

		<ul style="list-style-type: none"> • Breaking capacity minimum 35 kA at 415V AC. • Complete with rotary operating handle and door interlock. <p>Outgoing Feeders The panel shall be provided with: Each outgoing feeder shall consist of: 63A Cam-lock fuse unit complete. Cam-lock fuse units shall be shrouded type suitable for safe operation. Proper phase segregation and labeling shall be provided.</p> <p>Busbars:</p> <ul style="list-style-type: none"> • High conductivity electrolytic grade Copper busbars of size 30x6mm or suitable size as per requirement for 250A rating. • Separate neutral busbar of full size. • Earth busbar extending throughout panel length. • Busbars shall be adequately rated to withstand thermal and short circuit stresses. <p>*Note- Panel dimensions shall be adequate to accommodate all specified components, busbars, cable entries and future maintenance requirements, subject to site conditions and field requirements."</p>
15	Erection & commissioning of Feeder pillar panel (for residential quarters power distribution and other electrical requirements)	Installing, testing and commissioning of weatherproof feeder pillar panel for residential quarters (supplied against item no. 14 of schedule 2B) and allied electrical loads, fabricated from CRCA sheet steel, dust and vermin proof, complete with incomer/outgoing protection, copper busbars, internal wiring, gland plates, earthing arrangements and all necessary hardware in accordance with relevant IS/IEC standards."

SCHEDULE-3

Electrical portion of works "Bilaspur Division: Provision of new Type-V(SPL) Qrtrs. 05Nos & Type-V Qrtr. 5Nos in Bilaspur Settlement under SrDEN/Settlement/Bilaspur"

A: Type-V and Type-V (SPL) quarters (per qrtr)

Item No.	Description of Items	Detailed technical specification/ Scope of work of items appearing in schedule
1	Supply of Crosslinked Polyethylene Insulated Armoured Cable 4x25sqmm with Aluminiumconductor, suitable for rated voltage at 1100 volts grade, as per IS.7098 (Part 1): 1988 latest.	Supply of Crosslinked Polyethylene Insulated Armoured Cable 4x25sqmm w Aluminiumconductor, suitable for rated voltage at 1100 volts grade, as per IS:71 (Part 1): 1988 latest. Make: Polycab, Havells, KEI, Finolex, RR Kabel, Ultracab, Vishal Cables, equivalent makes conforming to BIS standards shall be accepted.
2	Laying of cable of lower size (upto 4x35 Sq. mm) in Polythene (HDPE) pipe without digging of earth dressing of land including	The cable of lower size upto 4x35 sq.mm (supplied by Railway) shall be laid in ca trenches along the road/track/ yard without digging in all sorts of soil with/with HDPE Pipe including supply of HDPE pipe & all materi [HDPE pipe 50 mm Diameter, PN 6 or above, conforming to IS 4984: 2016 relevant IS standard type: coil/straight as per requirement] as per site condi-

	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]	requirements. The cable laying shall be done and back filling and properly dress of land there after laying of cable with cement concrete/ Bitumen properly to original condition. More than one cable be laid on the same trench if required. 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 appropriate distance on cable route by contractor after cable laying.
3	Trenching/Digging of earth 1 mtr deep for cable laying.	The work consists of Trenching/Digging of earth 1mtr deep for cable laying. trenching /digging shall be done in all sort of soil as per the directive of 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 pro rata basis
4	Laying of cable of in GI pipe including supply of all materials (including GI Pipe & except Cable). With supply of G.I. pipe dia. 50mm thickness min. 2mm	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 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 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 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.
5	Laying of cable in open air/concealed in wall with supply of all material.	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 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/MS 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 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 done as per the directive of the authorized representative of Sr.DEE (RS&G)/BSP.
6	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 conforming to IS: 3648 - 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 mm, inner dia. 54.4 mm & thickness 2.9 mm. (approx.) (Make for GI pipe: SA JINDAL, Surya, TATA, Prakash, PSST or equivalent makes conforming to IS standards shall be accepted.). The Earth Cone shall be erected as per CEE/GRC 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

		erection/installation of the respective materials with GI Strip of size 25 mm x 3 mm (minimum) (or as specified) with hot-dip galvanization of uniform coating. Make GI strip: SAIL/Jindal/Surya/TATA/Prakash/PSST or equivalent approved make location for earth cones shall be indicated by the authorized representative SR.DEE (RS&G)/ BSP. Earth values after meggering to be written on the earth M.S. Cover plate 3 mm thick/concrete to be provided on earth pit. All joints shall properly cleaned. The work shall be carried out according to relevant IS std. and per directive of authorized representative of Sr.DEE(RS&G)/BSP.
7	<p>Supply, installation, testing & commissioning of prepaid cum postpaid Three phase Smart Energy Meter Accuracy Class 1.0, rating: 5-60A/10-60A/10-100A, 50Hz with Display Unit conforming to IS-16444 or latest, with Tamper Proof meter box/ enclosures of suitable size,wireless communication modules confirming to IS16444 part1 compatible with GPRS/Cellular including data communication for online energy monitoring /billing system with disconnection/ re-connection through remote location and data export to energy billing system for 2 years and technical support.</p> <p>Configuration & Commissioning with existing system of software for meter data transmission, acquisition & management system for billing application including vending charges, Monthly SIM Charges per meter of Smart Energy Meters for 2 years. The meter shall have suitable provision to consumer token entry locally in case of no WAN/communication scenario and monitoring consumption information through mobile app. Warranty on meter,sim, metering accessories & OEM software: 10years from date of commissioning.</p> <p>Make : Genus/Secure/Lauritz Knudsen E&A (Schneider Electric)/Polaris</p> <p>Make for Meter Box. Make:</p>	<p>Supply, installation, testing & commissioning of prepaid cum postpaid Three phase Smart Energy Meter Accuracy Class 1.0, rating: 5-60A/10-60A/100A, 50Hz with Display Unit conforming to IS-16444 or latest, with Tamper Proof meter box/ enclosures of suitable size,wireless communication modules confirming to IS16444 part1 compatible with GPRS/Cellular Configuration & Commissioning with existing system of software for meter data transmission, acquisition & management system for billing application including vending charges, Monthly SIM Charges per meter of Smart Energy Meters for 2 years. Warranty on meter,sim, metering accessories & OEM software: 5years from date of commissioning with the following specifications:</p> <p>AC three Phase four Wire, Tamper Proof, Static Meter of Class 1.0, -30% +20% of 230 V, 50 Hz \pm 5%, rating: 5-60A/10-60A/10-100A or above, IP-6 or better, with LED/LCD display. Meter should conform to IS-16444, IS-15959, IS-15884, IS-13779 and relevant IEC standards.</p> <p>Connect-disconnect switch with performance equivalent to UCI or better. Smart meter should have capability of connecting itself with server and adjacent meter through GPRS/cellular/NB/IoT network or equivalent. Meter should have connect / disconnect functionality operable from prepay billing software.</p> <p>Complete online auto generation of bill remotely using mobile app (Android and IOS) and computer web link.</p> <p>The meter should have in built-in battery for back up of data minimum up-to 1 month. Data storage should be for a minimum period of 12 months.</p> <p>Meter should have provision of local reading in the absence of mains. Electric connection should be automatically disconnected as soon as the recharged amount exhaust or the current exceeds the defined load limit (Remote or local de-energization and energization). Buzzer to give alarm in case of local credit/overload.</p> <p>In case of network connectivity failure meter should record reading and send data to the server when network connectivity restore. Meter should have feature of remote re-configuration. Relays to be provided for phase and neutral disconnection. Logging of tamper events and information alerts to backend system. In case of any tampering information should be sent to server. Necessary alarm/ indication should be sent to consumer and server before exhausting of recharged amount. Meter should support pre-pay & credit modes.</p> <p>Necessary fixing arrangement/ meter case/ wire/ sealing arrangement should be provided at the time of commissioning by the firm. Mobile app</p>

	Sintex, Hensel, Homelite, Schneider Electric or same as meter supplied/OEM make.	monitoring payment activation/deactivation to be provided along with meter in free of cost (For both Android and IOS). Make: Genus/Secure/Lauritz Knudsen E&A (Schneider Electric)/Polaris equivalent makes conforming to BIS standards shall be accepted. Make for Meter Box: Make: Sintex, Hensel, Homelite, Schneider Electric same as meter supplied/OEM make or equivalent makes conforming to BIS standards shall be accepted.
8	Supply of 4 modular plate complete with 20/16 Amps AC starter, 25/16 Amps socket, 25/16 Amps plugs.	Supply of AC starter unit suitable for outdoor/indoor use, comprising 25A/16A, 230V, single-phase industrial type metal clad/polycarbonate panel and socket, complete with 16A/25A SP MCB of reputed make (such as Anchor/Havells/Schneider or equivalent), housed in IP55/IP65 rated weatherproof enclosure, with all necessary accessories, conforming to relevant IS/IEC standards and as per site requirements."
9	Fixing connection & commissioning of above	Installation/fixing of AC starter unit (supplied against item no. 8 of schedule 3A) including mounting on wall/structure, cable termination with glands/earthing, dressing of wiring, and testing for proper operation, complete as per the directive of the authorized representative of Sr.DEE (RS&G)/BSP.
10	Supply of TPN vertical Distribution board conforms to IS-13032 DBs are phosphatised and painted with epoxy polyester based powder paint, neutral link, earth terminal & bus-bar double door 4 way (4+12) way.	Supply of TPN vertical Distribution board conforms to IS-13032 DBs phosphatised and painted with epoxy polyester based powder paint, neutral link, earth terminal & bus-bar double door 4 way (4+12) way. Ingress protection IP-42. Make: Havells, Anchor, Lauritz Knudsen, Finolex, Wipro, Schneider Electric, ABB, Legrand, IndoAsian, BCH or equivalent makes conforming to BIS standards shall be accepted.
11	Fixing and connection of MCB DB supplied with supply of all material.	The TPN vertical/horizontal DB (supplied under item no. 10 of Schedule-3A) shall be fixed as per directive of authorized representative of Sr.DEE/RS&G/BSP. Incoming cable & outgoing cables shall be connected to the terminals & from terminals to the incoming of the MCBs. The material & labour required for fixing above items shall be supplied by the contractor. The method of fixing & cable termination shall be done as per the directive of the authorized representative of Sr.DEE (RS&G)/BSP. Make: for copper wire: Polycab/Havells/KEI/Finolex/Kabel/Ultracab.
12	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), Sigm, Eaton, ABB or equivalent makes conforming to BIS standards shall be accepted.
13	Supply of TPN MCB 63 A capacity (C-curve)	Supply of Miniature Circuit Breaker (MCB) TPN, 415Volts AC 50HZ, with rated current 63 Amps (C curve) conforming to IS 8828-1996 IEC-60898-1 or relevant standard having facilities for termination of Aluminum cable, fixing arrangement mounting on steel rail & rubber glands conform to relevant IS standards for safe & reliable operation. Make: Siemens, Schneider, Havells, Standard, Crabtree, GE, IndoAsian, Control & Switchgear, BCH, Legrand, Hager, Lauritz Knudsen, Eaton or equivalent makes conforming to BIS standards shall be accepted.

14	Supply of 9W LED retrofit lamp B22 holder base with polycarbonate body.	The price shall cover supply of 9W LED Retrofit Lamp, B22 holder type, rated 220-240V AC, 50Hz, with polycarbonate diffuser housing and aluminium heat sink minimum efficacy ≥ 100 lm/W, PF ≥ 0.9 , THD $\leq 20\%$, and average life $\geq 25,000$ burning hours. Make – Philips, Osram, Havells, Wipro, Syska, Oreva, Orient, Surya, Halonix or equivalent makes conforming to BIS standards shall be accepted.
15	Supply of 10W-20W BULKHEAD FITTING with LED & enclosure	Supply of 10-20W LED Bulkhead light fitting suitable for 230V AC, 50 Hz supply, Power Factor ≥ 0.95 , System Efficacy ≥ 100 lm/W, Color Temperature 6500K(+/-500 K), CRI ≥ 80 , THD $\leq 10\%$, complete with inbuilt electronic driver, high-efficiency LED module, minimum IP65 protection, polycarbonate housing with opal diffuser, suitable for wall/ceiling mounting, cool white / warm white light as specified, complete with all mounting accessories, conforming to relevant IS standards. Make – Philips, Osram, Havells, Wipro, Oreva, Polycab, Orient, Surya, Halonix, Syska or equivalent makes conforming to BIS standards shall be accepted.
16	Supply of ELCB/RCCB 63 amps 4 pole 300mA sensitivity	The price shall cover supply of RCCB/ELCB (Residual Current Circuit Breaker/Earth Leakage Circuit Breaker), 4 Pole, rated current 63 Amps suitable for 415V, 3-phase, 50 Hz AC supply, with rated residual current sensitivity of 300 mA, conforming to IS/IEC 61008-1 or (latest). The RCCB shall be of current-operated type, capable of providing protection against earth leakage faults. Make: Siemens, Schneider, Havells, Standard, Crabtree, GE, Indoasi, Control & Switchgear, Legrand, Hager, L&T, Eaton, ABB or equivalent makes conforming to BIS standards shall be accepted.
17	Fixing/Erection/Commissioning of above ELCB/RCCB 63 amps 4 pole with all required material	The ELCBs/RCCB (supplied against item nos. 16 of schedule-3A) shall be fixed at the location identified by authorized representative of DEE(RS&G)/BSP by the use of suitable bolts etc. supplied by the contractor. The connection & testing shall be done by contractor. All wires shall be connected with the use of proper lugs and proper connection with earthing continuity conductor of 18 SWG PVC copper wire shall be made as per directives of authorized representative of Sr.DEE(RS&G)/BSP.
18	Concealed wiring for the 6 Amps. Light, fan & 5 Amps socket with 1.5 sqmm. FRLS copper wire including supply of all materials	The Concealed wiring for lights & fan, 5Amps socket & 6A plug points shall be done through PVC Pipe, heavy type ISI marked of size 20/25/32 mm. The wiring shall be done with PVC insulated stranded copper conductor 1.5 sq. mm 650/1100 volt gr. FRLS type ISI marked as per directives of authorized representative of Sr.DEE(RS&G)/BSP. The wiring through walls shall pass through PVC pipes 20/25/32 mm size & heavy type ISI marked. Switch socket and board shall be supplied by contractor. An earth continuity conductor of 18 SWG PVC copper wire shall be run all along the piping and shall be connected. For convenience, wiring for light & plug points shall be done through common PVC pipe & Earthing should be provided at earth point of 3/5 pin plugpoint. Make for PVC pipe - Polycab/Anchor/Finox/Bajaj/ Precision /Richa or equivalent makes conforming to BIS standards shall be accepted. Make for Switch/Socket - Havells brands/L&T/ Legrand/ Anchor/ ROMA/HPL or equivalent makes conforming to BIS standards shall be accepted. Make for copper or equivalent makes conforming to BIS standards shall be accepted. wire : Polycab/Havells/KEI/Finox/RR Kabel/Ultracab or equivalent makes conforming to BIS standards shall be accepted.

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.

The concealed wiring for 6-16 A plug points, individual or combined switch socket & fuse shall be through PVC pipe 20/25/32mm size/dia as required. PVC pipe shall be heavy type ISI marked with provision of suitable Tee bends, elbows, junction boxes as required. The wiring shall be with P' insulated stranded individual copper conductor 2.5 sq.mm for one socket Sq. mm if 2 to 3 sockets, 6 Sq. mm if 4 to 5 sockets in a board. The wire 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 & P' 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 Sr.DEE (RS&G)/BSP.

Make for PVC pipe- Polycab/Anchor/Finolex/Bajaj/ Precision /Richa or equivalent makes conforming to BIS standards shall be accepted.

Make for Switch/Socket - Havells brands/L&T/ Legrand/ Anchor/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.

20 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 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 (Major brands 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. P' 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 of 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 bent 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.

Make for copper wire: Polycab/Havells/KEI/Finolex/RR Kabel/Ultracab. or equivalent makes conforming to BIS standards shall be accepted.

21 Supply of 36W Led Recessed Luminaire (Panel Light), size: 2ftx2ft (approx), colour: 6000K.

Supply of 36W Led Recessed Luminaire (Panel Light), size: 2ftx2ft (approx), Colour temperature (in K) (+/- 500 K): 6500 K
1) LED chip Efficacy : with higher efficacy ≥ 130 Lm/Watt
2) Rated Voltage: 230 V AC 50 Hz
3) AC Power Factor: ≥ 0.90
4) Driver Efficiency: $\geq 85\%$
5) Colour Rendering Index (CRI): ≥ 80

		<p>6) Beam Angle: $\geq 120^\circ$</p> <p>7) Conformity to Indian Standard: IS:10322/part 5/sec-2/2012 and IS 16107 (1/2/Sec 1): 2012 for Recess type</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 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>
22	Supply of LED Recessed Luminaire Round shaped (downlight) wattage: 18W to 24W, colour: 6000K/6500K	<p>The price shall cover supply of LED Recessed Luminaire (Round Downlight type), wattage 18W to 24W, color temperature 6000K / 6500K (approx. suitable for operation on 230V AC, 50Hz, with high-efficiency driver (PF 0.9, THD < 10%), system efficacy ≥ 100 lm/W, and IP20 or higher protection housing made of die-cast aluminium with polycarbonate diffuser, suitable for false ceiling mounting, conforming to IS 10322 (Part 5/Sec 1) and IS 16107 (Part 1) or latest amendments, complete with all accessories .</p> <p>Make –Philips ,Osram ,Havells ,Wipro, Oreva ,Polycab, Orient , Surya Halonix,Syska, or equivalent makes conforming to BIS standards shall be accepted</p>
23	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) (+/-5% 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, 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>
24	Supply of 20W LED tube light supply voltage 230V 50Hz built in electronic driver	<p>Supply of 20W LED tube light fittings complete with all accessories. Supply voltage 230V 50Hz built in electronic driver. Detailed technical specification is enclosed as Annexure-I</p> <p>Make – Philips ,Osram ,Havells ,Wipro, Syska ,Oreva ,Polycab, Orient , Surya, Halonix, or equivalent makes conforming to BIS standards shall be accepted</p>
25	Supply of Electric Ceiling Fan BLDC Type Sweep Size (mm):1200, rating: 5star, type of regulator: Electronic/remote	<p>Supply of Electric Ceiling Fan BLDC Type Sweep Size (mm):1200, rating 5star, type of regulator: Electronic/remote , with 5 year warranty.</p> <p>Make: Khaitan, Havells, Crompton Greaves, Usha, Philips ,Halonix,Polycab or equivalent makes conforming to BIS standards shall be accepted.</p>
26	Fixing of lights/fans supplied as above with supply of flexible wire to connection the nearest ceiling rose.	<p>The lamp,bulkhead,recessedlight,inverterbatten,tubelight,ceilingfan,exhaustfan, bell & other LED light (supplied against item 14,15,21,22,23,24,25,27,28,34 of schedule 3A) shall be fixed at location mentioned by Sr. DEE (RS&G)/ Bilaspur 's authorized representative at , with use of proper size of P.K. screws & PVC sleeves shall be connected supply through PVC pipe/PVC casing capping wiring piercing across the wall</p>

		<p>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/ Baja Precision /Richa or equivalent makes conforming to BIS 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/ Kabel/Ultracab or equivalent makes conforming to BIS standards shall be accepted.</p>
27	Supply of ding dong type call bell.	<p>The ding dong call bell shall be suitable for use with 220 volt, 50 Hz. AC supply. One bell push shall be supplied along with the ding dong bell. Make: Anchor, Roma, Legrand, GM Modular, Orient or equivalent makes conforming to BIS standards shall be accepted.</p>
28	Supply of Exhaust fan 300 mm sweep complete with accessories.	<p>Supply of Exhaust Fan non-Capacitor Type Sweep Size (mm):300, No. of poles: 2, Insulation of material class: B or better Make: Khaitan, Havells, Crompton Greaves, Usha, Philips, Polycab or equivalent makes conforming to BIS standards shall be accepted. Warranty period -2 yr</p>
29	Supply of TPN MCB 63A flush mounting complete with sheet steel enclosure, powder painted for use as main switch.	<p>Supply of TPN MCB 63 Amps, flush mounting type, complete with sheet steel enclosure duly powder coated, suitable for use as main switch, having rated voltage 415 Volts AC, 50 Hz, with breaking capacity min. 10 kA conforming to IS 8828:1996 / IEC 60898-1 (to be furnished by manufacturer having suitable terminals for aluminum cable connection and fix arrangement for mounting on steel/DIN rail. Make: Siemens, Schneider, Havells, Standard, Crabtree, GE, Standard, Indoasian, Control & Switchgear, Legrand, Hager, L&T, Eaton or equivalent makes conforming to BIS standards shall be accepted.</p>
30	Fixing and connection of MCB DB supplied as above with supply of all material.	<p>The MCB DB supplied (supplied against item no. 29 of Schedule-3A) shall be fixed at the location identified by site engineer by the use of nos. bolts size 100mmx6mm supplied by the contractor. The connection testing shall be done by contractor. All wires shall be connected with the use of copper lugs & clamping kits.</p>
31	Concealed wiring for 20 Amps plug points with PVC pipe & PVC insulator copper conductor 4 sq mm size with supply of all material.	<p>The concealed wiring for 20A plug points, shall be through PVC pipe suitable size as required, PVC pipe shall be heavy type ISI marked. The wiring shall be with PVC insulated stranded individual copper conductor 4 mm. The wires should be 650/1100 volt grade FRLS type of ISI mark conforming to IS-694. A separate circuit should be drawn from the outgoing of a 20 Amps F.T. fuse provided on 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. Suitable Tees, bends, elbows, junction boxes required shall be supplied and fixed by the contractor. Wherever required wiring for light, fan & Plug points shall be done through common pipe. Materials shall be supplied by the contractor. In no case the PVC pipe shall bend to change the direction of wiring. The work shall be done as per directive of the authorized representative of Sr.DEE (RS&G)/BSP. Make for PVC pipe- Polycab/Anchor/Finolex/Bajaj/ Precision/Richa or equivalent makes conforming to BIS standards shall be accepted.</p>

		Make for Switch/Socket - Havells brands/L&T/ Legrand/ Anch ROMA/HPL orequivalent makes conforming to BIS standards shall be accepted Make for copper wire: Polycab/Havells/KEI/Finolex/RR Kabel/Ultracab orequivalent makes conforming to BIS standards shall be accept
32	Supply of ELECTRIC WATER HEATER- GEYSER - Tank Capacity 25 Liter, 5star rated Material of Inner Container: Stainless Steel, Material of Outer Container: ABS, warranty: 3year,	The cost covers supply of ELECTRIC WATER HEATER- GEYSER - T ₁ Capacity 25 Liter, 5star rated Material of Inner Container: Stainless St Material of Outer Container: ABS, warranty: 3year. It should have,thermos indicating lamp, thermal cut out, drain plug, provision for vent pipe/press relief valve, non return valve & other accessories. Make- Orient, kenstar,Bajaj,Usha,Havells or equivalent makes conforming BIS standards shall be accepted
33	Fixing of storage type geyser 25litrs capacity.	Fixing, installation and connection of 25-litre storage type electric gey (supplied against item no. 32of Schedule-3A)including wall mounting w suitable brackets/anchor fasteners, making plumbing and electri connections with approved materials, testing for proper operation & ensuring leak-free performance, complete in all respects.
34	Supply of Mirror/decorative/bracket light 20W	The cost covers Supply of 20W Mirror / Decorative / Bracket type LED li fitting(as per requirement) , Color Temperature 6500K(+/-500 K), Syst Efficacy ≥ 100 lm/W ,Power Factor ≥ 0.95 , CRI ≥ 80 , THD $\leq 10\%$, In Voltage 140V-270V AC, 50Hz, with inbuilt electronic driver, high-efficiet LED module, minimum IP20 protection, polycarbonate/metal body, wa white / cool white light as required, complete with all mounting accessori conforming to relevant IS standards. Make - Philips ,Osram ,Havells ,Wipro, Oreva ,Polycab, Orient , Sur Halonix,Syska or equivalent makes conforming to BIS standards shall be accept

B: Other electrical requirements for settlement area of quarters

1	Supply of 7 mtrs height hot deep galvanized octagonal pole (single arm)	The rate includes supply of 7 mtr height hot dip galvanized octagonal p with single arm bracket as per IS:2629/IS:2633/IS:4759 standards hav sheet thickness of 3 MM of make- Vakrangee, Ba Zenieth/TATA/Arya/Zenco Industrial Corpn/Shah Phylon/Philips orequival makes conforming to BIS standards shall be accepted . The single arm bracket length 1500MM along with spigot shall be hot dip galvanized. The inter and external surface of the pole shall be galvanized with minimum coat thickness of 65 microns. The pole shall have camouflaged junction box hav necessary terminal board with compression gland for termination of incoming & outgoing supply cable. The pole shall be approximately top and bottom dia of 70/130 MM respectively and shall a supplied with foundation bolts 04 nos 'J' type of size 20 MM (EN8 grac Anchor plate shall be of 3MM thickness, base plate of size 220X220X12M approximate
2	Excavation of earth, provision of Foundation and erection of hot deep galvanized octagonal poles with aluminium& red oxide paint	The price shall cover the cost of transportation of 7 mtr height hot de galvanized octagonal pole(supplied above) to the work site and casting concrete foundation for erection of pole with aluminium& red oxide pai The rate includes excavation of earth pit in any kind of soil and casting PCC foundation (1000x1000x100 MM) ratio 1:4:8 at the bottom and o which RCC foundation (350x350x1200MM) ratio 1:2:4 shall be done. The portion of the foundation shall be 300MM above the ground level. The J be

		shall be fixed in the RCC foundation as per the template size of the octago pole as per the direction of site in charge. The price shall also include be filling and dressing of earth and debris cleaning after completion of work all respect.
3	Supply of junction box 300x350x125 mm size material thickness 1.5mm with 1 no. 6A HRC fuse with base and 1 no. TPN terminal block stud type suitable for 25 sqmm cable.	The street light junction box to be supplied shall be made out of 1.5 mm thick CR sheet steel powder coated exterior, with gasket, hinged door with IP-55 protection better, mounting plate made of 2mm thick CRCA sheet steel, cable gland plate 2 thick provided at bottom, with cam type locking arrangement & with brackets pole mounting. The junction box should contain 1 no. 6A HRC fuse with base an no. TPN terminal block stud type suitable for 25 sq mm cable. The dimension of DB is 300 mm x350 mm x125 mm (WXHxD). The internal wiring shall be done 2.5 sq-mm FRLS wire.
4	Fixing & connection of junction boxes	The street light junction box (supplied against item no. 3 of schedule-3 shall be fitted on the street light pole(s) at the place identified by authorized representative of Sr. DEE(RS&G)/ BSP. The work incl connection of incoming & outgoing cables on the terminals of the DB. materials &labour required for fixing shall be supplied by the contract Make for copper wire: Polycab/Havells/KEI/Finolex/RR Kabel/Ultra orequivalent makes conforming to BIS standards shall be accepted
5	Supply of LED street light Luminaries 45W complete with all accessories.	Supply of LED street light Luminaries 45W complete with all accessori Detailed technical specification is enclosed as Annexure- II. Make –Philips ,Osram, Havells, Wipro, Syska, Oreva, Polycab, Orient ,Sur Halonix, or equivalent makes conforming to BIS standards shall be accepted
6	Fixing & connection of street light luminaire supplied above.	The luminaries (supplied against item No: 5 of schedule-3B) shall be fixed existing/newly erected Rail poles/SST poles/ wall of service buildings or place as directed by authorized representative of Sr.DEE(RS&G)/B Connection to the fittings shall be done through 2 core un-armoured 2.5 mm. copper cable or 4 sq. mm aluminium cable drawn from junction boxes from overhead line as per directives of site engineer. Any other minor ite required for execution of above work shall be supplied by the contractor.
7	Supply of class A MS pipe/MS clamp for clamping the light fitting at suitable design and size.	The price shall cover supply of Class A MS pipe of suitable dia. For fixing in st light fittings & Supply of MS clamps size 25mm x 5mm. The quantity of MS pipe suitable dia. & MS clamps shall be decided by the authorized representative Sr.DEE (RS&G)/BSPs. The work also includes the fabrication works required fixing the fittings into poles. After fabrication of pipe & clamps it shall be pain with red oxide primer & Aluminium paint.
8	Trimming of big branches above 15 cm.	Trimming of Big branches above 15 CM Diameter with contractor's labour tools with sufficient protection not to damage any other railway material. 1 branches to be cut have to be decided by site engineer. The tree branches to collected by the contractor & to be deposited at the place identified by the engineer.
9	Trimming of small branches dia. Above 5 CM & less than 15 cm.	Trimming of small branches diameter Above 5 CM & less than 15 CM w contractor's labour & tools with sufficient protection not to damage any of railway material. The branches to be cut have to be decided by site engine. The tree branches to be collected by the contractor & to be deposited at place identified by the site engineer.
10	Disconnection of existing wiring.	The work consists of disconnection and removal of wiring/cable/box et handing over the materials to concerned authorized representative Sr.DEE (RS&G)/BSP. Necessary care should be taken dur

		Disconnection & dismantling work so that the cable may be obtained its maximum length & in good condition. Boxes, DB shall be removed such a manner that the usable component may not be damaged.
11	Construction of Cement Concrete foundation containing cement concrete on the proportion 1:3:6 of cement, sand & ballast size of 40mm	The price shall cover excavation, supply & handling of all materials accessories temporary arrangement for excavation in hard soil : concrete/masonry drains/walls requiring use of chisel & hammer, shor where necessary casting concrete including frame work where necess. tamping of concrete, grouting of poles and finishing the top of concr foundation. The price also includes the dismantling of all connec temporary arrangements, backfilling with earth & compacting the same required height & width as per directive of authorized representative SR.DEE (RS&G)/BSP. The authorized representative of SR.D (RS&G)/BSP shall certify the use of chisel & hammer if necessary. The pr shall be paid on the basis of total volume of the concrete foundation. 1 depth of excavation shall be measured from the formation level to maximum excavated point. Cement concrete on the proportion 1:3:6 cement sand & ballast size of 40mm. The Cement concrete foundations n be for gate support pillars, fencing angle foundations, muffing & concret of existing structures and foundation for SST pole etc. SST poles/Rail po as per the directive of the authorized representative of SR.DEE (RS&G)/B. The proper curing work shall be done by the contractor. Preferably suita scroll of PVC pipe or G.I. pipe to be used during foundation casting for p erection after sufficient time for setting.
12	Supply DB containing one TP MCCB 100 Amps as incoming & 2 nos. 63 Amps. TP MCBs as outgoing complete with neutral bar din rail etc enclosed in a powder painted metallic enclosure.	Supply of DB with enclosure made out of CRCA steel sheet 1.2 mm th mounting plate made using 2 mm thick CRCA sheet steel, cable gland plat mm thick provided at the bottom , Cam locking arrangement ,Single do pole mounting bracket supplied separately ,containing one 100 Amps. ,MCCB breaking capacity 25 KA as incoming & 2 nos. TP MCB ,63 An breaking capacity 10 KA .The DB should have suitable dimension to ca above items. The DB shall contain cable entry holes for cables . The DB sh also contain the cable terminal links, neutral link & earth bar. Make for MCB/MCCB: Siemens, Schneider, Havells, (Standard, Indoasian, Control & Switchgear, Legrand, HPL, Hager, L&T equivalent makes conforming to BIS standards shall be accepted
13	Fixing, connection & commissioning of DB supplied as above.	The DB (supplied under item no. 12 of Schedule-3B) shall be fixed as directive of authorized representative of Sr.DEE/RS&G/BSP. The incom cable & outgoing cables shall be connected to the terminals & from terminals to the incoming of the MCCB/MCBs. The material & lab required for fixing all above items shall be supplied by the contractor. 1 method of fixing & cable termination shall be done as per the directive of authorized representative of SR.DEE (RS&G)/BSP. Make for copper wire: Polycab/Havells/KEI/Finolex/RR Kabel/Ultracab orequivalent makes conforming to BIS standards shall be accept
14	Supply of outdoor type Feeder pillar panel (for residential quarters distribution) 3 phase, 12 way Incomer 250A MCCB TPN Outgoing (12+12+12)Nos = 36 Nos 63 A Cam lock fuse ,	Supply of outdoor type Feeder pillar panel (for residential quarters distribution phase, 12 way, Incomer 250A MCCB TPN Outgoing (12+12+12)Nos = 36 Nos 63 A Cam lock fuse , make: Havells/equivalent (12Nos per phase) with busbars of 30x6mm or suitable size as per ampere ratings as per the directive of authorized representative of SR.DEE (RS&G)/BSP.

	make. Havells/equivalent (12Nos per phase) with busbars of suitable size as per ampere ratings.	Incomer: <ul style="list-style-type: none"> • 1 No. 250A MCCB TPN (4 Pole). • Breaking capacity minimum 35 kA at 415V AC. • Complete with rotary operating handle and door interlock. Outgoing Feeders The panel shall be provided with: Each outgoing feeder shall consist of: 63A Cam-lock fuse unit complete. Cam-lock fuse units shall be shrouded to be suitable for safe operation. Proper phase segregation and labeling shall be provided. Busbars: <ul style="list-style-type: none"> • High conductivity electrolytic grade Copper busbars of size 30x6mm or suitable size as per requirement for 250A rating. • Separate neutral busbar of full size. • Earth busbar extending throughout panel length. • Busbars shall be adequately rated to withstand thermal and short circuit stresses. *Note- Panel dimensions shall be adequate to accommodate all specified components, busbars, cable entries and future maintenance requirements subject to site conditions and field requirements."
15	Erection & commissioning of Feeder pillar panel (for residential quarters power distribution and other electrical requirements)	Installing, testing and commissioning of weatherproof feeder pillar panel for residential quarters (supplied against item no. 14 of schedule 3B) and all electrical loads, fabricated from CRCA sheet steel, dust and vermin proof complete with incomer/outgoing protection, copper busbars, internal wiring, gland plates, earthing arrangements and all necessary hardware in accordance with relevant IS/IEC standards."

SCHEDULE-4

Electrical portion of works "Construction of new 14 units Type-IV quarters under jurisdiction of ADEN/Settl-II/BSP in the jurisdiction of SrDEN/Sett./BSP at Bilaspur"

A: Type-IV quarters (per qrtr)

Item No.	Description of Items	Detailed technical specification/ Scope of work of items appearing in schedule- 4
1	Supply of Crosslinked Polyethylene Insulated Armoured Cable 4x25sqmm with Aluminiumconductor , suitable for rated voltage at 1100 volts grade, as per IS:7098 (Part 1): 1988 latest.	Supply of Crosslinked Polyethylene Insulated Armoured Cable 4x25sqmm with Aluminiumconductor , suitable for rated voltage at 1100 volts grade, as per IS:7098 (Part 1): 1988 latest. Make: Polycab, Havells, KEL, Finolex, RR Kabel, Ultracab, Vishal Cables, or equivalent makes conforming to BIS standards shall be accepted.
2	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]	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.
3	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
4	Laying of cable of in GI pipe including supply of all materials (including t.G.I. Pipe & except Cable). With supply of G.I. pipe dia. 50mm thickness min. 2mm	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.
5	Laying of cable in open air/concealed in wall with supply of all material.	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 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.
6	Earthing arrangement	<p>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 conforming 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 x 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.</p>
7	Supply, installation, testing & commissioning of prepaid cum postpaid Three phase Smart Energy Meter Accuracy Class 1.0, rating: 5-60A/10-60A/10-100A, 50Hz with Display Unit conforming to IS-16444 or latest, with Tamper Proof meter box/ enclosures of suitable size, wireless communication modules confirming to IS16444 part1 compatible with GPRS/Cellular including data communication for online energy monitoring /billing system with disconnection/ re-connection through remote location and data export to energy billing system for 2 years and technical support. Configuration & Commissioning with existing system of software for meter data transmission, acquisition & management system for billing application including vending charges. Monthly SIM Charges per meter of Smart Energy Meters for 2 years. The meter shall have suitable provision to consumer token entry locally in case of no WAN/communication scenario and monitoring consumption	<p>Supply, installation, testing & commissioning of prepaid cum postpaid Three phase Smart Energy Meter Accuracy Class 1.0, rating: 5-60A/10-60A/10-100A, 50Hz with Display Unit conforming to IS-16444 or latest, with Tamper Proof meter box/ enclosures of suitable size, wireless communication modules confirming to IS16444 part1 compatible with GPRS/Cellular. Configuration & Commissioning with existing system of software for meter data transmission, acquisition & management system for billing application including vending charges. Monthly SIM Charges per meter of Smart Energy Meters for 2 years. Warranty on meter, sim, metering accessories & OEM software: 5 years from date of commissioning with the following specifications:</p> <p>AC three Phase four Wire, Tamper Proof, Static Meter of Class 1.0, -30% to +20% of 230 V, 50 Hz \pm 5%, rating: 5-60A/10-60A/10-100A or above, IP-51 or better, with LED/LCD display. Meter should conform to IS-16444, IS-15959, IS-15884, IS-13779 and relevant IEC standards.</p> <p>Connect-disconnect switch with performance equivalent to UCI or better. Smart meter should have capability of connecting itself with server and the adjacent meter through GPRS/cellular/NB/IoT network or equivalent.</p> <p>Meter should have connect / disconnect functionality operable from prepaid billing software.</p>

information through mobile app, Warranty on meter, sim, metering accessories & OEM software: 10 years from date of commissioning. Make : Genus/Secure/Lauritz Knudsen E&A (Schneider Electric)/Polaris Make for Meter Box: Make: Sintex, Hensel, Homelite, Schneider Electric or same as meter supplied/OEM make

Complete online auto generation of bill remotely using mobile app (Android and IOS) and computer web link. The meter should have in built-in battery for back up of data minimum up-to 1 month. Data storage should be for a minimum period of 12 months. Meter should have provision of local reading in the absence of mains. Electric connection should be automatically disconnected as soon as the recharged amount exhaust or the current exceeds the defined load limit (Remote and local de-energization and energization). Buzzer to give alarm in case of low credit/overload. In case of network connectivity failure meter should record reading and send data to the server when network connectivity restore. Meter should have feature of remote re-configuration. Relays to be provided for phase and neutral disconnection. Logging of tamper events and information alerts to the backend system. In case of any tampering information should be sent to the server. Necessary alarm/ indication should be sent to consumer and server before exhausting of recharged amount. Meter should support pre-pay and credit modes. Necessary fixing arrangement/ meter case/ wire/ sealing arrangement should be provided at the time of commissioning by the firm. Mobile app for monitoring payment activation/deactivation to be provided along with meter in free of cost (For both Android and IOS).

Make : Genus/Secure/Lauritz Knudsen E&A (Schneider Electric)/Polaris or equivalent makes conforming to BIS standards shall be accepted

Make for Meter Box: Make: Sintex, Hensel, Homelite, Schneider Electric or same as meter supplied/OEM make or equivalent makes conforming to BIS standards shall be accepted

8 Plug and socket with mcb 25/16A metal clad box with metal plug and top

Supply of AC starter unit suitable for outdoor/indoor use, comprising 25A/16A, 230V, single-phase industrial type metal clad/polycarbonate plug and socket, complete with 16A/25A SP MCB of reputed make (such as Anchor/Havells/Schneider or equivalent), housed in IP55/IP65 rated weatherproof enclosure, with all necessary accessories, conforming to relevant IS/IEC standards and as per site requirements."

9 Fixing connection & commissioning of above

Installation/fixing of AC starter unit (supplied against item no. 9 of schedule 4A) including mounting on wall/structure, cable termination with glands/lugs, earthing, dressing of wiring, and testing for proper operation, complete as per the directive of the authorized representative of Sr.DEE (RS&G)/BSP

10 Supply of SPN Distribution board

Supply of SPN (Single Pole & Neutral) Distribution Board,

	confirms to IS-13032 DBs are phosphatised and painted with epoxy polyester based powder paint, neutral link, earth terminal & bus-bar single door 8 way.	8-way, suitable for 240V, single-phase, 50 Hz AC supply, complete with tinned copper busbar, neutral link, and earth terminal. The DB shall be fabricated from CRCA sheet steel, duly phosphatised and finished with epoxy polyester powder coating for corrosion resistance. The enclosure shall be single door type including detachable gland plate, and suitable for wall mounting. It shall conform to IS 13032 and relevant IS/IEC standards. Make: – Havells, Anchor, L&T, Sigma, Finolex, Wipro, Schneider Electric, ABB, Legrand, IndoAsian or equivalent makes conforming to BIS standards shall be accepted.
11	Supply of Double pole isolator 40Amp	The price shall cover supply of Double pole isolator 40Amp Conformity of the specification: as per IS/IEC IS/IEC 60947-3 or latest No. of pole: 2 Rated voltage (in Volts): 240 V, AC Rated Current (in Ampere): 40 Instantaneous tripping current type: C Rated Short circuit capacity (in Ampere): 10000 Make: Siemens, Schneider, Havells, GE, Standard, Indoasian, Control & Switchgear, Legrand, HPL, Hager, L&T/ Lauritz Knudsen, ABB, Anchor by Panasonic, Polycab or equivalent makes conforming to BIS standards shall be accepted
12	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.
13	Fixing, connection & commissioning of DB/bus-bar chamber supplied above.	The DB supplied (against item No: 11 of Schedule 4A) 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

14	Supply of 9W LED retrofit lamp B22 holder base with polycarbonate body.	<p>The price shall cover supply of 9W LED Retrofit Lamp, B22 holder type, rated for 220-240V AC, 50Hz, with polycarbonate diffuser housing and aluminium heat sink, minimum efficacy ≥ 100 lm/W, PF ≥ 0.9, THD $\leq 20\%$, and average life $\geq 25,000$ burning hours</p> <p>Make –Philips ,Osram ,Havells ,Wipro, Syska ,Oreva, Orient, Surya, Halonix or equivalent makes conforming to BIS standards shall be accepted.</p>
15	Supply of ELCB/RCCB 63 amps. 4 pole 300mA sensitivity	<p>The price shall cover supply of RCCB/ELCB (Residual Current Circuit Breaker/Earth Leakage Circuit Breaker), 4 Pole, rated current 63 Amps, suitable for 415V, 3-phase, 50 Hz AC supply, with rated residual current sensitivity of 300 mA, conforming to IS/IEC 61008-1 or (latest). The RCCB shall be of current-operated type, capable of providing protection against earth leakage faults.</p> <p>Make: Siemens, Schneider, Havells, Standard, Crabtree, GE, Indoasian, Control & Switchgear, Legrand, Hager, L&T, Eaton, ABB or equivalent makes conforming to BIS standards shall be accepted.</p>
16	Fixing/Erection/Commissioning of above ELCB/RCCB 63 amps. 4 pole with all required material	<p>The ELCBs/RCCB (supplied against item nos. 16 of schedule-4A) shall be fixed at the location identified by authorized representative of Sr. DEE(RS&G)/BSP by the use of suitable bolts etc. supplied by the contractor. The connection & testing shall be done by contractor. All wires shall be connected with the use of proper lugs and proper connection with earth continuity conductor of 18 SWG PVC copper wire shall be made as per directives of authorized representative of Sr.DEE(RS&G)/BSP.</p>
17	Concealed wiring for the 6 Amps. Light, fan & 5 Amps socket with 1.5 sqmm. FRLS copper wire including supply of all materials	<p>The Concealed wiring for lights & fan, 5Amps socket & 6A plug points shall be through PVC Pipe, heavy type ISI marked of size 20/25/32 mm. The wiring shall be done with PVC insulated stranded copper conductor 1.5 sq. mm 650/1100 volt grade FRLS type ISI marked as per directives of authorized representative of Sr.DEE (RS&G)/BSP. The wiring through walls shall pass through PVC pipes 20/25/32 mm size & heavy type ISI marked. Switch socket and board shall be supplied by the contractor. An earth continuity conductor of 18 SWG PVC copper wire shall be run all along the piping and shall be connected. For convenience, wiring for light & fan points shall be done through common PVC pipe & Earthing should be provided in earth point of 3/5 pin plugpoint.</p> <p>Make for PVC pipe- Polycab/Anchor/Finox/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 or equivalent makes conforming to BIS standards shall be accepted. wire:</p>

18	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.	<p><i>Polycab/Havells/KEI/Finolex/RR Kabel/Ultracab.</i> or equivalent makes conforming to BIS standards shall be accepted.</p> <p>The concealed wiring for 6-16 A plug points, individual or combined switch, socket & fuse shall be through 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.</p> <p>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>
19	Concealed Wiring for Sub-circuits.	<p>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 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</p>

		<p>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/KEL/Finolex/RR Kabel/Ultracab. or equivalent makes conforming to BIS standards shall be accepted.</p>
20	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>
21	Supply of 20W LED tube light supply voltage 230V 50Hz built in electronic driver .	<p>Supply of 20W LED tube light fittings complete with all accessories. Supply voltage 230V 50Hz built in electronic driver. Detailed technical specification is enclosed as Annexure-I</p> <p>Make – Philips ,Osram ,Havells ,Wipro, Syska ,Oreva ,Polycab, Orient , Surya, Halonix, or equivalent makes conforming to BIS standards shall be accepted.</p>
22	Supply of Electric Ceiling Fan BLDC Type Sweep Size (mm):1200, rating: 5star, type of regulator: Electronic/remote	<p>Supply of Electric Ceiling Fan BLDC Type Sweep Size (mm):1200, rating: 5 star, type of regulator: Electronic/remote, with 5 year warranty.</p> <p>Make: Khaitan, Havells, Crompton Greaves, Usha, Philips ,Halonix, Polycab, bajaj 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 the nearest ceiling rose.	<p>The retrofit lamp,,inverterbatten,tubelight,ceilingfan,exhaustfan,call bell & other LED light (supplied against item no. 15,21,22,23,25,26,29,30 of schedule 4A) shall be fixed at location mentioned by Sr. DEE (RS&G)/ Bilaspur 's authorized representative at site with use of proper size of</p>

		<p>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 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.</p>
24	Supply of ding dong type call bell.	<p>The ding dong call bell shall be suitable for use with 220 volt, 50 Hz. AC supply, one bell push shall be supplied along with the ding dong bell.</p> <p>Make: Anchor Roma, Legrand, GM Modular, Orient or equivalent makes conforming to BIS standards shall be accepted.</p>
25	Supply of Exhaust fan 300 mm sweep complete with accessories.	<p>Supply of Exhaust Fan non-Capacitor Type Sweep Size (mm):300, No. of pole: 4, Insulation of material class: B or better. Make: Khaitan, Havells, Crompton Greaves, Usha, Philips, Polycab or equivalent makes conforming to BIS standards shall be accepted.</p> <p>Warranty period -2 yr</p>
26	Supply of DP MCB 16 A flush mounting MCB complete with sheet steel enclosure, powder painted for use as main switch.	<p>Supply of Miniature Circuit Breaker (MCB) DP 16 Amps penta flush mounting with sheet metal enclosure powder painted for use as main switch with ratings 250 Volts AC 50 Hz with breaking capacity 10 KA as per IS 8828-1996 IEC-60898-1 (To be furnished by manufacturer) having facilities for termination of Aluminum cable, fixing arrangement for mounting on steel/DIN rail.</p> <p>Make: Siemens, Schneider, Havells, Standard, Crabtree, GE, Standard, Indoasian, Control & Switchgear, Legrand, Hager, L&T, Eaton or equivalent makes conforming to BIS standards shall be accepted.</p>
27	Fixing and connection of MCB DB supplied as above with supply of all material.	<p>The MCB DB supplied (supplied against item no. 27 of Schedule-4A) shall be fixed at the location identified by site engineer by the use of 04 nos. bolts size 100mmx6mm supplied by the contractor. The connection & testing shall be done by contractor. All wires shall be connected with the use of copper lugs & clamping kits.</p>
28	Supply of 10W-20W BULKHEAD FITTING with LED & enclosure	<p>Supply of 10-20W LED Bulkhead light fitting suitable for 230V AC, 50Hz supply, Power Factor ≥ 0.95, System Efficacy ≥ 100 lm/W, Color Temperature 6500K(+/-500 K), CRI ≥ 80, THD $\leq 10\%$, complete with inbuilt electronic driver, high-efficiency LED module, minimum IP65</p>

		<p>protection, polycarbonate housing with opal diffuser, suitable for wall/ceiling mounting, cool white / warm white light as specified, complete with all mounting accessories, conforming to relevant IS standards.</p> <p>Make – Philips ,Osram ,Havells ,Wipro, Oreva ,Polycab, Orient , Surya, Halonix,Syska or equivalent makes conforming to BIS standards shall be accepted</p>
29	Supply of Mirror/decorative/bracket light 20W	<p>The cost covers Supply of 20W Mirror / Decorative / Bracket type LED light fitting(as per requirement) , Color Temperature 6500K(+/-500 K), System Efficacy ≥ 100 lm/W ,Power Factor ≥ 0.95, CRI≥ 80, THD $\leq 10\%$, Input Voltage 140V–270V AC, 50Hz, with inbuilt electronic driver, high-efficiency LED module, minimum IP20 protection, polycarbonate/metal body, warm white / cool white light as required, complete with all mounting accessories, conforming to relevant IS standards.</p> <p>Make – Philips ,Osram ,Havells ,Wipro, Oreva ,Polycab, Orient , Surya, Halonix,Syska or equivalent makes conforming to BIS standards shall be accepted</p>
30	Supply of ELECTRIC WATER HEATER-GEYSER - Tank Capacity 25 Liter, 5star rated Material of Inner Container: Stainless Steel, Material of Outer Container: ABS, warranty: 3year,	<p>The cost covers supply of ELECTRIC WATER HEATER-GEYSER - Tank Capacity 25 Liter, 5star rated Material of Inner Container: Stainless Steel, Material of Outer Container: ABS, warranty: 3year. It should have,thermostat, indicating lamp, thermal cut out, drain plug, provision for vent pipe/pressure relief valve, non return valve & other accessories.</p> <p>Make- Orient, kenstar,Bajaj,Usha,Havells or equivalent makes conforming to BIS standards shall be accepted</p>
31	Fixing of storage type geyser 25litrs capacity.	<p>Fixing, installation and connection of 25-litre storage type electric geyser (supplied against item no. 31 of Schedule-4A)including wall mounting with suitable brackets/anchor fasteners, making plumbing and electrical connections with approved materials, testing for proper operation and ensuring leak-free performance, complete in all respects.</p>
B: Other electrical requirements for settlement area of quarters		
1	Supply of 7 mtrs height hot deep galvanized octagonal pole (single arm)	<p>The rate includes supply of 7 mtr height hot dip galvanized octagonal pole with single arm bracket as per IS:2629/IS:2633/IS:4759 standards having sheet thickness of 3 MM of make- Vakrangee, Bajaj/ Zenieth/TATA/Arya/Zenco Industrial Corpn/Shah Phylon/Philips orequivalent makes conforming to BIS standards shall be accepted . The single arm bracket of length 1500MM along with spigot shall be hot dip galvanized. The internal and external surface of the pole shall be galvanized with minimum coating thickness of 65 microns. The pole shall have camouflaged junction box having necessary terminal board with compression gland for</p>

		termination of incoming & outgoing supply cable. The pole shall have approximately top and bottom dia of 70/130 MM respectively and shall also supplied with foundation bolts 04 nos 'J' type of size 20 MM (EN8 grade). Anchor plate shall be of 3MM thickness, base plate of size 220X220X12MM approximate
2	Excavation of earth, provision of Foundation and erection of hot deep galvanized octagonal poles with aluminium& red oxide paint	The price shall cover the cost of transportation of 7 mtr height hot deep galvanized octagonal pole(supplied above) to the work site and casting of concrete foundation for erection of pole with aluminium& red oxide paint. The rate includes excavation of earth pit in any kind of soil and casting of PCC foundation (1000x1000x100 MM) ratio 1:4:8 at the bottom and over which RCC foundation (350x350x1200MM) ratio 1:2:4 shall be done. The top portion of the foundation shall be 300MM above the ground level. The J bolts shall be fixed in the RCC foundation as per the template size of the octagonal pole as per the direction of site in charge. The price shall also include back filling and dressing of earth and debris cleaning after completion of work in all respect.
3	Supply of junction box 300x350x125 mm size material thickness 1.5mm with 1 no. 6A HRC fuse with base and 1 no. TPN terminal block stud type suitable for 25 sqmm cable.	The street light junction box to be supplied shall be made out of 1.5 mm thick CRCA sheet steel powder coated exterior ,with gasket , hinged door with IP-55 protection or better ,mounting plate made of 2mm thick CRCA sheet steel , cable gland plate 2mm thick provided at bottom , with cam type locking arrangement & with brackets for pole mounting . The junction box should contain 1 no. 6A HRC fuse with base and 1 no. TPN terminal block stud type suitable for 25 sq mm cable. The dimension of the DB is 300 mm x350 mm x125 mm (WXHxD). The internal wiring shall be done by 2.5 sq-mm FRLS wire.
4	Fixing & connection of junction boxes	The street light junction box (supplied against item no. 3 of schedule-4 B) shall be fitted on the street light pole(s) at the place identified by the authorized representative of Sr. DEE(RS&G)/ BSP. The work include connection of incoming & outgoing cables on the terminals of the DB. All materials &labour required for fixing shall be supplied by the contractor. Make for copper wire: Polycab/Havells/KEI/Finolex/RR Kabel/Ultracab orequivalent makes conforming to BIS standards shall be accepted
5	Supply of LED street light Luminaries 45W complete with all accessories.	Supply of LED street light Luminaries 45W complete with all accessories. Detailed technical specification is enclosed as Annexure- II. Make -Philips ,Osram, Havells,Wipro, Syska, Oreva, Polycab, Orient ,Surya, Halonix, or equivalent makes conforming to BIS standards shall be accepted
6	Fixing & connection of street light luminaire supplied above.	The luminaries (supplied against item No: 5 of schedule-4B) shall be fixed on existing/newly erected Rail poles/SST poles/ wall of service buildings or at place as

		directed by authorized representative of Sr.DEE(RS&G)/BSP. Connection to the fittings shall be done through 2 core un-armoured 2.5 sq. mm. copper cable or 4 sq. mm aluminium cable drawn from junction boxes or from overhead line as per directives of site engineer. Any other minor items required for execution of above work shall be supplied by the contractor.
7	Supply of class A MS pipe/MS clamp for clamping the light fitting at suitable design and size.	The price shall cover supply of Class A MS pipe of suitable dia. For fixing in street light fittings & Supply of MS clamps size 25mm x 5mm. The quantity of MS pipe of suitable dia. & MS clamps shall be decided by the authorized representative of Sr.DEE (RS&G)/BSPs. The work also includes the fabrication works required for fixing the fittings into poles. After fabrication of pipe & clamps it shall be painted with red oxide primer & Aluminium paint.
8	Trimming of big branches above 15 cm.	Trimming of Big branches above 15 CM Diameter with contractor's labour & tools with sufficient protection not to damage any other railway material. The branches to be cut have to be decided by site engineer. The tree branches to be collected by the contractor & to be deposited at the place identified by the site engineer.
9	Trimming of small branches dia. Above 5 CM & less than 15 cm.	Trimming of small branches diameter Above 5 CM & less than 15 CM with contractor's labour & tools with sufficient protection not to damage any other railway material. The branches to be cut have to be decided by site engineer. The tree branches to be collected by the contractor & to be deposited at the place identified by the site engineer.
10	Disconnection of existing wiring.	The work consists of disconnection and removal of wiring/cable/box etc & handing over the materials to concerned authorized representative of Sr.DEE (RS&G)/BSP. Necessary care should be taken during Disconnection & dismantling work so that the cable may be obtained in its maximum length & in good condition. Boxes, DB shall be removed in such a manner that the usable component may not be damaged.
11	Construction of Cement Concrete foundation containing cement concrete on the proportion 1:3:6 of cement, sand & ball 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.
12	Supply of outdoor type Feeder pillar panel (for residential quarters distribution) 3 phase, 12 way. Incomer 250A MCCB TPN Outgoing (12+12+12)Nos = 36 Nos 63 A Cam lock fuse, make: Havells/equivalent (12Nos per phase) with busbars of suitable size as per ampere ratings.	<p>Supply of outdoor type Feeder pillar panel (for residential quarters distribution) 3 phase, 12 way. Incomer 250A MCCB TPN Outgoing (12+12+12)Nos = 36 Nos 63 A Cam lock fuse, make: Havells/equivalent (12Nos per phase) with busbars of size 30x6mm or suitable size as per ampere ratings as per the directive of the authorized representative of SR.DEE (RS&G)/BSP.</p> <p>Incomer:</p> <ul style="list-style-type: none"> • 1 No. 250A MCCB TPN (4 Pole). • Breaking capacity minimum 35 kA at 415V AC. • Complete with rotary operating handle and door interlock. <p>Outgoing Feeders</p> <p>The panel shall be provided with:</p> <p>Each outgoing feeder shall consist of:</p> <p>63A Cam-lock fuse unit complete. Cam-lock fuse units shall be shrouded type suitable for safe operation. Proper phase segregation and labeling shall be provided.</p> <p>Busbars:</p> <ul style="list-style-type: none"> • High conductivity electrolytic grade Copper busbars of size 30x6mm or suitable size as per requirement for 250A rating. • Separate neutral busbar of full size. • Earth busbar extending throughout panel length. • Busbars shall be adequately rated to withstand thermal and short circuit stresses. <p>*Note- Panel dimensions shall be adequate to accommodate all specified components, busbars, cable entries and future maintenance requirements, subject to site conditions and field requirements."</p>
13	Erection & commissioning of Feeder pillar panel (for residential quarters power distribution and other electrical requirements)	Installing, testing and commissioning of weatherproof feeder pillar panel for residential quarters (supplied against item no. 12 of schedule 4B) and allied electrical loads, fabricated from CRCA sheet steel, dust and vermin proof, complete with incomer/outgoing protection, copper busbars, internal wiring, gland plates, earthing

arrangements and all necessary hardware in accordance with relevant IS/IEC standards."

SCHEDULE-5

Electrical portion of works "Bilaspur Division: Provision of 20 Nos. Type-III Qtrs against replacement account in RTS, Wireless & Loco colony under Sr.DEN /Settlement/ BSP

A:Type-III quarters (per qrtr)

Item No.	Description of Items	Detailed technical specification/ Scope of work of items appearing in schedule- 5
1	Supply of Crosslinked Polyethylene Insulated Armoured Cable 4x16sqmm with Aluminiumconductor , suitable for rated voltage at 1100 volts grade, as per IS:7098 (Part 1): 1988 latest	Supply of Crosslinked Polyethylene Insulated Armoured Cable 4x16sqmm with Aluminiumconductor , suitable for rated voltage at 1100 volts grade, 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.
2	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]	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.
3	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
4	Laying of cable of in GI pipe including supply of all materials (including tGI. Pipe & except Cable). With supply of G.I. pipe dia. 50mm thickness min. 2mm	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.
5	Laying of cable in open air/concealed in wall with supply of all material.	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 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 done as per the directive of the authorized representative of Sr.DEE (RS&G)/BSP.
6	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 conforming 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 x 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.
7	Supply of electronic KWH meter (energy meter) 5-30 amps AC static 230 volt accuracy class-I	The price shall cover Supply of single phase AC static electronic kWh energy meter, current rating 5-30 Amps, operating voltage 230V \pm 20%, accuracy Class-1, conforming to IS 13779 / IEC standards, LCD display with backlight, LED indicators for energy pulse, tamper-proof polycarbonate enclosure, suitable for wall mounting, with facility for recording tamper events, complete in all respects. Makes: HPL, Secure Meters, Genus Power, Schneider Electric, L&T Electrical &Automation, C&S ELECTRIC or equivalent makes conforming to BIS standards shall be accepted
8	Fixing , connection & commissioning of above supplied	The cost covers fixing, connection and commissioning of single phase electronic kWh energy meter (supplied against item no. 7 of schedule 5A) including mounting on meter board/panel, making proper electrical terminations with suitable lugs, tightening of connections, providing necessary hardware, testing for proper functioning, sealing as per standard practice and handing over the installation in fully operational condition, complete in all

		respects. This also includes transportation of the material at site.
9	Plug and socket with mcb 25A metal clad box with metal plug and top	Supply of AC starter unit suitable for outdoor/indoor use, comprising 25A/16A, 230V, single-phase industrial type metal clad/polycarbonate plug and socket, complete with 16A/25A SP MCB of reputed make (such as Anchor/Havells/Schneider or equivalent), housed in IP55/IP65 rated weatherproof enclosure, with all necessary accessories, conforming to relevant IS/IEC standards and as per site requirements."
10	Fixing connection & commissioning of above	Installation/fixing of AC starter unit (supplied against item no. 9 of schedule 5A) including mounting on wall/structure, cable termination with glands/lugs, earthing, dressing of wiring, and testing for proper operation, complete as per the directive of the authorized representative of Sr.DEE (RS&G)/BSP
11	Supply of SPN Distribution board confirms to IS-13032 DBs are phosphatised and painted with epoxy polyster based powder paint, 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
12	Supply of Double pole isolator 40Amp	The price shall cover supply of Double pole isolator 40Amp Conformity of the specification: as per IS/IEC IS/IEC 60947-3 or latest No. of pole: 2 Rated voltage (in Volts): 240 V, AC Rated Current (in Ampere): 40 Instantaneous tripping current type: C Rated Short circuit capacity (in Ampere): 10000 Make: Siemens, Schneider, Havells, GE, Standard, Indoasian, Control & Switchgear, Legrand, HPL, Hager, L&T/ Lauritz Knudsen, ABB, Anchor by Panasonic, Polycab or equivalent makes conforming to BIS standards shall be accepted.
13	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.
14	Fixing, connection & commissioning of DB/bus-bar chamber supplied above.	The DB supplied (against item No: 11 of Schedule 5A) 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
5	15	<p>Supply of 9W LED retrofit lamp B22 holder base with polycarbonate body.</p> <p>The price shall cover supply of 9W LED Retrofit Lamp, B22 holder type, rated for 220-240V AC, 50Hz, with polycarbonate diffuser housing and aluminium heat sink, minimum efficacy ≥ 100 lm/W, PF ≥ 0.9, THD $\leq 20\%$, and average life $\geq 25,000$ burning hours Make -Philips ,Osram ,Havells ,Wipro, Syska ,Oreva, Orient, Surya, Halonix or equivalent makes conforming to BIS standards shall be accepted.</p>
	16	<p>Supply of ELCB 32 amps. 2 pole 300 MA sensitivity</p> <p>The price shall cover Supply of Earth Leakage Circuit Breaker (ELCB) 32A 2P 300mA, double pole, 32 Amps rating, 230V AC, 50Hz, with sensitivity of 300 mA, complete with DIN rail mounting, suitable enclosure, interconnections, accessories and all necessary hardware, conforming to relevant IS/IEC standards, as required at site.</p> <p>Make: Siemens, Schneider, Havells, Standard, Crabtree, GE, Indoasian, Control & Switchgear, Legrand, Hager, L&T, Eaton,ABB or equivalent makes conforming to BIS standards shall be accepted.</p>
6	17	<p>Fixing of ELCB 32 Amps. 2 pole 300 MA sensitivity.</p> <p>The ELCBs/RCCB (supplied against item nos. 16 of schedule-5A) shall be fixed at the location identified by authorized representative of Sr. DEE(RS&G)/BSP by the use of suitable bolts etc. supplied by the contractor. The connection & testing shall be done by contractor. All wires shall be connected with the use of proper lugs and proper connection with earth continuity conductor of 18 SWG PVC copper wire shall be made as per directives of authorized representative of Sr.DEE(RS&G)/BSP.</p>
	18	<p>Concealed wiring for the 6 Amps. Light, fan & 5 Amps socket with 1.5 sqmm. FRLS copper wire including supply of all materials</p> <p>The Concealed wiring for lights & fan,5Amps socket & 6A plug points shall be through PVC Pipe, heavy type ISI marked of size 20/25/32 mm. The wiring shall be done with PVC insulated stranded copper conductor 1.5 sq. mm 650/1100 volt grade FRLS type ISI marked as per directives of authorized representative of Sr.DEE (RS&G)/BSP. The wiring through walls shall pass through PVC pipes 20/25/32 mm size & heavy type ISI marked. Switch socket and board shall be supplied by the contractor. An earth continuity conductor of 18 SWG PVC copper wire shall be run all along the piping and shall be connected. For convenience, wiring for light & fan points shall be done through common PVC pipe & Earthing should be provided in earth point of 3/5 pin plugpoint. Make for PVC pipe- Polycab/Anchor/Finox/Bajaj/ Precision /Richa or equivalent makes conforming to BIS standards shall be accepted. Make for Switch/Socket - Havells brands/L&T/ Legrand/ Anchor/ ROMA/HPL. or equivalent makes conforming to BIS standards shall be accepted. Make for copper or equivalent makes conforming to BIS standards shall be accepted. wire: Polycab/Havells/KEI/Finox/RR Kabel/Ultracab. or equivalent makes conforming to BIS standards shall be accepted.</p>
	19	<p>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.</p> <p>The concealed wiring for 6-16 A plug points, individual or combined switch, socket & fuse shall be through 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</p>

		<p>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.</p> <p>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 Sub-circuits.	<p>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 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>
21	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 .</p>

		Surya, Halonix or equivalent makes conforming to BIS standards shall be accepted.
22	Supply of 20W LED tube light supply voltage 230V 50Hz built in electronic driver.	Supply of 20W LED tube light fittings complete with all accessories. Supply voltage 230V 50Hz built in electronic driver. Detailed technical specification is enclosed as Annexure-I Make - Philips, Osram, Havells, Wipro, Syska, Oreva, Polycab, Orient, Surya, Halonix, or equivalent makes conforming to BIS standards shall be accepted.
23	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.
24	Fixing of lights/fans supplied as above with supply of flexible wire to connection the nearest ceiling rose.	The retrofit lamp, bulkhead, recessed light, inverter batten, tubelight, ceiling fan, exhaust fan, call bell & other LED light (supplied against item no. 15, 21, 22, 23, 25, 26, 32 of schedule 5A) 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 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.
25	Supply of ding dong type call bell.	The ding dong call bell shall be suitable for use with 220 volt, 50 Hz. AC supply. one bell push shall be supplied along with the ding dong bell. Make: Anchor Roma, Legrand, GM Modular, Orient or equivalent makes conforming to BIS standards shall be accepted.
26	Supply of Exhaust fan 300 mm sweep complete with accessories.	Supply of Exhaust Fan non-Capacitor Type Sweep Size (mm):300, No. of pole: 4. Insulation of material class: B or better Make: Khaitan, Havells, Crompton Greaves, Usha, Philips, Polycab or equivalent makes conforming to BIS standards shall be accepted. Warranty period -2 yr
27	Supply of DP MCB 16 A flush mounting MCB complete with sheet steel enclosure, powder painted for use as main switch.	Supply of Miniature Circuit Breaker (MCB) DP 16 Amps penta flush mounting with sheet metal enclosure powder painted for use as main switch with ratings 250 Volts AC 50 Hz with breaking capacity 10 KA as per IS 8828-1996 IEC-60898-1 (To be furnished by manufacturer) having facilities for termination of Aluminum cable, fixing arrangement for mounting on steel/DIN rail. Make: Siemens, Schneider, Havells, Standard, Crabtree, GE, Standard, Indoasian, Control & Switchgear, Legrand, Hager, L&T, Eaton or equivalent makes conforming to BIS standards shall be accepted.



28	Fixing and connection of MCB DB supplied as above with supply of all material.	The MCB DB supplied (supplied against item no. 27 of Schedule-5A) shall be fixed at the location identified by site engineer by the use of 04 nos. bolts size 100mmx6mm supplied by the contractor. The connection & testing shall be done by contractor. All wires shall be connected with the use of copper lugs & clamping kits.
29	Concealed wiring for 20 Amps plug points with PVC pipe & PVC insulator copper conductor 4 sq mm size with supply of all material.	The concealed wiring for 20A plug points, shall be through PVC pipe of suitable size as required. PVC pipe shall be heavy type ISI marked. The wiring shall be with PVC insulated stranded individual copper conductor 4 sq. mm. The wires should be 650/1100 volt grade FRLS type of ISI marked, conforming to IS-694. A separate circuit should be drawn from the outgoing of a 20 Amps F.T. fuse provided on 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. Suitable Tees, bends, elbows, junction boxes as required shall be supplied and fixed by the contractor. Wherever required, wiring for light, fan & Plug points shall be done through common pipe. All materials shall be supplied by the contractor. In no case the PVC pipe shall be bend to change the direction of wiring. The work shall be done as per the directive of the authorized representative of Sr.DEE (RS&G)/BSP. Make for PVC pipe- Polycab/Anchor/Finolex/Bajaj/ Precision/Richa or equivalent makes conforming to BIS standards shall be accepted Make for Switch/Socket - Havells brands/L&T/ Legrand/ Anchor/ ROMA/HPL orequivalent makes conforming to BIS standards shall be accepted Make for copper wire; Polycab/Havells/KEI/Finolex/RR Kabel/Ultracab orequivalent makes conforming to BIS standards shall be accepted
30	Supply of ELECTRIC WATER HEATER-GEYSER - Tank Capacity 25 Liter, 5star rated Material of Inner Container: Stainless Steel, Material of Outer Container: ABS, warranty: 3year.	The cost covers supply of ELECTRIC WATER HEATER- GEYSER - Tank Capacity 25 Liter, 5star rated Material of Inner Container: Stainless Steel, Material of Outer Container: ABS, warranty: 3year. It should have, thermostat, indicating lamp, thermal cut out, drain plug, provision for vent pipe/pressure relief valve, non return valve & other accessories. Make- Orient, kenstar,Bajaj,Usha ,Havells or equivalent makes conforming to BIS standards shall be accepted
31	Fixing of storage type geyser 25litrs capacity.	Fixing, installation and connection of 25-litre storage type electric geyser (supplied against item no. 30of Schedule-5A)including wall mounting with suitable brackets/anchor fasteners, making plumbing and electrical connections with approved materials, testing for proper operation and ensuring leak-free performance, complete in all respects.
32	Supply of Mirror/decorative/bracket light 20W	The cost covers Supply of 20W Mirror / Decorative / Bracket type LED light fitting(as per requirement) . Color Temperature 6500K(+/-500 K), System Efficacy ≥ 100 lm/W ,Power Factor ≥ 0.95 , CRI ≥ 80 , THD $\leq 10\%$, Input Voltage 140V-270V AC, 50Hz, with inbuilt electronic driver, high-efficiency LED module, minimum IP20 protection, polycarbonate/metal body, warm white / cool white light as required, complete with all mounting accessories, conforming to relevant IS standards. Make - Philips ,Osram ,Havells ,Wipro, Oreva ,Polycab, Orient , Surya, Halonix,Syska or equivalent makes conforming to BIS standards shall be accepted

B: Other electrical requirements for settlement area of quarters, boundary wall rain water harvesting and other facilities

1	Supply of Submersible multistage pump capacity 5H.P., 3 phase Pump for 150 mm Dia bore well suitable for head range(47-118)meters	Supply of Submersible Multistage Pump Set, suitable for pump(OD)(50-150) mm. The pump shall deliver the required discharge at a head range(47-118)meters (depending on site conditions) and be driven by a suitable 5 HP, 3-phase, 415 V $\pm 10\%$, 50 Hz $\pm 3\%$ submersible motor. Make: Kirloskar / Texmo / CRI / KSB / Crompton / Lubi / V-Guard or equivalent makes conforming to BIS standards shall be accepted
2	Supply of Submersible openwell pump capacity 5H.P., 3 phase Pump for 300 mm Dia bore well suitable for head(22-38) meter,	Supply of Submersible Open Well Pump Set, suitable for installation in 300 mm (12") diameter open well. The pump shall be 5 HP, 3-phase, capable of delivering rated discharge at a head of (22-38) meters (as per site requirement). The pump shall be suitable for continuous duty operation and conform to relevant IS/IEC standards. Make: Kirloskar / KSB / Texmo / CRI / Crompton / Lubi / V-Guard / Oswal or equivalent makes conforming to BIS standards shall be accepted
3	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
4	Installation of pumps supplied	The pump sets (supplied against item no.1&2 of schedule 5B) shall be installed properly using suitable PVC insulated Galvanized Steel wire rope (supplied against item no.6 of schedule 5B)& PVC insulated flat copper conductors(supplied under item nos. 5 of schedule 5B) 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.
5	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
6	Supply of PVC insulated Galvanised Steel wire	Supply of PVC insulated Galvanized steel wire rope 114 strand, 8 mm size of good tensile strength confirming to relevant IS standard.

	rope 8 mm size as per details	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
7	Supply DB containing one TP MCCB 100 Amps as incoming & 2 nos. 63 Amps TP MCBs as outgoing complete with neutral bar din rail etc enclosed in a powder painted metallic enclosure.	Supply of DB with enclosure made out of CRCA steel sheet 1.2 mm thick mounting plate made using 2 mm thick CRCA sheet steel, cable gland plate 2 mm thick provided at the bottom, Cam locking arrangement, Single door, pole mounting bracket supplied separately, containing one 100 Amps TP MCCB breaking capacity 25 KA as incoming & 2 nos. TP MCB 63 Amps breaking capacity 10 KA. The DB should have suitable dimension to carry above items. The DB shall contain cable entry holes for cables. The DB shall also contain the cable terminal links, neutral link & earth bar. Make for MCB/MCCB: Siemens, Schneider, Havells, GE, Standard, Indoasian, Control & Switchgear, Legrand, HPL, Hager, L&T or equivalent makes conforming to BIS standards shall be accepted
8	Fixing, connection & commissioning of DB supplied as above.	The DB (supplied under item no. 7 of Schedule-5B) shall be fixed as per directive of authorized representative of Sr.DEE/RS&G/BSP. The incoming cable & outgoing cables shall be connected to the terminals & from the terminals to the incoming of the MCCB/MCBs. The material & labour required for fixing all above items shall be supplied by the contractor. The method of fixing & cable termination shall be done as per the directive of the authorized representative of SR.DEE (RS&G)/BSP. Make for copper wire: Polycab/Havells/KEI/Finolex/RR Kabel/Ultracab or equivalent makes conforming to BIS standards shall be accepted
9	Supply of TPN Distribution board confirms to IS-13032 DBs are phosphatised and painted with epoxy polyester based powder paint, neutral link, earth terminal & bus-bar double door 12 way	Supply of TPN Vertical Distribution Board double door 12 way phosphatised and painted with epoxy polyester based powder paint, sheet steel enclosure for flush/surface mounting fitted with copper Bus bars, Neutral links, Blanking plates as per IS 13032 & 8623 (Part-3) or relevant IS standard, universal mounting, Earth link, Earthing studs. The DB shall have rubber glands at cable entry. Make: - Havells, Anchor, L&T, Finolex, Wipro, Schneider Electric, ABB, IndoAsian.
10	Fixing and connection of MCB DB supplied with supply of all material.	The TPN Distribution board (supplied under item no. 9 of schedule 5B) shall be fixed as per directive of authorised representative of Sr.DEE/RS&G/BSP. The incoming cable & outgoing cables shall be connected to the terminals & from the terminals to the incoming of the MCBs. The material & labour required for fixing all above items shall be supplied by the contractor. The method of fixing & cable termination shall be done as per the directive of the authorised representative of SR.DEE(RS&G)/BSP. Make:- for copper wire: Polycab/Havells/KEI/Finolex/RR Kabel/Ultracab.
11	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.
12	Supply of TPN MCB 63 A capacity (C-curve)	Supply of Miniature Circuit Breaker (MCB) TPN, 415Volts AC 50HZ, with rated current 63 Amps (C curve) conforming to IS 8828-1996 IEC-60898-1 or relevant IS

		standard having facilities for termination of Aluminum cable, fixing arrangement for mounting on steel rail & rubber glands conform to relevant IS standards for safe and reliable operation Make: Siemens, Schneider, Havells, Standard, Crabtree, GE, Indoasian, Control & Switchgear, BCH, Legrand, Hager, Lauritz Knudsen, Eaton or equivalent makes conforming to BIS standards shall be accepted.
13	Supply of 7 mtrs height hot deep galvanized octagonal pole (single arm)	The rate includes supply of 7 mtr height hot dip galvanized octagonal pole with single arm bracket as per IS:2629/IS:2633/IS:4759 standards having sheet thickness of 3 MM of make- Vakrangee, Bajaj/Zenith/TATA/Arya/Zenco Industrial Corpn/Shah Phylon/Philips or equivalent makes conforming to BIS standards shall be accepted. The single arm bracket of length 1500MM along with spigot shall be hot dip galvanized. The internal and external surface of the pole shall be galvanized with minimum coating thickness of 65 microns. The pole shall have camouflaged junction box having necessary terminal board with compression gland for termination of incoming & outgoing supply cable. The pole shall have approximately top and bottom dia of 70/130 MM respectively and shall also supplied with foundation bolts 04 nos 'J' type of size 20 MM (EN8 grade). Anchor plate shall be of 3MM thickness, base plate of size 220X220X12MM approximate
14	Excavation of earth, provision of Foundation and erection of hot deep galvanized octagonal poles with aluminium & red oxide paint	The price shall cover the cost of transportation of 7 mtr height hot deep galvanized octagonal pole (supplied above) to the work site and casting of concrete foundation for erection of pole with aluminium & red oxide paint. The rate includes excavation of earth pit in any kind of soil and casting of PCC foundation (1000x1000x100 MM) ratio 1:4:8 at the bottom and over which RCC foundation (350x350x1200MM) ratio 1:2:4 shall be done. The top portion of the foundation shall be 300MM above the ground level. The J bolts shall be fixed in the RCC foundation as per the template size of the octagonal pole as per the direction of site in charge. The price shall also include back filling and dressing of earth and debris cleaning after completion of work in all respect.
15	Supply of junction box 300x350x125 mm size material thickness 1.5mm with 1 no. 6A HRC fuse with base and 1 no. TPN terminal block stud type suitable for 25 sqmm cable.	The street light junction box to be supplied shall be made out of 1.5 mm thick CRCA sheet steel powder coated exterior, with gasket, hinged door with IP-55 protection or better, mounting plate made of 2mm thick CRCA sheet steel, cable gland plate 2mm thick provided at bottom, with cam type locking arrangement & with brackets for pole mounting. The junction box should contain 1 no. 6A HRC fuse with base and 1 no. TPN terminal block stud type suitable for 25 sq mm cable. The dimension of the DB is 300 mm x 350 mm x 125 mm (WXHxD). The internal wiring shall be done by 2.5 sq-mm FRLS wire.
16	Fixing & connection of junction boxes	The street light junction box (supplied against item no. 15 of schedule-5 B) shall be fitted on the street light pole(s) at the place identified by the authorized representative of Sr. DEE(RS&G)/ BSP. The work include connection of incoming & outgoing cables on the terminals of the DB. All materials & labour required for fixing shall be supplied by the contractor. Make for copper wire: Polycab/Havells/KEI/Finolex/RR Kabel/Ultracab or equivalent makes conforming to BIS standards shall be accepted
17	Supply of LED street light Luminaries 45W complete with all	Supply of LED street light Luminaries 45W complete with all accessories. Detailed technical specification is enclosed as Annexure- II . Make - Philips, Osram, Havells, Wipro, Syska, Oreva, Polycab, Orient, Surya.

	accessories.	Halonix, or equivalent makes conforming to BIS standards shall be accepted
18	Fixing & connection of street light luminaire supplied above.	The luminaries (supplied against item No: 17 of schedule-5B) shall be fixed on existing/newly erected Rail poles/SST poles/ wall of service buildings or at place as directed by authorized representative of Sr.DEE(RS&G)/BSP. Connection to the fittings shall be done through 2 core un-armoured 2.5 sq. mm. copper cable or 4 sq. mm aluminium cable drawn from junction boxes or from overhead line as per directives of site engineer. Any other minor items required for execution of above work shall be supplied by the contractor.
19	Supply of class A MS pipe/MS clamp for clamping the light fitting at suitable design and size.	The price shall cover supply of Class A MS pipe of suitable dia. For fixing in street light fittings & Supply of MS clamps size 25mm x 5mm. The quantity of MS pipe of suitable dia. & MS clamps shall be decided by the authorized representative of Sr.DEE (RS&G)/BSPs. The work also includes the fabrication works required for fixing the fittings into poles. After fabrication of pipe & clamps it shall be painted with red oxide primer & Aluminium paint.
20	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.
21	Supply of DB containing one TP MCCB 100 Amps as incoming & 2 nos 63 Amps. TP MCBs as outgoing complete with neutral bar din rail etc enclosed in a powder painted metallic enclosure	Supply of DB with enclosure made out of CRCA steel sheet 1.2 mm thick mounting plate made using 2 mm thick CRCA sheet steel, cable gland plate 2 mm thick provided at the bottom , Cam locking arrangement ,Single door, pole mounting bracket supplied separately ,containing one 100 Amps. TP ,MCCB breaking capacity 25 KA as incoming & 2 nos. TP MCB ,63 Amps breaking capacity 10 KA .The DB should have suitable dimension to carry above items. The DB shall contain cable entry holes for cables . The DB shall also contain the cable terminal links, neutral link & earth bar. Make for MCB/MCCB: Siemens, Schneider, Havells, GE, Standard,Indoasian, Control & Switchgear, Legrand, HPL, Hager, L&T or equivalent makes conforming to BIS standards shall be accepted
22	Fixing of above DB.	The DB (supplied under item no. 21 of Schedule-5B) shall be fixed as per directive of authorized representative of Sr.DEE/RS&G/BSP. The incoming

		<p>cable & outgoing cables shall be connected to the terminals & from the terminals to the incoming of the MCCB/MCBs. The material & labour required for fixing all above items shall be supplied by the contractor. The method of fixing & cable termination shall be done as per the directive of the authorized representative of SR.DEE (RS&G)/BSP.</p> <p>Make for copper wire: Polycab/Havells/KEI/Finolex/RR Kabel/Ultracab or equivalent makes conforming to BIS standards shall be accepted.</p>
23	Erection & painting of departmentally supplied rail poles (13-8 Mtrs long)	<p>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. 20 of Schedule-5B given below.</p>
24	Cutting of Rail poles	<p>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.</p>
25	Transportation of rail pole from PWI godown/way site station to Work site .	<p>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 labor required for above transportation work shall be supplied by the contractor. The transportation shall be through vehicle of capacity 9 Ton.</p>
26	Supply of Stays & Guys	<p>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.</p>
27	Erection of Stays & Guys	<p>For stays and guys (supplied under item no. 26 of schedule-5B); 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</p>
28	Supply & fixing of C.I. clamp for top earth wire	<p>The price shall cover 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.</p>

	with all accessories like MS flat iron 50X8" size, nut - bolt, washer, reel insulator etc.	
29	Supply of G.I. wire 8 SWG size.	The price shall cover supply of 8 SWG GI wire of good tensile strength and confirming to IS: 280/1978 amended up to latest or relevant IS standard.
30	Drawing of earth wire.	The GI wire of 8 SWG (supplied under item no 29 of schedule 5B) has to draw on top of the rail pole with C.I. clamp as earth wire. The earth wire should be drawn with sufficient tension not to loose not to over tight. The earth wire should be connected to the entire earth pit provided for the purpose with same 8 SWG GI wire.
31	Supply of LT 5 pin vertical bracket for single circuit including back clamp, nut-bolt and washer.	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.
32	Fixing of LT 5 pin vertical bracket including back clamp, nut-bolt and washers.	The L.T. 5 Pin bracket (supplied under item no 31 of schedule 5B) 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.
33	Supply of LT insulator SHACKLE type 90X75 mm.	Supply of LT shackle insulator of size 90 mm x 75 mm of reputed make approved by Sr DEE (RS&G)/Bilaspur
34	Supply of G.I. Bolt Nut 4.5 inch x 1/2 inch with G. I. washers for fixing of LT insulators.	Supply of G.I. Bolt Nut 4.5 inch x 1/2 inch with G.I. strap/pipe 1/8 inch of reputed make approved by Sr DEE(RS&G)/Bilaspur for LT insulators SHACKLE type 90x75 mm.
35	Fixing of SHACKLE type insulator after release of old insulator if required.	Fixing of shackle insulators (supplied under item no 33 of schedule 5B) after on LT Bracket with supply of tools & labor. The shackle insulator shall be fixed on vertical brackets (supplied against item no 31 in schedule 5B) in proper manner.
36	Supply and fixing of vertical guarding with reel insulator	The price shall cover Supply & fixing of vertical guard wire after fabrication using GI wire (8 SWG) .It should provided on each LT Pole on the both side near the pole between Top conductor & bottom neutral with using reel insulator with the top phase conductor etc. as per the directive of authorized representative of SR.DEE (RS&G)/BSP. All tools, materials &labour required for the work shall be supplied by the contractor. The work shall be carried out as per procedure specified in IS: 5613 (Part1/2)-1985 amended up to date or relevant IS standard.
37	Supply of Aluminium conductor galvanized steel wire 50 sqmm	The ACSR conductor 50 sq.mm to be supplied shall be of 7 strands including one core conductor of steel. Each conductor shall have cross sectional area of 3.35 sq. mm.The ACSR conductor shall conform to IS : 398 (Pt-21/76) or

	reinforced size 6/3 35 MM ALUMN+1/3 35MM STEEL	with latest amendments with ISI marked. Make- Sterlite Technologies, Diamond Cables, Elecon Conductors, Hindusthan Vidyut Products, Arfin India, Lumino Ind., Oswal cables, KJV Alloy Conductors, Unity Conductor & Wire, RAJPUTANA CABLES AND CONDUCTORS or equivalent makes conforming to BIS standards shall be accepted
38	Drawl of 5 conductor LT line using ACSR conductor.	Drawing of ACSR conductor for LT line on the rail 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 site engineer. The rate is for 5 wire LT line in case of any variation proportionate entry shall be made on the measurement book.
39	Supply of LT Pin insulator	Supply of LT Pin insulator conforming to IS 1445 (1977) or with latest amendments with ISI marked. Material: Porcelain Warranty (in Years): 1 years. 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	Erection of LT pin insulator	Fixing of LT Pin insulator (supplied against item no. 39 of Schedule 5B) with pin supplied as above on rail poles as per the directive of authorized representative of SR, DEE (RS&G)/BSP.

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
Switch/Socket/modular board	Havells brands/L&T -Lauritz Knudsen Electrical and Automation (under Schneider Electric) / Anchor/ Legrand/ ROMA/HPL.
Copper wire	Polycab/Havells/KEI/Finolex/RR Kabel/Ultracab
Casing capping	Polycab /Anchor / Finolex/ Bajaj /Precision /Richa
Ceiling Rose	Polycab/Anchor/Panasonic/Finolex/ Bajaj / Precision /Richa
PVC pipe	Polycab/Anchor/Finolex/Bajaj/ Precision /Richa
MCCB/MCBs:	Siemens, Schneider, Havells, Standard, Crabtree, GE, Indosian, Control & Switchgear, Legrand, Hager, L&T-Lauritz Knudsen Electrical and Automation (under Schneider Electric), Eaton, Sigma, BCH
GI pipes	SAIL, JINDAL, Surya, TATA, Prakash, PSST
FRLS wire	Polycab/Havells/ KEI/Finolex/ RR Kabel/Ultracab/BCH

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.

ANNEXURE-I**LED TUBE LIGHT COMPLETE FITTING 18/20W.**

S. N.	Parameters	Specification
1.	Wattage	18/20W+10%
2.	Input Voltage	220V-240V,
3.	Operating Voltage	100V-300V AC
4.	Input frequency	45-55 Hz
5.	Input current	95 MA
6.	Power factor	>0.9
7.	Driver efficiency	>85%
8.	Luminous flux	1600 lm – 2000 lm
9.	Luminous efficiency	80-100lm/W
10.	Color temperature	Cool White (4000K-7000K)
11.	CRI (Color rendering index)	>=80
12.	Optics Used	Diffuser (Milky)
13.	Material for Diffuser	PC/PMMA
14.	Material for Housing	Polycarbonate
15.	Mounting option	Surface mounting
16.	Temperature rise	Temperature rise in Heat sink from ambient shall be 20°C
17.	Protections	Surge (Up to 3.0 KV) Open Loop Short Circuit Ingress (IP 20) >120°
18.	LED Beam angle	40,000 – 50,000 Hours.
19.	LED Life	0°C- 50°C
20.	Working Temperature	60 Months from date of commissioning or 72 Months from the date of supply whichever is earlier.
21.	Performance & warranty	
22.	THD (Total Harmonic Distortion)	Less than 15%

23.	Conforming to	IS:16102 (Part 1&2)/2012
24.	Report to be mandatory submitted along with the offer LM 79 Test report in respect of the luminaries test certificates should be from ILAC/MRA/KOLAS/NVLAP/EPA/NABL accredited manufacturer. 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.	
	Note: Minor changes in the above specifications of LED lights as per latest market scenario may be considered after taking the approval by Sr.DEE(RS&G)/BSP	

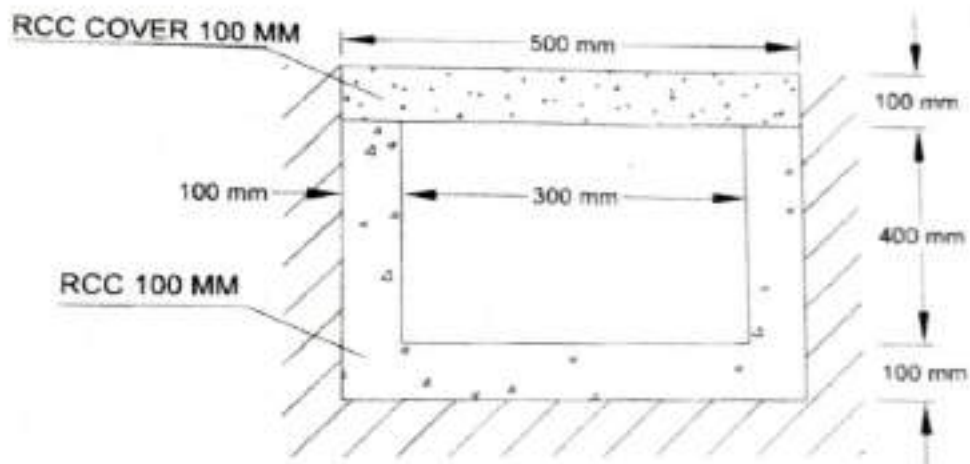
ANNEXURE-II

LED STREET LIGHT COMPLETE FITTING WITH LAMP 45 W		
S.N.	PARAMETERS	SPECIFICATION
1.	Wattage	45 W
2.	Input Voltage range	220-240 V
3.	Operating voltage range	100V-300V AC
4.	Power factor	>0.9
5.	Total Harmonic distortion (THD)	<15%
6.	Input frequency range	45-55 Hz
7.	Driver efficiency	>85%
8.	Luminous Flux	3000lm -4500 lm
9.	Colour Temperature	Cool White (6000K-7000K)
10.	CRI (Colour rendering index)	≥ 70
11.	Type of mounting	Pole Mount
12.	Materials used for LED Engine	Metal core PCB
13.	Materials of glass	Toughened glass
14.	Materials used for fixture	High grade Aluminium die cast
15.	Temperature rise	Temperature rise in heat sink from ambient shall be (30°C)
16.	Electrical protection	Open loop Short circuit Under voltage Over Voltage Surge Up to 4 Kv Isolation in driver I/p to O/p (1.5 kV)
17.	Environmental Protection	Ingress (IP 65) or better
18.	Type of LED	High power SMD (Surface Mounting Device)
19.	LED Beam angle	>120°
20.	LED Lumen	≥120 lumen/watt
21.	LED Life	40,000-50,000 hours. minimum
22.	Working temperature	0°C- 50°C

23.	Warranty Clause	60 Months from date of commissioning or 72 Months from the date of supply whichever is earlier.
24.	Note:- Supplied LED Luminaries shall conform to BIS: 16106 or IEC: 60598 and LED,s to BIS: 16105 or 16108 or IEC: 62471.	
25.	Report to be mandatorily submitted along with the offer. •LM 79 Test report in respect of the luminaries test certificate should be from ILAC/MRA/KOLAS/NVLAP/EPA/NABL accredited manufacturer. •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.	
	Note: Minor changes in the above specifications of LED lights as per latest market scenario may be considered after taking the approval by Sr.DEE(RS&G)/BSP	




SKETCH SHOWING COVERED CABLE TRENCH



SR. DEE (RS & G)

Handwritten signature



क्र. ELECT (RS & G)/PL/TECH/ 2023/

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

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

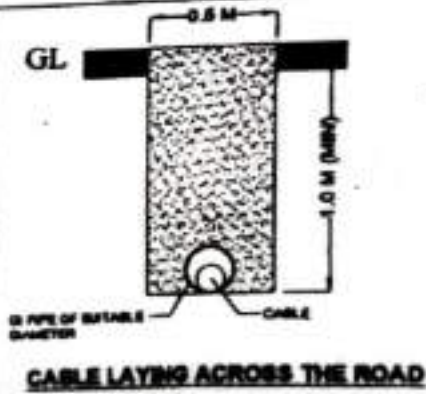
With reference to the above, the following guidelines are issued for underground laying of electrical cables.

- 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 ALONG THE ROAD

- 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



CABLE LAYING ACROSS THE ROAD

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

Handwritten signature

Handwritten initials