulated copper wire 1.5 sq. mm size of. All required material & manpower shall be supplied by the contractor. <b>Make:</b> All wiring accessories confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.
Item no-59	The rate shall be quoted for fixing of ceiling fan. The AC Ceiling Fan shall be fixed at location mentioned by authorized representative of Sr.DEE (G)/ Raipur at site with suitable rubber bush, clamp, Nut-bolts, Double Safety pin, check Nut etc. The AC Ceiling Fan shall be connected to the ceiling rose with twin flexible PVC insulated copper wire 1.5 sq. mm size of any reputed make approximately 1 (one) m for each fitting. An earth continuity conductor of 14 SWG tinned copper wire shall be run all along the wiring and shall be connected to the fan regulator (if metallic) and down rod of the fan(supplied and fixed by the contractor). Wiring shall be done with 1.5 sq mm copper wire FRLS grade conforming to IS 694 or latest amendment. All required material & manpower shall be supplied by the contractor. <b>Make:</b> All wiring accessories confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.
Item no-60	The rate shall be quoted for fixing of electronics regulator supplied above. The electronics regulator shall be fixed on to a PVC gang box/ switch board, and gang box shall be fixed on wall at nearest control board with suitable size screw. Wiring shall be done with 1.5 sq mm copper wire FR grade conforming to IS 694 or latest amendment. All required material & manpower shall be supplied by the contractor. <b>Make:</b> All wiring accessories confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.
Item no-61	The rate shall be quoted for Installation of submersible pumps, including all accessories in a bore well with clamp ,nut bolt , pipe and non return valve etc as per direction of authorized representative of Sr.DEE/RS&G/ Raipur at site. All required manpower and material shall be supplied by contractor except pipe and non return valve.
Item no-62	The rate shall be quoted for installation of control panel for submersible pump including automation equipment including like suitable type starter ,timer ,single phase preventor cum dry sensor with probe element ,Over & Under voltage protection ,reverse current protection, ampere meter, voltmeter, indicator, rotory switch and indicator arrangement etc shall be fixed on the floor foundation through suitable size Iron frame with rage bolt, nut bolt etc. Foundation shall be made by contractor (height from ground as per standard) with all required materials as per the direction of representative of Sr.DEE/RS&G/Raipur at site. All required material and manpower for installation of above item shall be supplied by contractor.
Item no-63	The rate shall be quoted for erection/ fixing of TPN MCB supplied above at SI No.19 with enclosure as per the direction of authorized representative of Sr.DEE/G/R. All required material and man power as per site requirement shall be supplied by contractor.
Item no-64	The Earth cones to be laid shall be fabricated from Class-B G.I. Pipe conforming to relevant ISS and should be erected as per CEE/SER/GRC's Drawing No: CEE/G/A1/P-124 (1984) or latest. The earth cone shall be connected to the metallic structure and Distribution board by proper lugs and 8 SWG size GI Wires (earth continuity conductor). A connection shall also be made to the armour of the PVC cable near the DB by suitable clamps to the main earth connection. The location of cone will be decided by the representative.



	Suitable size of earth pit/ sump should be provided in each earth cone and the value with date of testing must be recorded on wall of the pit. All required material and man power shall be supplied by contractor. The location of cone will be decided by the representative of Sr.DEE/G/R. The earthing system shall be confirming to IS 3043-1987. All required material and man power shall be supplied by contractor. The location of cone will be decided by the representative (Earth pipe size Outer Dia 2.9+54.40+2.9=60.2mm, thickness 2.9 mm and length of the pipe 2.8 meters)
Item no-65	The rate quoted shall cover the Supply, fabrication, laying, welding and connection from earth pit with GI not bolt of suitable size of 8 SWG G.I. wire conforming to relevant IS/IEC specification as per site requirement. <b>Make:</b> any reputed make confirming to IS/IEC specification and as approved by Sr.DEE/G/R.
Item no-66	Supply , erection , testing & commissioning of maintenance free earth by 17.2 mm dia low carbon steel rod coated with 205 microns thick copper , 3 M long with clamps & carbon base earth enhancing compound of any reputed make BACKFILL material not less than 40 Kgs for each. Exothermic welding & earth connection by 8 SWG GI wire of length upto 6 M for connecting the earth to equipment.
Item no-67	The rate shall be quoted for Supply, fabrication, laying, welding and connection of GI Flat of size 25x3 mm from earth pit with GI nut Bolt of suitable size. All required material and man power as per site requirement shall be supplied by contractor.
Item no-68	The rate shall be quoted for erection/ installation of metallic pillar box as supplied in above item no.20 as per the direction of representative of Sr.DEE/G/Raipur at site. The work of installation pillar box shall be done by the contractor with supply of labour & tools. 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. All materials required shall be supplied by the tenderer.
Item no-69	The rate shall be quoted for Installation of railway supplied 3 phase 5 HP submersible pumps including all accessories in a bore well with clamp ,nut bolt , pipe and non return valve etc as per direction of authorized representative of Sr.DEE/RS&G/ Raipur at site. All required manpower and material shall be supplied by contractor except pipe and non return valve.
Item no-70	The rate shall be quoted for Installation of above supplied submersible pumps at SI No.21 including all accessories in a bore well with clamp ,nut bolt , pipe and non return valve etc as per direction of authorized representative of Sr.DEE/RS&G/ Raipur at site. All required manpower and material shall be supplied by contractor except pipe and non return valve.
Item no-71	The rate quoted shall cover the fixing of LED based 1x1 recess mounted fitting at specified locations and as per the direction of representative of Sr.DEE/G/Raipur at site. Luminaries shall be connected through nearest light point/ ceiling rose through 1.5 sq mm size, 650/1100 Volts FRLS grade conforming to IS 694 or latest amendment. All required material and man power shall be supplied by contractor for fixing of luminaries as per actual site condition. . The rate includes supply of all required materials and man power for installation of led light fittings. <b>Make:</b> Wire of Any reputed make confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.
Item no-72	The rate shall cover the excavation of cable trench across the road/tack, laying of circular RCC pipe. The excavation of cable trench shall be done in all sorts of soil 100 cm deep and 30-50cm wide(for single cable 30CM & for more than one cable 50CM as per site requirement), laying of circular RCC pipe shall be done as per drawing and back filling and properly dressing of land thereafter. If any road is cut for trenching, the same shall be restored after laying of cable with cement concrete /Bitumen properly to the original condition. As per Joint procedure order by SECR vide no-SECR/S&T/Policy/889,Dt-05.07.2012 the contractor must follow special condition "The contractor shall take utmost care while carrying out the works including excavation so as not to cause any damaged by the contractor due to fault of his personnel, he is liable for a penalty of Rs. ONE LAKH ONLY for each case, for the loss caused to the Railway. His work is also liable to be stopped till such time he takes measures which are certified to be satisfactory by the executing supervisor." All material and labour shall be supplied by the contractor. The path of trenching shall be decided by Sr.DEE / G / R's authorized representative at site. Note: All the material for cable/ pipe laying should be brought to site of work before starting the excavation of trench.
Item no-73	The rate shall cover the transporting and laying of cable in trench across the Track/Road/Drain through Circular RCC pipe including all materials. The cable shall be transported to the site from Railway store by the contractor on his own cost.
Item no-74	The rate shall cover the cutting of trench depth of 20cm and width of 20cm with marble/ concrete cutting machine, laying of GI/PVC Pipe & accessories and wiring done. After wiring cut of trenching, shall be restored with cement concrete/plaster to the original condition. All required material and man power shall be supplied by the contractor. The cutting of wall/floor surface shall be done without causing any damage of existing electrical /signal cable or any other railway property. If anything get damaged during trenching such as electrical cable/S&T cable same shall be repaired & restored to original by the tenderer. As per Joint procedure order by SECR vide no-SECR/S&T/Policy/889,Dt-05.07.2012 the contractor must follow special condition "The contractor shall take utmost care while carrying out the works including excavation so as not to cause any damaged by the contractor due to fault of his personnel, he is liable for a penalty of Rs. ONE LAKH ONLY for each case, for the loss caused to the Railway. His work is also liable to be stopped till such time he takes measures which are certified to be satisfactory by the executing supervisor." The path and type of cable to be laid on that path shall be decided by Sr.DEE / G / R's authorized representative at site.

	The cable shall be transported to the laying site from Railway store by the contractor on his own cost.
Item no-75	<p>The rate quoted shall cover the supply of HDPE Pipe (PE-80, 90 mm dia, 10 mm thick, @Density: 0.954) confirming to IS specification and laying of HDPE pipe supplied above and cable(supplied departmentally) by pipe pushing method including all associated work (more than 1.0 meter from ground level) pipe pushing method with Laying of pipe by compression pushing shall be done by compressor machine/manually without causing any damaged of existing electrical /signal cable or any other railway property. As per Joint procedure order by SECR vide no-SECR/S&amp;T/Policy/889,Dt-05.07.2012 the contractor must follow special condition "The contractor shall take utmost care while carrying out the works including excavation so as not to cause any damaged by the contractor due to fault of his personnel, he is liable for a penalty of Rs. ONE LAKH ONLY for each case, for the loss caused to the Railway. His work is also liable to be stopped till such time he takes measures which are certified to be satisfactory by the executing supervisor."All material and labour shall be supplied by the contractor. The path and type of cable to be laid on that path shall be decided by Sr.DEE / G / R authorized representative at site. The cable shall be transported to the laying site from Railway store by the contractor on his own cost.</p> <p><b>Make-</b> HDPE pipe of any reputed make confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/RS&amp;G/R.</p>
Item no-76	<p>The Rate shall be quoted for fixing of 400 mm Bracket mounted fan for wall as supplied above, shall be provided at location mentioned by Sr.DEE/RS&amp;G/ Raipur's authorized representative at site with suitable frame, clamp, bolts, etc. fixed on the wall /Ceiling . The wall Bracket Fan/FTL Fitting shall be connected to the ceiling rose with twin flexible PVC insulated copper wire 1.5 sq. mm size of 650/1100Volts FRLS grade confirming to IS 694 or latest amendment. All required material and man power shall be supplied by contractor.</p>
Item no-77	<p>The Rate shall be quoted for fixing of High speed Air circulator supplied above, shall be provided at location mentioned by Sr.DEE/RS&amp;G/ Raipur's authorized representative at site with suitable frame, clamp, bolts, etc. fixed on the wall /Ceiling . The wall Bracket Fan/FTL Fitting shall be connected to the ceiling rose with twin flexible PVC insulated copper wire 1.5 sq. mm size of 650/1100Volts FRLS grade confirming to IS 694 or latest amendment. All required material and man power shall be supplied by contractor.</p>
Item no-78	<p>The rate shall be quoted for erection/ installation of wall mounted 8-way metallic sub distribution board with 01no 63A TPN MCB, 6nos16A DPMCB ,busbar and neutral link arrangement etc. All required material and man power as per site requirement shall be supplied by contractor.</p>
Item no-79	<p>The rate shall be quoted for the fixing of Exhaust fan &amp; Air circulator fan as supplied above at Sl No. 32, at location directed by Sr.DEE (G)/ Raipur authorized representative at site with suitable frame, bolts, etc. fixed on the wall and grouted firmly. The Exhaust fan shall be connected to the ceiling rose with twin flexible PVC insulated copper wire 1.5 sq. mm size of. All required material &amp; manpower shall be supplied by the contractor.</p> <p><b>Make:</b> All wiring accessories confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.</p>
Item no-80	<p>The rate shall be quoted for installation of 15 Ltr geyser as supplied above. The work to be done as per the instruction of authorized representative of Sr. DEE/G/R. All required material and man power for installation of geyser shall be provided by the contractor.</p> <p><b>Make:</b> All wiring accessories confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.</p>
Item no-81	<p>The rate shall be quoted for the complete installation, testing and commissioning of <b>3 Ton 5-Star Rated Ceiling Mounted Cassette Type Air Conditioner (departmentally supplied)</b> at the location specified by the authorized representative of <b>Sr.DEE (G)/Raipur.</b></p> <p>The scope of work shall include supply, installation and fixing of all accessories and consumables required for proper commissioning and satisfactory operation of the AC unit, including but not limited to suitable hanging supports, threaded rods, mounting brackets, MS framework (where required), vibration isolators, clamps, anchor fasteners, insulation material, control cables, interconnecting power and communication cables, refrigerant copper piping with thermal insulation, condensate drain piping, PVC casing/capping, sleeves, sealants, refrigerant gas (if required for commissioning), and all other incidental materials.</p> <p>The contractor shall transport the departmentally supplied indoor and outdoor units from the Railway's designated store/location to the installation site at his own cost, including loading, unloading and safe handling.</p> <p><b>The work shall also include the following:</b></p> <ul style="list-style-type: none"> <li>• The contractor shall install the indoor cassette unit in the false ceiling with proper alignment and adequate structural support, ensuring easy accessibility for maintenance and servicing.</li> <li>• Suitable openings and restoration work in the false ceiling, walls or slabs, wherever required for routing of pipes and cables, shall be carried out by the contractor. After completion of the work, all disturbed portions shall be restored to their original condition.</li> <li>• Refrigerant piping and condensate drain piping shall be laid with proper slope, supports and insulation, ensuring leak-proof operation and effective drainage. Necessary pressure testing, vacuumization and</li> </ul>

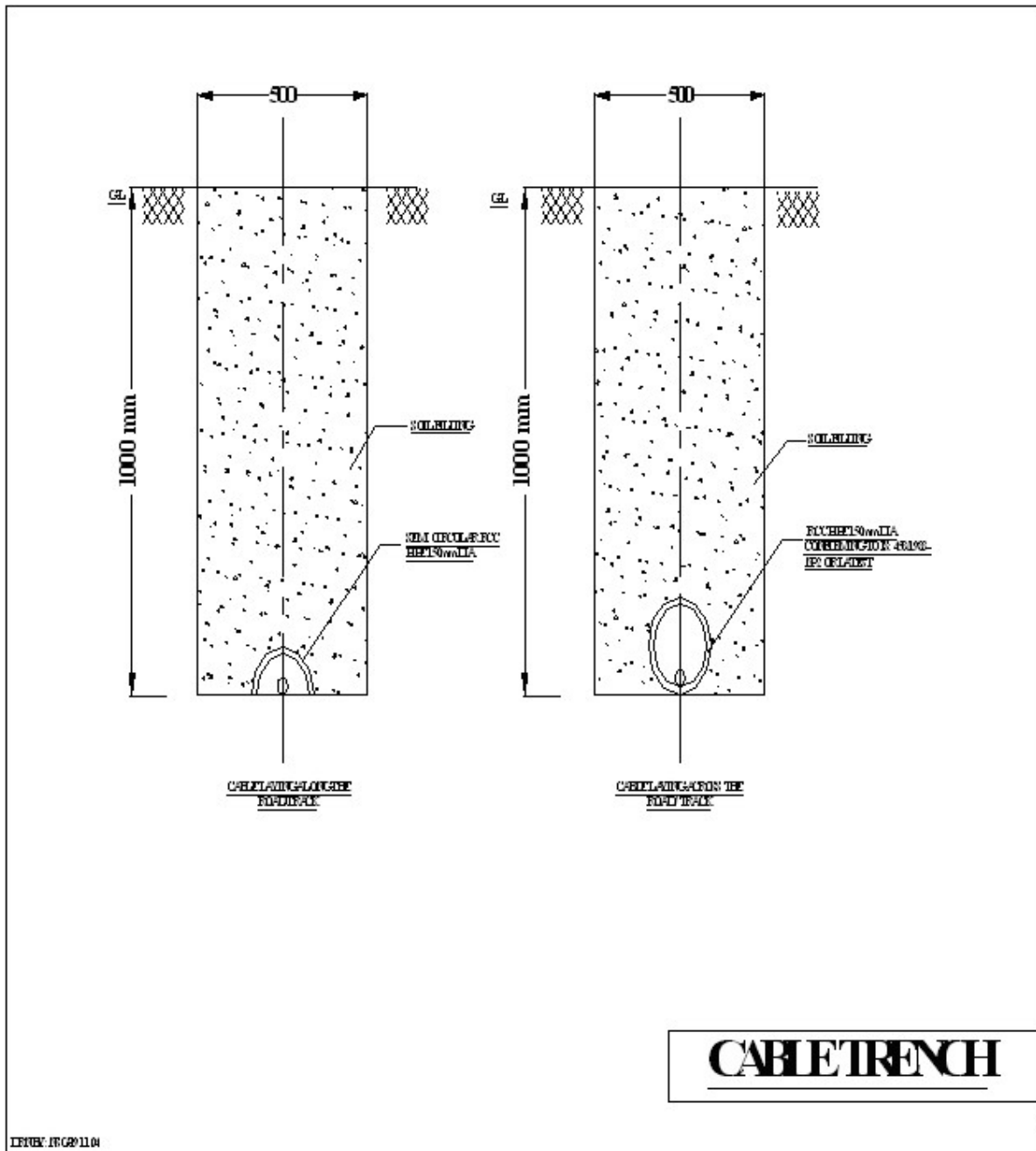
	<p>refrigerant charging shall be carried out by the contractor before commissioning.</p> <ul style="list-style-type: none"> <li>• The layout of refrigerant piping, drain piping and electrical cabling shall be designed in such a manner that it does not adversely affect the aesthetics of the building/room, avoids the possibility of inadvertent future damage, and provides optimum routing for efficient and reliable air conditioning performance.</li> <li>• Appropriate design parameters shall be considered as per site conditions. The contractor shall ensure that all low-side and high-side works are executed in accordance with the manufacturer's recommendations and relevant IS/CPWD/Railway standards to achieve the specified cooling performance.</li> <li>• Electrical connections from the nearest available power source up to the AC unit, including suitable isolating switch/MCB, earthing, control wiring and termination, shall be carried out by the contractor as required for safe operation, unless otherwise specified.</li> <li>• The contractor shall submit the proposed design, layout scheme and General Arrangement Drawing (GAD) indicating the locations of indoor units, outdoor units, refrigerant piping, drain piping and electrical routes for approval of <b>Sr.DEE (G)/Raipur</b> before commencement of the work. The building drawings, wherever available, shall be provided by the Railway for reference.</li> <li>• Any deviation from the approved layout or technical specifications shall require prior approval of <b>Sr.DEE (G)/Raipur</b>.</li> </ul> <p><b>Make:</b> All accessories confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.</p>
Item no-82	<p>The Rate shall be quoted for installation of split AC (supplied departmentally) at location mentioned by authorized representative of Sr.DEE (G)/ Raipur at site with suitable frame, stand ,clamp, bolts, insulations, control wires etc. Necessary refrigerant charging shall be done by contractor for commissioning of ACs. All required material including refrigerant gas and man power shall be supplied by contractor. Tenderer shall transport departmentally supplied AC at own cost to the location of installation.</p>
Item no-83	<p>The rate shall be quoted for concealed wiring for AC. Wiring shall be drawn through PVC pipe 25/32 mm dia, 2mm wall thickness. The wiring shall be done with PVC insulated stranded copper conductor 4 sq mm 650/1100Volts FRLS grade confirming to IS 694 or latest amendment. The wiring shall be terminated in Ray-roll metallic DB (supplied by contractor) through 30A SPMCB. Separate circuit shall be drawn from the outgoing of the sub distribution board for each AC point by controlling MCB of DB. An earth continuity conductor 14 SWG tinned/annealed copper conductor/wire drawn from main earth shall be run all along the piping and connected to the earth pin of sockets. The arrangement in detail will be explained by the authorized representative of Sr.DEE (G)/R at the site. All materials including Ray-roll socket, metallic DB made with Metal plug Socket, 30 Amp SPN MCB etc. and man power shall be supplied by contractor.</p> <p><b>Make:</b> All required wiring accessories (Ray-roll socket, metallic DB made with Metal plug Socket, 30 Amp SPN MCB) shall be of any reputed make confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.</p>
Item no-84	<p>The rate quoted shall cover the fixing of 36 Watt LED based 2x2 recess mounted fitting at specified locations and as per the direction of representative of Sr.DEE/G/Raipur at site. Luminaries shall be connected through nearest light point/ ceiling rose through 1.5 sq mm size, 650/1100 Volts FRLS grade conforming to IS 694 or latest amendment. All required material and man power shall be supplied by contractor for fixing of luminaries as per actual site condition. The rate includes supply of all required materials and man power for installation of led light fittings.</p> <p><b>Make:</b> Wire of Any reputed make confirming to RDSO/IS/IEC specification and as approved by Sr.DEE/G/R.</p>



DETAILS OF EARTHING ARRANGEMENT







**Guaranty / Warranty:** The materials supplied and the workmanship shall carry a guaranty / warranty for a period of 12 months from the certified date of installation or 18 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 tenderer.