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Technical Capability:

The tender have to execute the work of electrical by engaging competent agency Complying norms of clause no. 7 (Part-II) of GCC-2022.

ADDITIONAL SPECIAL CONDITIONS OF CONTRACT (ELECTRICAL)

(The following conditions and explanatory notes should be considered while quoting the Price)

- 1) Wherever an item of work covers supply of materials and/or erection, such item shall include all bolts, nuts, locknuts & washer etc. of CORE/RDSO approved make to complete the item of work. No separate payment for fasteners is admissible.
- 2) Erection of any item of equipment whether supplied by purchaser or contractor will include testing, commissioning and bringing the equipment into operation to the satisfaction of the purchaser.
- 3) The basic quantities of components and materials required to make up a unit of work for selected items are indicated for guidance only. There may be minor variation to suit erection but no adjustment in prices shall be made on that account. Prices quoted shall be inclusive of all incidental charges viz. Freight, handling, taxes, duties, insurance if any and works contract tax as applicable etc.
- 4) Soon after the approval of drawing, the contractor shall assess the quantity of each material required for the work and submit his assessment, which will be verified and approved by purchaser, Both supply and erection shall be carried out accordingly. However, the exact quantity of supply of items will be decided by DY. CEE/CON/GRC or DEE/CON/ KGP and the procurement to be made on written order of DY. CEE/CON/GRC or DEE/CON/ KGP.
- 5) All the OHE/PSI components to be supplied by the contractor must be procured from CORE/RDSO approved regular source (Part-I) whether specifically mentioned or not in the schedule. All works shall be executed in accordance to the CORE/RDSO drawings, specifications & guidelines, if any. However any modified arrangement if in vogue in SE Railway or approved by CEE/CON/GRC, the work will be executed accordingly without any alterations in accepted rates.
- 6) If the contractor fails to return such materials, which stay unutilized after completion of works with him ,the cost of such materials will be recovered at twice the book rate of the contract (two times of the LOA rate) from the contractor.
- 7) Contractor shall get tested each insulator for tensile strength at Railway's testing machine at his own cost. However, no charge will be levied for usage of machine for testing.
- 8) Such material as have been issued to the contractor but left behind with him unutilized, shall be determined after reconciliation with the actual quantum issued vis-a-vis utilized for execution of the work and returned to the Railway depot at no extra cost in the same condition of the material as were issued to the contractor. If the contractor fail to return such materials, the cost of such material will be recovered at GCC conditions/Railway guidelines. The sfac custody of materials shall rely with the contractor.
- 9) The supply of products like LED light, Induction motor, Pump sets,Ceiling fan should be 5 star and above as per latest Bureau of Energy Efficiency (BEE) standard of star rating.
- 10) Based on availability for Electrification Works in lengthy sections, 25kV Electrification work for wiring purpose, wiring train/reel wagon/power car shall be provided by the Railway. Otherwise, the wiring work has to be done manually by the contractor arranging necessary tools & tackles without any additional cost.
- 11) No cost of transportation for the materials supplied by contractor from manufacturer's premises to work sites /Railway stores will be given by Railway. However, transportation cost will be given to the contractors for the materials being carried from Railway stores/ Railway owned materials at sites to different locations as per the instructions of DY. CEE/CON/GRC.
- 12) The Railway will not provide any drawings, specifications etc. required in connection with the execution of work as mentioned in the tender document. The contractor has to arrange all drawing and documents at his own cost from the office of CORE/RDSO on payment.
- 13) All materials to be supplied by the contractor have to be duly inspected by RITES/a Competent Railway official as appointed by DY.CEE/CON/GRC or DEE/CON/ KGP. No payment will be made unless the inspection certificate has been submitted along with supplier's original challans and test certificates. The materials have to be procured only from approved sources/reputed make as mentioned in the tender document with the prior approval of DY. CEE/CON/GRC .
- 14) The Railway has the right to supply any item if available with the railway even though it is covered

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under the scope of supply by the contractor. The quantities to that effect will be reduced from the scope of supply accordingly.

- 15) Any work failing under power block will be determined by the Railway Engineer and the power blocks will be arranged by the Railways supervisor. The contractor has to work with minimum power block with adequate arrangement of manpower, tools & plants and materials as decided by the Railway and penalty can be imposed to the contractor for exceeding of the arranged power block in a particular type of work or for not arranging adequate manpower, tools & plants and materials. Any dispute in this regard each only be decided by CEE(Con)/GRC and his decision will be final and binding on the contractor.
- 16) While drilling holes on the web of the non-track circuited rails for providing all types of traction bonds, gas cutter shall not under any circumstances be used. Ratchet hand/ Electric driven with 17.50mm drill bit shall only be used for drilling holes on the Rails.
- 17) The cost incurred in carrying out cube test for concrete foundation sample shall be borne by the contractor.
- 18) The tenderer is required to submit a bar chart for executing the work so as to complete the job in the specified period along with offer.
- 19) The tenderer must submit along with the offer an under taking clearly specifying the period by which all materials will be made available to the custody of the Railway, where equipments are to be supplied by the tenderer. Such under taking will be independent of the actual progress of the work as envisaged in the offer. The failure to supply equipment's or materials due to failure of tenderers, sub-contractor will not be accepted as excuse for delay in execution and for extension.

2. Payment terms:

- 2.1 On Account payment: On account payment will be made to the extent of 80% of supply rate of item after supply, inspection, testing and acceptance of material. In case separate rate of supply is not specified in the schedule, no payment will be made against supply for example foundation etc. Balance 10% of supply and 90% of erection portion shall be paid after erection to the satisfaction of Railways.

Final payment: Balance 10% will be released through final bills, after completion of all formalities like, submission of no claim certificate, submission of as erected drawing, rectification of defects/deficiencies noticed till such time, guarantee certificate and submission of Bank Guarantee or any other instrument which are acceptable as security deposit for warranty period of 10% of the contract value as per final variation statement. Security deposit for warranty period will be released after completion of warranty period on submission of no claim certificate as well as certificate for not going for any arbitration or court proceedings against this contract and rectification of defect/deficiencies during warranty period.

WARRANTY: The contractor shall warranty satisfactory working of the installation erected by him, for a period of **twelve months** from the date of provisional acceptance of each installation.

During this period the contractor shall make available an experienced Engineer and necessary equipment to attend to any defective installation and be responsible for satisfying himself that the purchaser's staff follow the prescribed procedure for operation and maintenance of equipment. The contractors shall bear the cost of all modifications, additions or substitutions that may be considered necessary due to faulty materials, designs or workmanship for the satisfactory working of the equipment.

During the period of guarantee the contractor shall be liable for the replacement of any parts which may be found defective in the equipment whether such equipments be of his own manufacturer or those of his sub-contractors whether arising from faulty design, materials, workmanship or negligence in any manner on the part of the contractor provided always that such defective parts as are not repairable at site are promptly returned to the contractor if so required by him at site (contractor's own expenses). The contractor shall bear the cost of repairs carried out on his behalf by the purchaser at site. In such a case the contractor shall be informed in advance of the works proposed to be carried out by purchaser.

If it becomes necessary for the contractor to replace or renew any defective portion of the equipment under the clause aforesaid then the provision of the said clause shall also apply to the portions of the equipments so replaced or renewed until the expiration of six months from the date of such replacement or until the end of the above mentioned period of twelve months, whichever is later, such extension shall not

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apply in case of defects of a minor nature, the decision of the Chief Electrical Engineer(Con) , S. E. Railway, Garden Reach, Kolkata being final in the matter, if any defects be not remedied within a reasonable time during the aforesaid period the purchaser may proceed to do the work at the contractor's risk and expense, but without prejudice to any other rights and remedies which the purchaser may have against the contractor in respect of such defects or faults.

The repaired or renewed parts shall be delivered and erected at site free of charges to the purchaser.

Any materials supplied shall also be covered by the provisions of this clause. The liability of the contractor under the guarantee will be limited to re-supply of materials made under clause 42 such supply shall be affected at the contractor's depot or in the event of closure of the depot at the stores depot of the engineer at site covered by the contract.

In case of materials supplied by the purchaser under Clause no 42 liability will rest on the contractor for failure on account of defects inherent in such materials.

EXPLANATORY NOTES TO SCHEDULE OF PRICES

Name of the Work:- Supply, erection, testing & commissioning for the Electrical works at Nimpura Reception yard to Kharagpur. PH-II.

Schedule- H

Item No. 1: Supply of the LED 2x18-20W T-8 indoor type Tube Light fitting with Aluminum housing having Luminous flux efficacy 120 Lm/ Watt,CRI75 for each tube light, with Constant current driver complete with lamp and all accessories.

Price includes the Supply of energy efficient LED 2x18/20W T-8 indoor type Tube Light fitting with Aluminum housing having Luminous flux efficacy ≥ 120 Lm/Watt,CRI ≥ 75 for each tube light, with Constant current driver complete with lamp and all accessories.

Make: Havells/Philips/Surya/Bajaj/other reputed make subject to prior approval of DY.CEE/CON/GRC.

Price shall also cover dismantling, removal and deposition of old/released light to store if any as per the instruction of Railway representative.

Item No. 2: Supply and erection of LED Lamp 7-9W,230V.

Price includes the Supply and erection of LED Lamp 7-9W,230V.

Make: Havells/Philips/Surya/Bajaj/other reputed make subject to prior approval of DY.CEE/CON/GRC

Item No. 3: Supply of the LED 1x18-20W T-8 indoor type Tube Light fitting with Aluminum housing having Luminous flux efficacy 120 Lm/Watt,CRI75 with Constant current driver complete with lamp and all accessories.

Price includes the Supply of energy efficient LED 1x18/20W T-8 indoor type Tube Light fitting with Aluminum housing having Luminous flux efficacy ≥ 120 Lm/Watt,CRI ≥ 75 for each tube light, with Constant current driver complete with lamp and all accessories. Price shall also cover dismantling, removal and deposition of old/ released light to store if any as per the instruction of Railway representative.

Make: Havells/Philips/Surya/Bajaj/other reputed make subject to prior approval of DY.CEE/CON/GRC.

Item No. 4: Supply of the Energy efficient (5-star rating) Ceiling fan of 1200mm sweep with BLDC Motor including electronic regulator/remote & suspension arrangement.

The rate quoted shall cover Supply of Energy efficient (5-star rating) Ceiling fan of 1200mm sweep with BLDC Motor including electronic regulator/remote and other accessories including wiring materials & its connection from ceiling rose to fan. Price shall also cover dismantling, removal and deposition of old/ released fan to store if any as per the instruction of Railway representative

Make :Atomberg /Polar/ Bajaj/ Havells/ reputed make Subject to prior approval of DY.CEE/CON/GRC.

Item No. 5: Supply of the Exhaust Fans, 250/300 mm.....

Supply of the Exhaust Fans, 250/ 300 mm sweep BLDC ,suitable for 230V, 50Hz, AC supply, Conformity to Indian Standard IS: 2312 (latest), No. of Poles 2,Insulation Material Class E, Standard installation accessories such as Frame, Legs Set, Rubber Clamps & Other Hardware - inclusive in the scope of supply. Price shall also cover dismantling, removal and deposition of old/released fan to store if any as per the instruction of Railway representative

Make: Atomberg /Polar/ Bajaj/ Havells / reputed make Subject to prior approval of DY.CEE/CON/GRC.

Item No: 6 Supply of the Distribution Board IP-43 wall mounting type with provision of 1x32Amp DP MCB....

The price includes the cost of Supply of the Double door Distribution Board IP-43 wall mounting type with provision of 1x32A, 10kA Double Pole MCB as Incoming & 4 x Single Pole MCB 6A-16A,10kA as outgoing as per IS/IEC 60898-1,housing in a SP&N Prewired 6-way CRCA steel sheets enclosure with Neutral Link, Earth bar & Din Rail etc with suitable size Flexible, Multistrand Cu wire of FR-LSH grade, appropriate spreader link for MCCB, Stud Terminals suitable for termination of incoming /outgoing cables,. All MCCBs and MCBs should be confirming to IS/IEC 60947-2: 2016 and IS/IEC 60898-1:2015 or latest.

Make- MCCB & MCB: Siemens / Schneider /ABB/ L & T/C&S/ reputed make Subject to prior approval of DY.CEE/CON/GRC.

Item No. 7: Supply of the LED Street Light Luminaire in Die Cast Aluminium Body with heat sink in aluminium extrusion,IP66, LED light 50Watt - 60 Watt,230V.

The cost covers Supply of Outdoor type LED street light fitting IP66, LED light 50Watt - 60 Watt, 230V, 5700K-6500K along with necessary accessories. Price shall also cover dismantling, removal and deposition of old/released light to store if any as per the instruction of Railway representative

Make: Havells/Philips/Surya/reputed make Subject to prior approval of DY.CEE/CON/GRC.

Item No. 8: Supply of Heat shrinkable indoor/outdoor end termination kit/Straight through cable jointing kit suitable for 11 KV XLPE 3C x 70/95/120/150/185/240 sq. mm. XLPE cable.

The price shall cover the cost of Supply of heat shrinkable indoor/outdoor end termination kit / Straight through cable jointing kit suitable for 11 KV XLPE 3C x 70/95/120/150/185/240 sq. mm. XLPE cable.

Make- Denson, 3M, Raychem or reputed brand/make Subject to prior approval of DY.CEE/CON/GRC.

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Item No. 9: Supply of Earth cone of 2.8 M long, 54.4mm inside dia and 60.2 mm outside dia GI pipe. The pipe having conically tapered at one end and having sufficient no. of holes of 12mm dia. including connection by 2x8.No SWG GI wire and making of earth cone sump box as per Drawing No.CEE/G/A3/P-150.

The price shall cover the cost of supply of earth cone of 2.8 M long, 54.4mm inside dia and 60.2 mm outside dia GI pipe. The pipe having conically tapered at one end and having sufficient no. of holes of 12mm dia. The complete earth cone shall be as per Railway Drg. No. CEE/G/A3/P-150, Alt.1. Make of pipe- Tata, Jindal / any reputed IS make, Subject to prior approval of DY.CEE/CON/GRC.

Item no. 10: Supply of GI pipe 3"/4" dia with socket as per site requirement for laying of cable/ vertical lifting.

The cost covers supply of GI pipe as per site requirement for laying/passing of cable across road/track/drain. Erection/Laying of GI pipe 3"/4"dia with socket/clamp as per site requirement for laying of cable/vertical lifting of cable. The cost also covers the Supply & Erection of necessary MS clamps, nuts, bolts & required masonry work.

Item no. 11: Supply, erection and testing of Maintenance free Earthing system comprising of 48.3 mm dia , 3 meter long earthing electrode of low carbon high tensile steel with 250 microns copper coating + carbon based conductive back fill compound & copper Clamp including suitable length earthing GI strip of 40 x 3 mm for termination works and construction of Earth sump box.

The price shall cover supply, erection, testing of Maintenance free earthing system (Duel pipe with flat technology) with 50 mm. outer dia and 25 mm. inner pipe dia , 2.5 mm pipe thickness, 3 meter long, 100 micron copper bonded both outer & inner with copper terminal of 40*6 mm. Pipe should be filled with Ground Enhancement carbon based crystals with RoHS certified. Carbon based back fill compound of 50kg per earthing electrode [Tested from NABL accredited LAB] and must be installed as directed by site supervisor/OEM representative to complete the work. Price for erection shall include the excavation of a pit on any kind of soil for earth electrode including installation of PVC pit cover 300x300x300 mm as for earth pit. The Price shall also include for making Earth bus at suitable places as directed by the Site-in charge. The work shall also cover supply of all materials and testing of earth resistance jointly with Railways and Contractor's representatives. The Pit of Earth should be as per the direction of the Railway representative at site. All the materials should be approved by the competent authority before procurement and supply. Make- True Power, Wallies, Earth agencies/ any reputed IS make, Subject to prior approval of DY.CEE/CON/GRC

Item no. 12: Supply of MCB 16-25A, 10Ka with 3/5 modular type socket with starter in a enclosure for A.C point similar to DHDUCDP0253016-25 with complete wiring.

The price shall cover the rates for Supply of MCB 25A 10KA with 3/5 pin 15A modular type socket with starter in a enclosure for A.C point similar to DHDUCDP0253016-25 with complete wiring. Make :L&T, Siemens, C& S. Havells reputed brand/make Subject to prior approval of DY.CEE/CON/GRC.

Item No. 13 Supply of Triple pole 11 KVx400A Capacity gang operated airbreak switch.....

The price shall cover the cost of supply of 11 KV triple pole gang operated air break switch as per IS:9921 complete with insulator, DO fuse, galvanized Steel Base, copper alloy Male-Female Contacts, Arcing Horns, M.S. square Rod for rocking operation, desired length of G.I. Pipe to operate the Air Break Switch from ground level with operating handle and locking arrangement. The operating handle shall be designed for easy lubrication. Make/Agency of the AB switch should be approved by the representative of DY.CEE/CON/GRC before supply.

Item No: 14 Supply of 11 KV LA.....

The price shall cover the cost of supply of 11 KV Lighting arrestor set 10KA breaking capacity [as per IS 3070: PART-3, IS:2633 & IS:5621] in set (1Set consists of 3 Nos. LA) with mounting hardware arrangement for mounting on horizontal channel of Double-Pole/4-Pole structure. Make OBLUM/LAMCO or equivalent reputed make Subject to prior approval of DY.CEE/CON/GRC before supply. Manufacturer's test certificate as per IS specification shall be submitted in duplicate.

Item No.15 : Supply & erection of 11 kV Pin Insulator as per IS ..

The price shall cover the cost of Supply & erection of 11 kV Pin Insulator as per IS :731 & Insulator fittings as per IS: 2486 (Part-I,II & III), having minimum creepage distance 240mm, complete set including bolts, nut, washers & insulator fittings etc. The price shall cover the cost of all materials required for the above work including labour charges.

Item No.16: Supply & erection of Disc Insulator as per IS ..

The price shall cover the cost of Supply & erection of 11 kV Disc Insulator as per IS :731 & Insulator fittings as per IS:2486 (Part-I,II & III), having minimum creepage distance of single insulator 430 mm, complete set including bolts, nut, washers & insulator fittings. The price shall cover the cost of all materials required for the above work including labour charges.

Item No.17: Supply of MS Sheet Cable Busbar Chamber IP-43 wall mounting type.....100A..

Price includes the Supply of MS Sheet Cable Busbar Chamber IP-43 wall mounting type 3 phase and neutral, 416 Volt with 4 Nos copper bus bar of 100A each (similar to Havells Cat.No.IHBC010004) for 4x50/70/95/120 sq.mm cable entry provision. Make: Havells/L & T/HPL/Hensel reputed make Subject to prior approval of DY.CEE/CON/GRC

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Item No.18: Supply of MS Sheet Cable Busbar Chamber IP-43 wall mounting type.....400A..

Price includes the Supply of MS Sheet Cable Busbar Chamber IP-43 wall mounting type 3 phase and neutral, 416 Volt with 4 Nos copper bus bar of 400A each all assembled in 14 SWG sheet steel, powder coated MS Box Enclosure (similar to Havells Cat.No.IHBC010004) for 4x120/150/240 sq.mm cable entry provision.

Make: Havells/L & T/HPL/Hensel reputed make Subject to prior approval of DY.CEE/CON/GRC

Item No.19: Supply of MS Sheet Cable Busbar Chamber IP-43 wall mounting type.....63A..

Price includes the Supply of Busbar Chamber IP-43 wall mounting type 3 phase and neutral, 416 Volt with 4 Nos copper bus bar of 63A each, all assembled in CRCA steel sheets enclosure (similar to Havells Cat. No.IHBC006304) for 4x25/35/50 sq.mm cable entry provision.

Make: Havells/L & T/HPL/Hensel reputed make Subject to prior approval of DY.CEE/CON/GRC.

Item No: 20 Fire fighting equipment 5 Kg. capacity (DCPT)

The price shall cover the cost of supply & erection of fire extinguisher/fighting equipment 5 Kg. capacity (DCPT) of reputed make conforming to IS;2171;latest version. The fire fighting equipment shall be suitable to take care of B&C class of fire. The extinguisher shall have 5 kg of dry powder with suitable capacity co2 cartridge so as to enable to douse both B&C type of fire.

Item No: 21: GI Flate for Earthing.....

The price includes the cost of supply of GI Flate of size 40 x 3 mm for Earthing of all structure and vital equipment including required nut, bolts & sockets etc as per site requirement for Earthing of vital equipment including required GI nut, bolts & sockets etc.

Item No: 22: Supply of bulk head fitting complete with LED lamp of 9-10 watt with all accessories.

The price shall cover supply of bulkhead luminaire with Energy saving new generation IP-66, 9-10W LED with opal diffuser or equivalent of approved make including wiring material for fixing. All the materials should be got approved from Rly authorized representative before procurement and supply. Price shall also cover dismantling, removal and deposition of old/released light to store if any as per the instruction of Railway representative.

Make: Havells /Philips/Surya/Bajaj /any reputed make Subject to prior approval of DY.CEE/CON/GRC.

Item No: 23: Supply of Service main DB consisting of one no. 5-30A electronics energy meter (LCD display), & RCCB 1x32A, 30 mA as per IS/ IEC 61008-1, housing in duly painted CRCA steel sheets enclosure with cable entry arrangement.

The price shall cover supply of Service main DB consisting of one no. 5-30A electronics energy meter (LCD display), & RCCB 1x32A, 30 mA as per IS/ IEC 61008-1, housing in duly painted CRCA steel sheets enclosure with cable entry arrangement with Neutral Link, Earth bar & Din Rail etc. including internal connection with suitable size Flexible, Multistrand Cu wire of FR-LSH grade, appropriate spreader link for MCCB, Stud Terminals suitable for termination of incoming /outgoing cables.,

All MCCBs and MCBs should be confirming to IS/IEC 60947-2: 2016 and IS/IEC 60898-1:2015 or latest. Make- MCCB, RCCB & MCB: Siemens / Schneider /ABB/ L & T/C&S/ reputed make Subject to prior approval of DY.CEE/CON/GRC.

Item No: 24: Supply of Street light panel with Astronomical/digital timer 24hrs, contactor rating 32A/TP MCB rating 40A/TPN, Max load 6 KW. (similar to Havells IHXTS0306A).

The price includes the cost of Supply of plinth/wall mounted complete set of 3phase Control box or Panel for Street Light conforming IS/IEC 60947-4-1, 24 hrs, contactor rating 32A/TP MCB rating 40A/TPN, Max load 6 kw.

Make- Street Light Panel: Havells/L&T/reputed make Subject to prior approval of DY.CEE/CON/GRC.

Item No: 25: Supply of Distribution Board Double door type IP-43 wall mounting type with provision of 1x63A Double Pole MCB as Incoming & 4 x 20A Double Pole MCB , as outgoing as per IS/IEC 60898 & 60947-2,housing in a SP&N Prewired MS Box Enclosure with Neutral Link, Earth bar & Din Rail etc.

The price shall cover supply of Distribution Board Double door type IP-43 wall mounting type with provision of 1x63A Double Pole MCB as Incoming & 4 x 20A Double Pole MCB , as outgoing as per IS/IEC 60898 & 60947-2, housing in a SP&N Prewired MS Box Enclosure with Neutral Link, Earth bar & Din Rail etc. including internal connection with suitable size Flexible, Multistrand Cu wire of FR-LSH grade, appropriate spreader link for MCCB, Stud Terminals suitable for termination of incoming /outgoing cables.,

All MCCBs and MCBs should be confirming to IS/IEC 60947-2: 2016 and IS/IEC 60898-1:2015 or latest. Make- MCCB & MCB: Siemens / Schneider /ABB/ L & T/C&S/ reputed make Subject to prior approval of DY.CEE/CON/GRC.

Item No: 26: Supply of LT DB comprising 1x63A ,16kATPN MCCB with busbar as incoming and 4x32A, 4x16A,10kA DP MCB as outgoing as per IS/IEC 60898 & 60947-2.

The price shall cover supply of LT DB comprising 1x63A ,16kATPN MCCB with busbar as incoming and 4x32A, 4x16A,10kA DP MCB as outgoing, housing in a SP&N Prewired MS Box Enclosure with Neutral Link, Earth bar & Din Rail etc. including internal connection with suitable size Flexible, Multistrand Cu wire of FR-LSH grade, appropriate spreader link for MCCB, Stud Terminals suitable for termination of incoming / outgoing cables.,

All MCCBs and MCBs should be confirming to IS/IEC 60947-2: 2016 and IS/IEC 60898-1:2015 or latest. Make- MCCB & MCB: Siemens / Schneider /ABB/ L & T/C&S/ reputed make Subject to prior approval of DY.CEE/CON/GRC.

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Item No: 27: Supply of Hot dip galvanized flange mounted type continuously tapered, polygonal cross section, 20 sided High mast (Grade BSEN 10025 - S355J0) of 20M normal mounting height with minimum diameters of 200mm at the top and 540 mm at the bottom, Minimum plate thickness 30mm, Base Flange diameter: 740mm, Flange thickness: 30 mm, PCD (Pitch Circle Diameter) : 650mm, complete with 3 point suspension system, head frame canopy, 6mm stainless steel wire ropes to carry up to 12.Nos luminaries complete mounting bracket & accessories, one length 2.5 sqmm 8 core flat electrical trail copper cable 1100V grade, foundation bolt, nut, washer and Top & Bottom templates, lightning arrestors, lantern carriage, double drum winch, 3-phase 2HP Motor, earthing arrangement etc suitable for withstanding basic wind speed of 180KMPH including suitable 3PH power tools, twin aviation obstruction neon light as well as manual arrangement for raising lowering of lantern carriage with all necessary accessories, including suitable size Outdoor stand mounted duly painted Feeder Pillar box made by 1.6mm thick CRCA steel sheets Enclosure with locking arrangement comprising 63A Four Pole MCB as incomer, timer, Triple Pole contactor for the Automatic switching of luminaries and power tool control with 9A contactors and raise lower push button.

The price shall cover Supply of Hot dip galvanized flange mounted type continuously tapered, polygonal cross section, 20 sided High mast (Grade BSEN 10025 - S355J0) of 20M normal mounting height with minimum diameters of 200mm at the top and 540 mm at the bottom, Minimum plate thickness 30mm, Base Flange diameter: 740mm, Flange thickness: 30 mm, PCD (Pitch Circle Diameter) : 650mm, complete with 3 point suspension system, head frame canopy, 6mm stainless steel wire ropes of 7/19 construction non corroddible stainless steel of AISI 316 grade to carry up to 12.Nos luminaries with two continuous length of stainless steel wire complete mounting bracket & accessories, one length 2.5 sqmm 8 core flat electrical trail copper cable 1100V grade, foundation bolt, nut, washer and Top & Bottom templates, lightning arrestors, lantern carriage, double drum winch, 3-phase 2HP Motor, earthing arrangement etc suitable for withstanding basic wind speed of 180KMPH including suitable 3PH power tools, twin aviation obstruction neon light as well as manual arrangement for raising lowering of lantern carriage with all necessary accessories, including suitable size Outdoor stand mounted duly painted Feeder Pillar box made by 1.6mm thick CRCA steel sheets Enclosure with locking arrangement comprising 63A Four Pole MCB as incomer, timer, Triple Pole contactor for the Automatic switching of luminaries and power tool control with 9A contactors and raise lower push button.

Make- High Mast -- Transrail Lighting Ltd/Bajaj/Utkarsh/Reputed make, subject to prior approval of DY.CEE/CON/GRC.

Make- MCB, Timer, Contactor: Siemens Ltd / Schneider/ ABB/ L& T /reputed make subject to prior approval of DY.CEE/CON/GRC.

Item No: 28: Supply of high intensity long range, energy saving die cast aluminium IP-66 flood light luminaries with 190-200 W high power LED as light source .

The cost covers supply of LED Flood Light Luminaire 190-200 Watt, 240V with secondary optics made in pressure die cast housing and heat sink in aluminium extrusion with IP66 5700K-6500K along with LED light & necessary accessories.

Make: Havells/Philips/Bajaj/ Surya/reputed make Subject to prior approval of DY.CEE/CON/GRC.

Item No: 29: Supply of Outdoor type LED light fitting (IP-66) for front lighting, 70-80 Watt, suitable for voltage 230V AC complete with driver and all other accessories.

The price shall cover the rates for supply of 70-80 W LED(IP- 66) with excellent thermal management along with IP66 protection complete with LED lamp, driver and all other accessories including its suspension arrangement for illumination for Front Lighting. Price shall also cover dismantling, removal and deposition of old/released light to store if any as per the instruction of Railway representative.

Make: Havells/Philips/Surya/ any reputed make Subject to prior approval DY.CEE/CON/GRC.

Item No: 30: Supply of recess mounted LED panel light 10-12 Watt with driver .

The price shall cover the rates for supply of recess mounted LED panel light 10-12 Watt with driver similar to Havells HEBLDPFPVNW010 model.

Make: Havells/Philips/Surya/Bajaj any reputed make Subject to prior approval of DY.CEE/CON/GRC.

Item No: 31: Supply of Electric storage water heater of 15L capacity geyser with 5 star rating similar to Havells GHWCNTIV015.

The price shall cover the rates for supply of Electric storage water heater of 15L capacity geyser with 5 star rating similar to Havells GHWCNTIV015.

Make: Havells/CG/ Bajaj/ any reputed make Subject to prior approval of DY.CEE/CON/GRC.

Item No: 32: Supply of Wire Mesh type Cable tray of Stainless Steel, 300mm width with SS fixing bracket, coupler & bend plate with suitable SS nut, bolt & washer etc.

The price shall cover the rates for supply of Wire Mesh type Cable tray of Stainless Steel, 300mm width with SS fixing bracket, coupler & bend plate with suitable SS nut, bolt & washer etc. All the materials should be got approved from Rly authorized representative before procurement and supply.

Make: Any IS make / reputed make Subject to prior approval of DY.CEE/CON/GRC.

Item No: 33: Supply of 1.1 KV 3.5/4 CORE 50/70/ 95/120 sq.mm LT straight through heat shrinkable kit.

The price shall cover the rates for supply of 1.1 KV 3.5/4 CORE 25 - 50 sq.mm LT straight through heat shrinkable kit & 3.5/4 CORE 70 - 120 sq.mm LT straight through heat shrinkable kit.

Make- Denson, Raychem/3M/ reputed make Subject to prior approval of DY.CEE/CON/GRC.

Item No: 34: Supply of IP65 (dust proof & jet water tight) junction box.....

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The price includes the cost of Supply of IP65 (dust proof & jet water tight) junction box, made of high quality thermoplastic having high grade internally embedded gasket made of Polyurethane, fire retardant & self extinguishing, JB size (L X B X H) of : 300mm X300mm X 170mm fitted with 1No.63A DP MCCB, with minimum 2.Nos 2C x70/50Sq.mm cable entry arrangement with TPN-100A, 4-Way cable connector.4.Nos cable entry of size 4 core 95 sq.mm arrangement. All MCCBs and MCBs should be confirming to IS/IEC 60947-2: 2016 and IS/IEC 60898-1:2015 or latest.

Make- Junction box : Legrand/Hensel /reputed make Subject to prior approval of DY.CEE/CON/GRC

Make- MCB: Siemens / Schneider /ABB/ L & T/C&S/ reputed make Subject to prior approval of DY.CEE/CON/GRC

Item No: 35: Supply of IP65 (dust proof & jet water tight) junction box.....

The price includes the cost of Supply of IP65 (dust proof & jet water tight) junction box, made of high quality thermoplastic having high grade internally embedded gasket made of Polyurethane, fire retardant & self extinguishing, JB having size (L X B X H) of :360mm X 500mm X 180mm fitted with 1No. 160A DP MCCB, with minimum 2.Nos 2Cx150Sq.mm cable entry arrangement with (TP-200A cable connector terminal) / loop in loop out terminal. All MCCBs and MCBs should be confirming to IS/IEC 60947-2: 2016 and IS/IEC 60898-1:2015 or latest.

Make- Junction box : Legrand/Hensel /reputed make Subject to prior approval of DY.CEE/CON/GRC

Make- MCB: Siemens / Schneider /ABB/ L & T/C&S/ reputed make Subject to prior approval of DY.CEE/CON/GRC.

Item No: 36: Supply of programmable time switch 24 Hrs code with contractor 3 pole with AC coil i.eAmp-32 make Havells or Similar.

The price includes the cost of Supply of programmable time switch 24 Hrs code with contractor 3 pole with AC coil i.eAmp-32 make Havells or Similar.

Make : Havells,L &T /C&S or reputed make Subject to prior approval of DY.CEE/CON/GRC.

Item No: 37: Supply of IP65 (dust proof & jet water tight) junction box,....

The price includes the cost of Supply of IP65 (dust proof & jet water tight) junction box, made of high quality thermoplastic, Insulated & corrosion free, acid and chemical resistant, having high grade internally embedded gasket made of Polyurethane, fire retardant & self extinguishing, JB having size (L X B X H) of :600mm X450mm X 250mm (approx) fitted with 2 No. TPN-100A, cable connector terminal / loop in loop out terminal with minimum 4.Nos 4Cx 70/50Sq.mm cable entry arrangement. All MCCBs and MCBs should be confirming to IS/IEC 60947-2: 2016 and IS/IEC 60898-1:2015 or latest.

Make- Junction box : Legrand/Hensel /reputed make Subject to prior approval of DY.CEE/CON/GRC

Make- MCB: Siemens / Schneider /ABB/ L & T/C&S/ reputed make Subject to prior approval of DY.CEE/CON/GRC.

Item No: 38: Design, manufacture, display of wall hanging / floor mounting type LED illuminated....

The price includes the cost of Supply ,design, manufacture, display of wall hanging / floor mounting type LED illuminated sign / direction boards in half elliptical shape. The display sheet shall be of unbreakable 040 translucent polycarbonate sheet of 2mm thickness. The text / graphics matter visibility shall not be less than 160 deg. The approved colour text and graphics shall be printed / router cut on monomeric calendered vinyl of 70 um thickness and shall be firmly pasted on display sheets. The mounting arrangement shall be hanging / wall mounting / ceiling mounting / pole mounting or floor mounting and as per site requirement. The signage shall have the integral mounting arrangements with sturdy structural frame and ACP cladding on the back side of the signage to avoid rusting and entry of dust. The LED board shall have uniform illumination with 4-8 W / sq.ft and with brightness more than ambient light. Suitable size end cap of 1.5 mm thick SS 304 should be provided. The details drawing, indicating of technical particulars, dimension, should be submitted for approval of DY.CEE/CON/GRC before the supply.

*Guidelines for signages are to be followed as per RB Ltr. No. 2023/SD-II/22/07/02, Dtd. - 15.05.2023.

Item No: 39: Supply of Automatic Supply change over color light signaling panels,160A.....

The price shall cover the rates for supply of auto changeover panel (Colour light Signal panel) 160A capacity for 25KVA AT conforming to RDSO specification No. TI/SPC/PSI/CLS/0020 with A&C slip No.1 to 4 or latest .

Make of MCB & MCCB: Siemens Ltd /Schneider/ABB/L& T /reputed make subject to prior approval of DY.CEE/CON/GRC.

Item No: 40: Supply of single phase Submersible pump set for use in bore wells.....

The price shall cover the rates for Supply of single phase Submersible pump set for use in bore wells for handling clear cold water having motor of wet type for continuous rating, Delivery 1.1KW/1.5HP with pump controller/ starter as per site requirement, including PP Rope 14mm, 3COREX4.Sq.mm.FLAT CABLES with flexible copper conductor as per site requirement or minimum 90m.

Make: Kirloskar Brothers/KSB/Calama/Havells/Reputed make, Subject to prior approval of DY.CEE/CON/GRC.

Item No: 41: Supply of LT Panel consisting with 4-pole MDO (Manually Operated Draw Out) type ACB 800 A, 50KA, Microprocessor.....

The price shall cover the cost of Supply of indoor type LT panel board IP 56 Conforming to IS/IEC 60947-1&2 or latest with copper busbar of 1000A, 4-pole MDO (Manually Operated Draw Out) type ACB 800 A, 50KA, Microprocessor Based - 02Nos. as incoming, 4-pole MF (Manually Operated Fixed) type ACB 800 A, 50KA, Microprocessor Based - 01 No. as buscoupler and FP 400A, 50kA microprocessor based MCCB -02 Nos, FP 250A, 50kA microprocessor based MCCB - 05 Nos, FP100A, 36kA microprocessor based MCCB -

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03Nos., FP MCB 63A, 10kA with 3PP (Protected Pole) – 02 Nos. as outgoing with suitable Cu.Bus bar, Automatic Fire Ball, Digital Multifunctional Meter in each Incoming & Outgoing MCCB, Capable to measure and display Voltage, Current, Frequency, Power factor, kW, kVAR, kWh, kVAh, kVARh etc., appropriate spreader link for MCCB and with necessary item for seal the cable entry and outgoing point. With selector switch, LED indication lamp on each incoming & outgoing circuit lamp with each MCCBs as per their rating, electronic Frequency meter, EF & OC relay, Digital voltmeter & ammeter etc. with selector switch, LED indication lamp on each incoming & outgoing circuit.
Painting: Powder Coated for CRCA Sheet Steel Base: GI/SS Channel for floor Mounting. (Minimum 75mm height) Internal Wiring: Copper Strips & Flexible Copper Cables of suitable rating as per IS Cables should be terminated through suitable lugs manufactured from tough pitched electrolytic copper of 99.9% purity and fire-retardant ferrules to grade UL-94 V0.

Cable ties used shall be of fire retardant to grade UL-94 V0

Busbar: Copper Busbar made of Electrolytic Copper with 99.9% purity, (R.Y.B.N).

Busbar Supporter: Epoxy type Insulator.

Earthing: Aluminium Earth bus of minimum cross section 50x6mm, shall run throughout the length at the bottom of the panel and shall have 02 earthing terminals.

Stainless Steel materials: All Hinges, Locks, Cable Glands and Fasteners used in the Panel.

Other details: Floor mounted, 'Detachable gland plate with glands at bottom for Cable Entry'. Panel

bottom will have suitable clearance from floor level for cable entry through glands. All visible parts of Panel (meters, indication lamp, switches, MCCB etc.) shall have aluminium Name Plate.

Automatic Fire Ball: Inside panel 1 no Automatic Fire Balls of spherical shape will be provided. Fire ball will have weight of extinguishing agent Dry Chemical Powder for Fighting A,B,C Class fires duly ISI marked UL listed not less than 0.5 kg but less than 1kg. Fire ball will be Thermally activated with activation temperature of 95 deg C. Location of installation shall be such that it should cover whole volume of the panel.

Insulating Mats Class B Insulating Mats to IS 15652 latest of 1.5M (minimum) length & width has to be provided in suitable nos. to cover whole length of panel.

Digital Multifunction Meter (DFM): 01 No. per Incoming & Outgoing ACB/MCCB. Three phase DFM shall have 4 or more Rows or Column LED/LCD display for display of Voltage, Current, Frequency, Power factor, kW, kVAR, kWh, kVAh, kVARh, ON-Hours, Phase Angle, and THD with Modbus RS 485 port having accuracy class of 0.5S, site adjustable CT secondary, Flush mounting, 128 samples/cycle, power supply 110V-230V AC/DC. Each line will display a group of different parameters.

LED Indicator Lamp: 1 set (R.Y.B) & 1 set (ON, OFF, TRIP) per ACB & MCCB.

The scope of work is inclusive of all the items of PCEE/SER/GRC Specification of LT Distribution Panel as applicable with Description No. SER/ELEC/GS/DESCRIPTION/LTPANEL/1/REV-1/JAN 2025 dated 05.02.2025.

Make-ACB, MCCB & MCB: Siemens / Schneider / ABB/ L & T/CG reputed make Subject to prior approval of DY.CEE/CON/GRC.

The details drawing, indicating of technical particulars, dimension, make etc should be submitted for approval of competent authority before the supply. Any Fabrication/modification if required will have to be carried out by the contractor as per site condition at his own expenses.

Item No: 42: Supply of 5M HDG (Hot Dip Galvanized) double arm.....

The price shall cover the cost of Supply of 5M HDG (Hot Dip Galvanized) double arm Octagonal Pole with cable junction compartment Insulated Cable Connector 4-way and SP 6A MCB, Pole top dia.70mm, bottom dia. 130mm, sheet thickness 3mm, base plate dimensions (L X B X T)-200mm X 200mm X 12mm with 1000 mm long double arm as per IS 2062: 2011 and foundation bolts etc including TS-600 grade J-type M20x600 mm long foundation bolts along with required quantity of templates for the pole & flush door 0.5m above the base plate consisting GI sheet for MCB & stud mounting, 1.Nos MCB(SP) of 6.Amps & stud type terminal block(3PH+N) suitable for loop-in loop- out of armoured cable.

Make- pole -- Transrail Lighting Ltd/Bajaj/Utkarsh/Reputed make, Subject to prior approval of DY.CEE/CON/GRC.

Item No: 43 : Supply of painted outdoor pillar box made of 2mm thickness sheet steel, rust protected, powder coated with single door & locking arrangement as per IP-54, consisting with FP MCCB 250A, 50kA Microprocessor Based.....

The price shall cover the cost of Supply of painted outdoor pillar box made of 2mm thickness sheet steel, rust protected, powder coated with single door & locking arrangement as per IP-54, consisting with FP MCCB 250A, 50kA Microprocessor Based - 01 No. as incoming and FP MCCB 100A, 36kA Microprocessor Based - 02 Nos., FP MCCB 63A, 36kA Microprocessor Based - 04 Nos.as outgoing with suitable Cu. Bus-bar, Digital Multifunctional Meter in each Incoming & Outgoing MCCB, Capable to measure and display Voltage, Current, Frequency, Power factor, kW, kVAR, kWh, kVAh, kVARh etc., appropriate spreader link for

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MCCB and with necessary item for seal the cable entry and outgoing point including internal connection with suitable size Flexible, Multistrand Cu wire of FR-LSH grade, appropriate spreader link for MCCB, Stud Terminals suitable for termination of incoming /outgoing cables.

All MCCBs and MCBs should be confirming to IS/IEC 60947-2: 2016 and IS/IEC 60898-1:2015 or latest. Make- MCCB & MCB: Siemens / Schneider /ABB/ L & T/CG reputed make Subject to prior approval of DY.CEE/CON/GRC.

The scope of work is inclusive of all the items of PCEE/SER/GRC Specification of LT Distribution Panel as applicable with Description No. SER/ELEC/GS/DESCRIPTION/LT PANEL/1/REV-1/JAN 2025 dated 05.02.2025.

The details drawing, indicating of technical particulars, dimension, make etc should be submitted for approval of competent authority before the supply. Any Fabrication/modification if required will have to be carried out by the contractor as per site condition at his own expenses.

Item No: 44 : Supply of Cable loop box (of fibre body) for.....

The price shall cover the cost of Supply of Cable loop box (of fibre body) for 3-Phase incoming and outgoing connection consists of 3-Phase and neutral terminal and 15/16 Amps K-fuse as per relevant ISS, with suitable bridge arrangement of size: 240mmx 140mm x 100mm and all other accessories with cable entry provision.

Make: Havells/L & T/HPL/Hensel/ reputed make Subject to prior approval of DY.CEE/CON/GRC.

Item No: 45 : Supply of Industrial Plug & Socket of capacity: 32 A,.....

The price shall cover the cost of Supply of Industrial Plug & Socket of capacity: 32 A, 5 Pin, 3P+N+E with 32A,10kA FP MCB with 3PP (Protected Pole)- 01No. and Plug and Socket Distribution Board with TPN Connector in Enclosure. Power socket should be assembled in a Rain proof, high quality Thermoplastic Polycarbonate IP-66/67 dust & jet water proof, corrosion, weather safe ,acid and chemical resistant, fire retardant, with internally embedded gasket box. All MCCBs and MCBs should be confirming to IS/IEC 60947-2: 2016 and IS/IEC 60898-1:2015 or latest.

Make of MCB: Siemens /Schneider/L&T/ABB or reputed make Subject to prior approval of DY.CEE/CON/GRC

Item No: 46 : Supply of VTP & N 8-Way DB (Double Door) consisting with FP 100A, 36kA.....

The price shall cover the cost of Supply of VTP & N 8-Way DB (Double Door) consisting with FP 100A, 36kA Microprocessor Based MCCB - 01 No. as incoming and TP MCB 63A, 10kA- 6 Nos. as outgoing with Cu. bus-bar, Neutral links, Earth bar, cable gland, appropriate spreader link for MCCB etc including internal connection with suitable size Flexible, Multistrand Cu wire of FR-LSH grade, appropriate spreader link for MCCB, Stud Terminals suitable for termination of incoming /outgoing cables.

All MCCBs and MCBs should be confirming to IS/IEC 60947-2: 2016 and IS/IEC 60898-1:2015 or latest.

Make- MCCB & MCB: Siemens / Schneider /ABB/ L & T/CG reputed make Subject to prior approval of DY.CEE/CON/GRC.

Item No: 47 : Supply of TP&N 4-Way DB (Double Door) consisting with FP MCB 63A.....

The price shall cover the cost of Supply of TP&N 4-Way DB (Double Door) consisting with FP MCB 63A, 10kA with 3PP (Protected Pole) - 01 No. as incoming and SP MCB 32A, 10kA- 8 no. or DP MCB 32A, 10 kA- 4 Nos. as outgoing with bus-bar, Neutral links, Earth bar, cable gland etc including internal connection with suitable size Flexible, Multistrand Cu wire of FR-LSH grade, appropriate spreader link for MCCB, Stud Terminals suitable for termination of incoming /outgoing cables.

All MCCBs and MCBs should be confirming to IS/IEC 60947-2: 2016 and IS/IEC 60898-1:2015 or latest.

Make- MCCB & MCB: Siemens / Schneider /ABB/ L & T/CG reputed make Subject to prior approval of DY.CEE/CON/GRC.

Item No: 48: Supply of Switch fuse unit (rewireable type) 415V TP with Neutral link capacity 63A.

The price includes the cost of Supply of complete set of Switch fuse unit (rewireable type) in sheet steel enclosure, capacity 63A, 415V TP with Neutral link. Price shall also cover rain shed protection cover for switch wherever erection done at outdoor to protect from water ingress.

Make-Havells/HPL/ L&T Subject to prior approval of DY.CEE/CON/GRC.

Item No: 49: Supply of Switch fuse unit (rewireable type) 415V TP with Neutral link capacity 100A.

The price includes the cost of Supply of complete set of Switch fuse unit (rewireable type) in sheet steel enclosure, capacity 63A, 415V TP with Neutral link. Price shall also cover rain shed protection cover for switch wherever erection done at outdoor to protect from water ingress.

Make-Havells/HPL/ L&T Subject to prior approval of DY.CEE/CON/GRC.

Item No: 50: Supply of FP 125 Amps, 35kA Microprocessor Based MCCB.....

Price includes the rates for Supply of FP 125 Amps, 35kA Microprocessor Based MCCB in sheet steel enclosure with cable entry provision through cable gland ,lugs, spreader link. Price shall also cover rain shed protection cover for box wherever erection done at outdoor to protect from water ingress.

Make: Siemens Ltd /Schneider/ABB/L& T /reputed make subject to prior approval of DY.CEE/CON/GRC.

Item No: 51: Supply of FP 200 Amps, 36kA Microprocessor Based MCCB.....

Price includes the rates for Supply of FP 200 Amps, 36kA Microprocessor Based MCCB in sheet steel enclosure with cable entry provision through cable gland ,lugs, spreader link. Price shall also cover rain shed protection cover for box wherever erection done at outdoor to protect from water ingress.

Make: Siemens Ltd /Schneider/ABB/L& T /reputed make subject to prior approval of DY.CEE/CON/GRC.

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Item No. 52 : Supply & erection of Sand bucket/ Fire buckets complete set as per IS : 2546 (set of Four nos. of 9 litre capacity) with one no. stand.

The price shall cover the cost of Supply & erection of Sand bucket / Fire buckets complete set as per IS : 2546 (set of Four nos. of 9 litre capacity) with one no. stand.
Make: Any IS approved.

Item No: 53: Insulated rubber mat 2m x 1m x 2cm

The cost shall include supply & erection of Insulated rubber mat 2m x 1m x 2cm of class B as per relevant IS-15652.

Item No: 54: Supply of Schematic Diagram in original along with 06 copies.....

Supply of Schematic Diagram in original along with 06 copies on A-0 papers of different locations showing superimposition of cable route, HT/ LT panels, transformers, location of tubular poles and all other electrical items and works. The price shall cover cost towards preparation and submission of wiring and power supply diagram for various station buildings. The contractor shall have to submit 1 set of A4 size drg (colour) as draft copy for checking in paper. After checking and approval of the drg. by competent authority, 6 sets ammonia copies and one copy in tracing should be submitted to the competent authority for reference. After completion of the work, "as erected drawing" in tracing & RTF along with 6 sets ammonia copies should be submitted by the contractor to the competent authority as final drawing.

Item No: 55: Supply & erection of Early Streamer Emission (ESE) Lightning Arrestor/ Protection system as per NFC 17-102 suitable for an apartment/building upto G+6 storied along with all necessary accessories such as Mounting Base, Conductor Shackle, Down Conductor, Earthing system, Lightning event counter etc.

The price includes the cost of Supply & erection of Advance ESE Lightning Arrestor/protection system Copper-Clad Steel EarlyStreamer Emission (ESE) LightningProtection System, Length 200centimeter (more than 55m radius protection) as per IS/IEC 62305 used to provide information no of lightning strikes which our lightning protection system has safely discharged with supply & erection of Air terminal, comprising with 3m Mounting Mast, guywire and base plate, Conductor clips, clamps and holdfasts, Bimetallic connection components, base plate and insulator, 25mm e-connector and Maintenance free Earthing system etc

Specifications:

- Very high grade stainless steel material body, 1000 mm long and 4.8 Kg nett weight with pointed tip
- Based on active early streamer emission principle and consists of ion generator
- Early streamer warning time of 63 microseconds
- METU electrical & electronics test report as per NFC 17-102 2011 standard
- In each lightning conductor serial number, Model no., CE mark, hologram & manufacturer name is available. packed inside printed carton for each piece
- Every lightning conductor carry 30 years warranty. certificate is issued from the manufacturer
- Internal last inspection report of manufacturer will be provided with every serial numbered lightning arrester, if required
- Sigma test report
- QA technical conformity certificate
- TS EN ISO 9001:2008 certificate
- CE certification
- Designed as per NFC17-102 standard which meets all lightning conductor standards
- Suitable for all types of lightning discharges (negative, positive or lateral)
- Suitable for all whether and climatic conditions and can be used in any terrain
- No use of battery or power source is required
- Digital Lightning Event Counter with power source of 9 V battery.

Elevation rod

the advance lightning conductor height may be increased by means of an elevation rod of gi/ ss/ frp with gi/ aluminium.

The lightning conductor tip should be at least 2 meters higher than the highest point of the building that it protects, including antenna, cooling towers, roofs, tanks, etc.

the down conductor is attached to the advance lightning conductor by a connecting system located on the support rod. This connecting system consists of suitable mechanical devices providing long-lasting contact. The down conductor should comply with the data as below

down conductor

material

remarks

minimum dimensions

bare/tin -plated electrolytic copper recommended for its good conductivity and corrosion resistance

strip 30 x 2mm

round section 8mm dia

18/10-304 stainless steel

recommended in certain corrosive environments

strip 30 x 2mm

round section 8mm dia

a 5/1 to be used on aluminum surfaces (cladding, curtain walls)

strip 30 x 3mm round section 10mm dia The details drawing, indicating of technical particulars, dimension, make etc should be submitted for approval of DEE/CON/KGP before the supply.

Make-Sabo or similar with prior approval of DY.CEE/CON/GRC.

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Item no. 56: Supply of Residual Current Device with Socket 16Amp.with Steel Enclosure (SRCD DBOX) for Geyser point. (similar to Havells Cat. No.Havells SRCD WOCB Dboxx Steel Encl).

The price shall cover the rates for Supply of Residual Current Device with Socket 16Amp.with Steel Enclosure (SRCD DBOX) for Geyser point. (similar to Havells Cat. No.Havells SRCD WOCB Dboxx Steel Encl).

Make :L&T, Siemens, C& S. Havells reputed brand/make Subject to prior approval of DY.CEE/CON/GRC.

Item no. 57: Supply of Ding Dong Door Bell.

The price shall cover the supply of Call bell for the building.

Make :Anchor,Roma,Cona reputed brand/make Subject to prior approval of DY.CEE/CON/GRC.

SCHEDULE - I

Item No 1 – Erection, testing & commissioning of Outdoor type copper wound, oil cooled transformer .

Price includes of erection, testing and commissioning of transformer 250 kVA/ 500kVA, 11KV/0.416--0.433 KV, 6.0kv /415 v outdoor type on the plinth and connection of HT terminal with suitable jumpers and connector and LT terminals of transformer with cable and other accessories

*Necessary tools/ropes/man power are to be arranged by the Contractor. The cost also includes crane charges if required as per site condition. Price also includes the supply & erection of proper size cable terminal lugs duly crimped cable gland etc. The erection work includes earthing of Neutral terminal and body of the transformer separately with appropriate GI flat complying with IE rules. Filtration of transformer oil, reconditioning of silica gel in the breather and conducting of all pre - commissioning test before commissioning of transformers.

The rate shall also cover the cost of all pre-commissioning test of the transformer as per CEGE guide line for EIG of Sub-Station on site at the time of commissioning. (, to be done in presence of representative of DY.CEE/CON/GRC. The rate shall also cover the cost of supply & erection of all jumpers, connectors, clamps, enameled number plates, nuts, bolts,& erection of GI earth flat etc as per requirement of site condition for commissioning of transformers. (Transformer will be supplied by Railway)

Item No: 2 Erection, testing & commissioning of 11kV VCB panel

Erection, testing & commissioning of 11kV VCB with panel with 01 No VCB of capacity 3PH, 11kV, 630 Amps, motor and manually controlled spring charged mechanism, complete with CT, PT, & protective relays, tri-vector meter, pf meter, heater circuit, annunciation, status indicator, hooter/alarm, including all other associated accessories with PVC insulated copper Bus bar of 1000 Amps capacity including all other associated accessories , including shifting, necessary masonry work, making of panel/cable duct. The ratio of concrete for cable duct 1:3:6. (Concreting cost is excluded) loading & unloading of panel along with supply & erection of all types of nut and bolts, MS channel angles etc. The HT panel assembly shall be earthed with 40x3 mm size GI flat. The price also includes the cost of required modification for bus bar on VCB, requisite nuts & bolts for commissioning of the panel necessary item for seal the cable entry points and necessary accessories to complete job with all other Civil work as per site requirement. Incoming and outgoing cable entry point shall be on bottom side. Only Stainless Steel (SS) clamps, fasteners, nut-bolts to be used for fixing purpose. The rate shall also cover the cost of all pre-commissioning test of the 11KV HT Panel, to be done in presence of representative of DY.CEE/CON/GRC and test certificate to be submitted in triplicate in prescribed Proforma as required for EIG. (VCB will be supplied by Railway). (The cost of earth cone, earthing flat & concerting of duct is excluded).

Item No: 3: Supply & erection of 110 mm or higher dia. HDPE pipe.....

The rate covers the Supply & erection of 110 mm or higher dia. HDPE pipe of grade PE-100 as per IS 4984: 1995 for HDD requirement including laying and jointing of HDPE Pipe with suitable size couplers, plugs, end caps, spacer, T band etc. with min depth of 3 mtrs/ as per the site conditions with proper tools, for cable running applications. Cost included for erection and commissioning of HDPE pipe duly undertaking jointing with required suitable size couplers, plugs, end caps, spacer, T band etc. as per the site conditions with proper tools, for cable running applications. HDPE pipe to be of AKG, Finolex, Flowmax, Precision or reputed make.

Item No: 4: Supply & erection of 160 mm or higher dia. HDPE pipe.....

The rate covers the Supply & erection of 160 mm or higher dia. HDPE pipe of grade PE-100 as per IS 4984: 1995 for HDD requirement including laying and jointing of HDPE Pipe with suitable size couplers, plugs, end caps, spacer, T band etc. with min depth of 3 mtrs/ as per the site conditions with proper tools, for cable running applications. Cost included for erection and commissioning of HDPE pipe duly undertaking jointing with required suitable size couplers, plugs, end caps, spacer, T band etc. as per the site conditions with proper tools, for cable running applications. HDPE pipe to be of AKG, Finolex, Flowmax, Precision or reputed make.

Item No: 5: Erection and installation of wall hanging/ floor mounting type LED illuminated sign / direction boards in half elliptical shape.

The rate covers the cost of erection and installation of wall hanging/ floor mounting type LED illuminated sign / direction boards in half elliptical shape. mounting arrangement shall be hanging / wall mounting / ceiling mounting / pole mounting or floor mounting and as per site requirement. The signage shall have the integral mounting arrangements with sturdy structural frame and ACP cladding on the back side of the signage to avoid rusting and entry of dust. Suitable size end cap of 1.5 mm thick SS 304 should be provided.

Guidelines for signages are to be followed as per RB Ltr. No. 2023/SD-II/22/07/02, Dtd. - 15.05.2023.

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Drawing to be approved by Dy.CEE/CON/GRC or authorized representative.

Item No: 6: Erection, testing & commissioning of FP 125 Amps MCCB,FP 200 Amps MCCB, main Switch fuse unit (rewireable type) 415V TP in sheet steel enclosure, 63Amps./100 Amps including necessary masonry work and supply & fixing of all types of cable gland, cable sockets, lugs, requisite nuts & bolts, with rain shed protection etc .

Price includes the cost of Erection of commissioning of FP 125 Amps MCCB,FP 200 Amps MCCB, main Switch fuse unit (rewireable type) 415V TP in sheet steel enclosure, 63Amps./100 Amps on a wooden/ fibre board or as per direction of site Engineer including necessary masonry work, cable termination, with supply and erection of all types of board, frame, cable gland, lugs, nut and bolts etc as required to complete the work. Only Stainless Steel (SS) fasteners, nut-bolts to be used for fixing purpose and all wiring connections are to be done with provision of Pin Type Cu Terminal End Lugs as per size of cable.

Item No: 7: Fixing and commissioning of Cable loop box (of fibre body) for 3-Phase incoming and outgoing connection consists of 3-Phase and neutral terminal and 15/16 Amps K-fuse and all other accessories with proper termination of cables through glands and fixing with 25 X 3 mm MS flat bar.

The price includes the Erection, testing & commissioning of cable loop box including necessary masonry work, cable termination, with supply and erection of all types of cable gland & lugs, nut and bolts etc as required to complete the work.

Item No: 8,9 : Erection of LED indoor type Tube Light.....

The cost covers Erection of energy efficient LED Tube light fitting complete with all accessories including tube suitable for 230V AC The cost also covers the Supply & Erection of necessary , clamps, nuts, bolts & necessary required connection done by supplying flexible FRLSH PVC insulated copper cable from nearest ceiling rose to the fitting. The price shall also cover with Supply & Erection of its suspension arrangement from ceiling/wall etc as per site condition.

Item No. 10 Erection, testing and commissioning of energy efficient Ceiling fan

The price shall cover erection, testing and commissioning of Energy efficient (5-star rating) Ceiling fan of BLDC Motor including electronic regulator & suspension arrangement and accessories including its connection with twin 1.5 sq.mm copper flexible cable from nearest ceiling rose & earth connection of fan. The price shall cover supply &fixing of modular type electronic fan regulator on the switch board and its connection.

Item No. 11: Erection of the Capacitor Type Exhaust Fans...

The price shall cover erection, testing and commissioning of Capacitor Type Exhaust Fans, suitable for 230V, 50Hz, AC supply, Conformity to Indian Standard IS: 2312 (latest), No. of Poles 2,Insulation Material Class E, Standard installation accessories such as Frame, Legs Set,Rubber Clamps & Other Hardware - inclusive in the scope of supply.

Item No. 12: Erection, testing & commissioning of MCB DB.....,

The price shall cover Price includes the cost of Erection of MCB Distribution Board includes on a wooden/ fibre board or as per direction of site Engineer including necessary masonry work, cable termination, with supply and erection of all types of board, frame, cable gland, lugs, nut and bolts etc as required to complete the work. Only Stainless Steel (SS) fasteners, nut-bolts to be used for fixing purpose and all wiring connections are to be done with provision of Pin Type Cu Terminal End Lugs as per size of cable. During commissioning any blank space of DB is to be covered by MCB dummy plate.

Item No. 13: Erection, testing & commissioning of service main energy meter DB.....

The price shall cover the cost of Erection of service main energy meter DB includes on a wooden/ fibre board or as per direction of site Engineer including necessary masonry work, cable termination, with supply and erection of all types of board, frame, cable gland, lugs, nut and bolts etc as required to complete the work. Only Stainless Steel (SS) fasteners, nut-bolts to be used for fixing purpose and all wiring connections are to be done with provision of Pin Type Cu Terminal End Lugs as per size of cable. During commissioning any blank space of DB is to be covered by MCB dummy plate.

Item No. 14: Erection of Hot dip Galvanized Octagonal street light pole.....

The price shall cover the cost of Erection of Hot dip Galvanised Octagonal street light pole with all accessories of including foundation, earth connection & Erection of LED street light fitting with wiring from MCB to light fitting by PVC FRLSH insulated copper cable 1100 V grade 1 Sq.mm. (Balance Octagonal pole will be supplied by Railway). The contractor has to furnish a dimensional drawing of showing technical and grouting details for pole. . Only Stainless Steel (SS) fasteners, nut-bolts to be used for fixing purpose and all wiring connections are to be done with provision of Pin Type Cu Terminal End Lugs as per size of cable.

Item No. 15: Erection of LED Street Light/ Outdoor Light Luminaries on wall/ structure/ shed (except Octagonal/SST Pole) with all accessories for fixing.

The cost covers Erection & testing and commissioning of outdoor street light fitting complete set on wall/ structure/shed, including necessary masonry work, with supply & erection of suitable size pipe clamps, nuts, bolts etc. The erection of street light fitting includes wiring from JB/ceiling rose to light fitting by supplying 1.5 Sq.mm PVC copper wire. . Only Stainless Steel (SS) fasteners, nut-bolts to be used for fixing purpose and all wiring connections are to be done with provision of Pin Type Cu Terminal End Lugs as per size of cable.

Item No. 16: Erection & termination of HT Heat shrinkable type indoor/ outdoor end termination/Straight through cable jointing kit.

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The price includes the cost of termination/ Jointing, testing and commissioning of heat shrinkable indoor/ outdoor end termination/straight through termination/jointing kit suitable for 11 KV XLPE 3C x 70/95/120/150/185 /240 sq. mm. XLPE Railway supplied cable. The contractor should bring his own tools & tackles to complete the work.

Item No. 17: Excavation of earth in any kind of soil & Erection, testing & commissioning of Earth cone as per Drawing No. CEE/G/A3/P-134.

The rate quoted shall cover the cost of erection, testing & commissioning of earth electrode (Earth Cone) with clamp as per Railway's standard drg. This also includes the cost of excavation of the earth pit and supply & filling of all materials such as charcoal, common Salt, cement etc& supply & erection of nuts & bolts washers etc. The price also includes the cost of supply, erection & termination of 2x8.No SWG GI wire with earth cone. The price also includes the cost of making of masonry sump box with cover as per RLY's standard and measurement & writing of earth resistance on earth sump box of individual electrodes.

Item no. 18: Erection of GI pipe 3"/4 dia with socket as per site requirement for laying of cable/ vertical lifting.

The cost covers Erection of GI pipe as per site requirement for laying/passing of cable across road/track/drain/Erection/Laying of GI pipe 3"/4"dia with socket/clamp as per site requirement for laying of cable/vertical lifting of cable. The cost also covers the Supply & Erection of necessary MS clamps, nuts, bolts & required masonry work. The base end of the pipe should be provided with cement brick work with plaster and inside filled with sand cushioning of 40cm height. The end of the pipe should be blocked by PVC/wooden bush.

Item no. 19: Erection of MCB 16-25A 10KA with 3/5 pin 15A modular type.....

The price shall cover the rates for erection of MCB 25A 10KA with 3/5 pin 15A modular type socket with starter in a enclosure for A.C point similar to DHDUCDP0253016-25 with complete wiring and including all accessories required to erect the item. . Only Stainless Steel (SS) fasteners, nut-bolts to be used for fixing purpose and all wiring connections are to be done with provision of Pin Type Cu Terminal End Lugs as per size of cable.

Item No. 20: Triple pole 11 KV Capacity gang operated air break switch.....

The rate covers the erection, testing and commissioning of triple pole 11 KVx400 A Capacity gang operated air break switch as per IS:9921 complete with insulator, DO fuse, support channel, clamps for fixing in 4 pole/DP structure along with operating handle and locking arrangement etc. The operating handle shall be provided with guides in regular interval to prevent buckling of handle during operation. The rate shall also cover the cost of jumpers, nuts, bolts, connectors, clamps & washers etc. as required for commissioning of the AB switch.

Item No:21: Erection of 11 KV LA

Rate includes erection of 11 KV lighting arrestor set (one set consist of 3 no single pole LAs) with mounting hardware arrangement on structure & connection of earthing with 40x3 mm size GI flat and commissioning. The rate shall cover the cost of supply & erection of all nut and bolts jumpers connectors clamps and washers etc. as required for erection testing and commissioning.

Item No: 22 : Erection of Busbar Chambers IP-43 wall mounting type including rainshed protection (for outdoor installation) fabrication work, necessary cable termination & masonry work.

The price includes the Erection, testing & commissioning busbar chamber as per direction of site Engineer. Including necessary masonry work, cable termination, with supply and erection of all types of board, frame, cable gland, lugs, nut and bolts etc as required to complete the work. The price is inclusive of erection including supply of rain shed protection cover if erection outside the covered space.

Item No:23: Erection of GI Flat of size 40mm x 3mm

The rate quoted shall cover the cost of erection & testing of GI Flat for Earthing of all structure and vital equipment including required nut, bolts & sockets etc as per site requirements and as directed by the site in-charge of Railways.

Item No:24: Erection of 33KV/ 11KV/ LT pin/ disc/ shackle insulator complete with pin, clamp, stalk etc. complete with all accessories.

The price shall cover the cost of Erection of 33KV/ 11KV/ LT pin/ disc/ shackle insulator complete with hardware with galvanized straps, pin, clamp stalk, nuts and washers conforming to IS 1445/1966 & erection on 4/6 pin G.I brackets .The price shall cover the cost of all materials required for the above work including labour charges.

Item No:25: Erection of bulk head fitting complete with LED lamp of 9-10 watt with all accessories.

The price shall cover erection & commissioning of led bulk head fitting. The price shall include its suspension arrangement like pipe ,clamp on the board/wall as per site condition.

Item no. 26: Erection of the Control box or Panel for Street Light including supply & erection of all fixing bolts, cable termination and masonry work.

Price includes the Erection, testing and commissioning of Street light panel as per direction of site Engineer including shifting, necessary masonry work, cable termination, with supply and erection of all types of board, frame, cable gland, lugs, nut and bolts etc as required to complete the work.

Item no. 27: Erection, testing & commissioning of outdoor type (Rain water tight) Feeder Pillar/ Location box floor/ plinth mounted type including necessary masonry work & cable termination work.

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Price includes the cost of Erection, testing and commissioning of outdoor type (Rain water tight) Feeder Pillar/ Location box floor/ plinth mounted type Feeder Pillar box including necessary masonry work, cable termination through suitable cable glands, lugs, making of suitable size cement concrete plinth, with supply and erection of all types of nut and bolts, MS channel, angles etc as required to complete the work. The price also includes the cost of requisite nuts & bolts for commissioning of the panel necessary item for seal the cable entry points and necessary accessories to complete job with all other Civil work as per site requirement. Incoming and outgoing cable entry point shall be on bottom side. Only Stainless Steel (SS) clamps, fasteners, nut-bolts to be used for fixing purpose and all wiring connections are to be done with provision of Pin Type Cu Terminal End Lugs as per size of cable. During commissioning any blank space of DB is to be covered by MCB dummy plate. (The cost of concrete foundation for plinth is excluded).

Sr. No. 28,29,30,31,32 & 33: Supply, fixing, wiring & commissioning of PVC concealed conduit/ PVC conduit Surface /casing capping wiring by PVC FRLS insulated copper cable 1100 V grade 2.5 Sq.mm through PVC conduit with running earth copper wire throughout the wiring including supply and fixing of hot deep GI sheet concealed Modular switch board, Modular switch, socket & electronic fan regulators, ceiling rose/holder etc. (a) Light, Bell & Fan point wiring with 6 Amp, Modular switch with Metal back Plate etc. By 1.5 sq.mm of PVC FRLSH with running earth by same size of copper wire through out the wiring b) 5/6 Amp., 5 pin plug socket point wiring with 6 Amp, Modular type switch with Metal back Plate & socket by 2.5 sq.mm PVC FRLSH copper cable with running earth by same size of copper wire through out the wiring c) 15 Amp plug socket point wiring by 4 Sq.mm PVC FRLSH insulated copper cable with 16 Amp, Modular type Metal back Plate switch & socket, etc with running earth by same size of copper wire through out the wiring.

Supply & fixing, wiring & commissioning of PVC concealed conduit/PVC conduit surface /casing capping wiring by 2 Nos. 6 sqmm PVC FRLS insulated copper cable 1100V grade through PVC conduit with running earth by 6 sqmm copper wire through out the wiring for drawing/extension of supply from Main DB/Busbar chamber to service main board/ Circuit DB/Air conditioner point by 6 sq.mm cable. Note-|Quantity per meter means: one meter conduit with two meter 6sqmm PVC FRLS insulated copper cable & one meter 6 sqmm copper wire for running earth).

Supply & fixing, wiring & commissioning of PVC concealed conduit/PVC conduit surface /casing capping wiring by 2 Nos. 2.5 sqmm PVC FRLS insulated copper cable 1100V grade through PVC conduit with running earth by 2.5 sqmm copper wire through out the wiring for drawing/extension of supply from Main DB/Busbar chamber to service main board/ Circuit DB/Air conditioner point by 6 sq.mm cable. Note-|Quantity per meter means: one meter conduit with two meter 2.5 sqmm PVC FRLS insulated copper cable & one meter 2.5 sqmm copper wire for running earth).

Supply & fixing, wiring & commissioning of PVC concealed conduit/PVC conduit surface /casing capping wiring by 2 Nos 4 sq mm PVC FRLSH insulated copper cable 1100V grade through PVC conduit with running earth by 4 sq mm copper wire throughout the wiring for drawing/extension of supply from Main DB/Busbar chamber to service main board/Circuit DB/Air conditioner point by 4sq.mm cable. Note-(Quantity per meter means: one meter conduit with two-meter 4sqmm PVC FRLSH insulated copper cable & one meter 4 sq mm copper wire for running earth).

The price shall cover Supply, fixing, wiring & commissioning of PVC Concealed wiring of light and fan point by 1.5 Sq. mm Copper wire each for phase & neutral with 1.5 Sq. mm, Copper wire for Earthing through PVC Conduit Pipe of Nominal Size 20mm/25mm (as per site requirement). The system should provide ease of access to fittings for maintenance and repair and for any possible modification to the system.

Electrical wiring to be concealed in wall structure, the necessary fan hooks, conduits should be positioned during the shuttering is in place and before the concrete is poured, provision being made to protect conduits from damage. Each point circuit must include separate phase, neutral & protective earth conductor from respective junction box. Proper earthing of all apparatus and appliances in accordance with all relevant IS standards/specifications is to be maintained.

The cost includes necessary masonry work including supply and fixing of all required materials like copper wire, conduit pipe, modular switch, socket, lamp holder, ceiling rose with suitable flush metal boxes, front plate etc. as per below mentioned specifications and to be provided with Modular type hot deep GI sheet concealed switch board for Modular switch, socket & electronic fan regulators etc for . (a) Light, Bell & Fan point wiring with 6 Amp, Modular switch with Metal back Plate etc. By 1.5 sq.mm of PVC FRLSH with running earth by same size of copper wire throughout the wiring b) 5/6 Amp., 5 pin plug socket point wiring with 6 Amp, Modular type switch with Metal back Plate & socket by 2.5 sq.mm PVC FRLSH copper cable with running earth by same size of copper wire throughout the wiring c) 15 Amp plug socket point wiring by 4 Sq.mm PVC FRLSH insulated copper cable with 16 Amp, Modular type Metal back Plate switch & socket, etc with running earth by same size of copper wire throughout the wiring.

PVC Conduit Pipe of Nominal Size 20mm/25mm spec: It shall be Socket ended (at one end), medium mechanical stress, White Colour, Resistant to Flame Propagation to grade UL-94 V0, Conforming to IS 9537 (Part 3) 1983 (Reaffirmed Year: 2017) with amendment no. 2 or latest with ISI mark.

The price shall cover Supply & fixing, wiring & commissioning of PVC concealed conduit/PVC conduit surface /casing capping wiring by 2 Nos. 6 sqmm PVC FRLS insulated copper cable 1100V grade through PVC conduit with running earth by 6 sqmm copper wire throughout the wiring for drawing/extension of supply from Main DB/Busbar chamber to service main board/ Circuit DB/Air conditioner point by 6 sq.mm cable. Note-|Quantity per meter means: one meter conduit with two meter 6sqmm PVC FRLSH insulated copper cable & one meter 6 sqmm copper wire for running earth).

The price shall cover Supply & fixing, wiring & commissioning of PVC concealed conduit/PVC conduit surface /casing capping wiring by 2 Nos 2.5 sq mm PVC FRLSH insulated copper cable 1100V grade through PVC conduit with running earth by 2.5 sq mm copper wire throughout the wiring for drawing/extension of supply from Main DB/Busbar chamber to service main board/Circuit DB/Air conditioner point by 2.5 sq.mm cable. Note-(Quantity per meter means: one meter conduit with two-meter 2.5 sqmm PVC FRLSH insulated copper cable & one meter 2.5 sq mm copper wire for running earth).

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The price shall cover Supply & fixing, wiring & commissioning of PVC concealed conduit/PVC conduit surface /casing capping wiring by 2 Nos 4 sq mm PVC FRLSH insulated copper cable 1100V grade through PVC conduit with running earth by 4 sq mm copper wire throughout the wiring for drawing/extension of supply from Main DB/Busbar chamber to service main board/Circuit DB/Air conditioner point by 4sq.mm cable. Note-(Quantity per meter means: one meter conduit with two-meter 4sqmm PVC FRLSH insulated copper cable & one meter 4 sq mm copper wire for running earth).

As per CEGE Letter no. SER-HQ-ELEC(POWR)/45/2023-O/o DY.CESE/GRC/SER Date: 24.07.2024 "Termination of wires in Switches, Sockets, MCB/MCCB/RCCB etc. shall be through terminal lugs only".

Quantity per meter means- 01 (One) meter Conduit Pipe with 3 (Three) meters multi-strand Cu. [01 (One) meter each for phase, neutral & protective earth conductor.

The switch boards shall be common for lights and fans in the same room/portion of the room as per the standard Engg. Make of switch should be either of Anchor/Havells/Crabtree/Legrand/reputed make and make of the PVC cable should be either of MESCAB/Havells/ Finolex/HPL/Polycab/reputed make. The Make: of Modular type switch, socket, bell push, fuse & indicator etc: Anchor/Legrand/Havells//reputed make The wiring shall be done as per I.E. rule amended upto date. All the materials should be got approved from Dy.CEE/Con/GRC before procurement and supply and commencement of work.

Item No. 34,35 & 36: Excavation of cable trench in all type of soil concrete & laying of HT/LT cable (Rly supplied) 0.5 M wide, 1.0 M depth...

The price covers the cost of excavation of cable trench in all type of soil, concrete & laying of HT/LT cable (Rly supplied) 0.5 M wide, 1.0 M depth and laying of HT/LT cable (Rly supplied) and refilling of excavated earth including

Item No. 34 :Laying of A class bricks/Semi Circular RCC pipe as per Rly. Specification and laying of 50 mm thick sand under the bricks/Semi Circular RCC pipe. The rate also covers for laying of HT/LT cable of all size.

Item No. 35:Laying of cable (across the road/track/drain) shall be through heavy duty GI pipe (75/100mm) as per site condition with additional 0.5 m length on either side of the road in single piece with provision of wooden/PVC bush on both side of the GI pipe.

Item No. 36: The rate includes the cost of fixing of cable by MS clamp of suitable size with structure/wall etc. (in air). In case of vertical lifting, 2.5 m GI pipe should be fixed by proper clamping with structure with supply & erection requisite nuts & bolts & related fabrication work.

This price includes the cost of supply & erection/fixing of cable gland, terminal lugs, requisite nuts & bolts including commissioning of cable.

Item No. 37: Laying of extra cables in the excavated same trench.

The cost includes laying of extra cables in the excavated same trench as per the direction of consignee and termination, connection, testing and commissioning of cable with proper socketing of cables. Cost also includes collection of cable/cables from Railway store if required. Cable will be supplied by Railway.

Item No. 38: Excavation of cable trench in all type of soil...

The price covers the cost of Excavation of trench in all kinds of soils ,concrete including soft rocky area and clearing of roots of trees, bushes, rocks, blast etc., to a depth of 1m & width 0.3m including supply and laying of Double wall Corrugated Pipe with collars of 103mm inner dia and 120 mm outer dia with couplers and sockets as per RDSO specf. No- RDSO/SPN/204/2011/Ver. 1.1 Supply of one coupler for 6m of DWC Pipe and two couplers for 30m of length is also to be supplied for execution .

Item No. 39: Boring/punching of underground crossing track with pipe pushing by HDD technology for crossing HT/LT power cable below railway track/road.

The price shall cover Excavation & Boring/punching of underground crossing Railway track/road by machine and laying / pushing of GI/HDPEE pipe by HDD technology for crossing HT/LT power cable below the railway track/road etc. as per direction of Railway representative. The cost of GI/HDPEE pipe is excluded. The price shall cover the cost of supply & erection of cable gland, cable sockets/lugs, requisite nuts & bolts including testing & commissioning of cable.

Item No. 40: Concrete for foundation in 1:3:6 ratio in any kind of soil.....

The price shall cover excavation, supply and handling of all materials and accessories temporary arrangements for excavation, concreting and grouting, including supply of cement, sand, ballast, rod& other materials whatsoever. Price also includes supply & handling of arrangements for shoring and shuttering where necessary, casting, grouting of pole/mast/structure & finishing the top of concrete foundations with muff. Price also includes dismantling of temporary arrangement and removal and dressing of soil.

The price shall also cover casting work for trench cover, all reinforced concrete work for foundations, including supply of steel for reinforcement and other materials required for reinforcement, shoring and shuttering wherever necessary, casting, grouting & finishing the tops of the foundation blocks /trench cover. The price also includes dismantling of all connected temporary arrangements, back filling as required and removal of excess soil.

Concrete for foundation shall be nominal mix of grade M. 10 obtained by mixing cement, coarse aggregate, final aggregate and water in accordance with proportions.

Item No. 41: Dismantling and removal of existing overhead LT/HT line with accessories.

The price shall cover the Dismantling of existing over head line HT/LT including insulator bracket and overhead conductor etc . All necessary precaution shall be taken to prevent damage to its associated fittings /Structures. The price shall also cover the removal of entire existing overhead LT/HT line with its brackets and other accessories. The work to be done neatly enabling salvaging of the workable parts for future use.

The price shall also cover transportation and deposition of dismantled materials to the SSE's Store as directed by the site supervisor.

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Item No: 42: Dismantling, Shifting of Rail Pole/SST pole/GI/MS Structure/Location box/

The price shall cover the Dismantling / Shifting of Rail Pole/SST pole/GI/MS Structure/Location box/ Control Panels Busbar chamber/DB/Pre-cooling socket/ Lovolite Transformer/Battery charger etc with gas cutting or any other means without appreciable damage& including dismantling of associated foundation work above GL without appreciable damage the equipment All necessary precaution shall be taken to prevent damage to its associated fittings /Structures.

The work to be done neatly enabling salvaging of the workable parts for future use. The price shall also cover transportation and deposition of dismantled materials to the SSE's Store as directed by the site supervisor.

Item No.43: Transportation of Railway supply materials from Railways....

Price includes loading, unloading and transportation of Railway's supply materials such as cables, TR, panels & other materials from consignee premise in KGP/ ADA/CKP/RNC Divisions to site of work and other site to work site and stacking of materials. Loading and unloading by means of manual labour or any other means/equipment will be at contractors labour & costs.

Item no. 44: Supply & Erection of RCC make cable route marker size L-12", B-6" & H-30".

Supply, erection & fixing of RCC Cable Route Marker of size L-12", B-6" and H-2.6" or as per site requirement with all accessories. Cable route marker should be properly grouted in the ground with concrete.

Item No: 45: Supply & Installation of Standard enameled 11 KV/400 Volt danger board

The cost covers Supply & Installation of Standard enamelled 11 KV/400 Volt danger board having impression of skull & bone with written "DANGER" 11000/400 Volt 2/2 Hindi, English & local language size 6"8" as per IS:255 including supply and erection of all types of nut and bolts, MS angles etc as required to complete the work.

Item No. 46: Supply & Erection of galvanized stay set for over head line...

The price shall cover Supply of galvanized stay set as per IS: 2141 -2000, for overhead line complete for over head line complete with 19/20mm dia x1.9 M long stay road anchor plate of 45cmx45cmx7.5cm including turn buckle, clamp and 7/5mm dia GI stay wire with Guy insulator & all accessories.

The cost also covers the erection of galvanized stay set for over head line complete with 19/20mm dia x1.9 M long stay road anchor plate of 45cmx45cmx7.5cm including turn buckle, clamp and 7/5mm dia GI stay wire with Guy insulator including excavation of earth in any kind of soil and cement concrete (1:3:6) foundation of 1.9 M long stay road with anchor plate by excavating earth pit of size 1 mx1mx0.80m complete with all accessories.

Item No: 47: Supply Erection, fabrication & painting of Miscellaneous iron work MS angle, flats, channel etc.....

The price shall cover the cost of supply, fabrication, painting & erection of Miscellaneous iron work MS angle, flat, channel etc as per site requirement for Iron fencing, Small steel parts except rail pole for Fabrication of cable tray, 4 pole/2 pole structures & single pole cross arm etc, including required GI nut, bolts & sockets etc as per the complete detailed approved drawing.

The price shall cover the cost of painting of miscellaneous iron work with one coat of red oxide primer and two coat of enamel paint over primer. (Rail pole will be supplied by Railway).

Item no. 48: Erection of the Hot dip galvanized flange mounted type High mast (Grade BSEN 10025 - S355J0) of 20M height complete mounting bracket, foundation bolt & accessories including Outdoor Feeder Pillar box.

The rate quoted shall cover Erection, testing & commissioning of (a) Hot dip galvanized flange mounted type polygonal tapered type High mast of 20M long nominal mounting height complete with all necessary accessories including LED Flood Light Luminaries with wiring work and (b) Outdoor stand mounted Feeder Pillar complete with all necessary accessories as per manufacturers guide line or as per approved drawing. The contractor has to furnish a dimensional drawing of foundation details for flange mounted polygonal tapered high mast foundation bolts showing technical and grouting details for the approval of Dy.CEE/CON/GRC before foundation work.

Item No. 49: Erection of the Outdoor type LED light fitting (IP-66) for front lighting 70-100W/ 190-200 W flood light (exclusive of high mast), suitable for voltage 230V AC and all other accessories.

The price shall cover the rates for erection of Outdoor type LED light fitting (IP-66) for front lighting 70-100W/ flood light (exclusive of high mast), with all accessories including its suspension arrangement , suitable size pipe clamps, nuts, bolts etc and necessary fabrication work, cable termination & connection work for illumination for Front Lighting as per the direction of Rly authorized representative.

Item No: 50: Erection of recess mounted LED panel light 10-12 Watt with Constant current driver complete with lamp and all accessories.

The price shall cover erection of indoor type TFL recess mounted LED panel light 10-12 Watt of approved make including wiring materials and fixing arrangement from ceiling/wall etc. as per site condition with all accessories including its suspension arrangement , suitable size pipe clamps, nuts, bolts etc and necessary fabrication work, cable termination & connection work for illumination for Front Lighting as per the direction of Rly authorized representative.

Item No: 51: Installation and commissioning of Geyser 15L Capacity including electrical connection, wiring & necessary masonry work/ plumbing connection work.

Price shall cover the rates for Erection of 15 lt water geyser suitable for operation in 230V, 50Hz AC supply, complete with all accessories including necessary masonry work, cable termination, with supply and

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erection of all types of nut and bolts, pvc pipes, plumbing pipe connection works, MS channel, angles etc as required to complete the work.

Item No: 52: Fabrication, erection & installation of Wire Mesh type Cable tray of Stainless Steel, 300mm width with SS fixing bracket, coupler & bend plat with suitable SS nut, bolt & washer etc.

The rate shall cover the Fabrication & Erection Wire Mesh type Cable tray of Stainless Steel, 300mm width with SS fixing bracket, coupler & bend plat with suitable SS/GI nut, bolt & washer etc. Only Stainless Steel (SS) clamps, fasteners, nut-bolts to be used for fixing purpose.

Item No: 53: Erection of 1.1 KV 3.5/4 CORE50/70/ 95/120 sq.mm LT straight through heat shrinkable kit.

The price shall cover the rates for erection of 1.1 KV 3.5 CORE 25/50/70/120 sq.mm LT straight through heat shrinkable jointing kit. The price also covers the cost of erection , testing, & commissioning of jointing kit indoor/outdoor with requisite materials like nuts & bolts etc. The contractor should bring his own tools & tackles to complete the work.

Item No: 54: Erection of IP65 junction box with lugs, spreader link and cable gland.

The price includes the Erection, testing & commissioning of IP65 (dust proof & jet water tight) junction box as per direction of site Engineer including necessary masonry work, cable termination, with supply and erection of all types of board, frame, cable gland, lugs, nut and bolts etc as required to complete the work. Only Stainless Steel (SS) fasteners, nut-bolts to be used for fixing purpose. The price is inclusive of erection including supply of rain shed protection cover if erection outside the covered space.

Item No: 55: Erection of CLS panel with lugs, spreader link and cable gland.

Price includes the Erection, testing and commissioning of CLS panel board as per direction of site Engineer including shifting, necessary masonry work, cable termination, with supply and erection of all types of board, frame, cable gland, lugs, nut and bolts etc as required to complete the work.

Item No: 56: Erection of programmable time switch 24 Hrs code with contractor 3 pole with AC coil i.e Amp-32 make Havells or Similar.

Price shall cover the cost of installation, erection& commissioning of programmable time switch 24 Hrs code with contractor 3 pole with AC coil i.e Amp-32 make Havells or Similar including necessary masonry work, cable termination, with supply and erection of all types of board, frame, cable gland, lugs, nut and bolts etc as required to complete the work. Price shall also cover rain shed protection cover wherever erection done at outdoor to protect from water ingress.

Item No: 57: Installation testing and commissioning of single/ three phase Submersible pump set for use in bore wells for handling clear cold water with pump controller/starter as per site requirement, including lowering/laying of pipe, RR Rope12mm, FLAT CABLES with flexible copper conductor.

The price shall cover the cost of Installation testing and commissioning of Submersible pump set including pump Control panel/starter including lowering/laying of GI column pipe, clamps (safety clamp, rest clamp etc), Nylon/PP Rope & flat cables as per site requirement.

Item No: 58: Erection of Plug & Socket Board, in 3P&N enclosure with 3-pole + SC (scraping earth) Socket with 4P MCB of rating 32 A.

Price shall cover the cost for fixing and commissioning of the same with GI angle, Rain protection cover and proper wiring for completing the job as per site requirement including necessary masonry work, cable termination, with supply and erection of all types of board, frame, cable gland, lugs, nut and bolts etc as required to complete the work. Only Stainless Steel (SS) fasteners, nut-bolts to be used for fixing purpose.

Item No: 59: Installation and commissioning of 1.5/2 Ton split Air Conditioner.

The price shall cover the rates for Installation and commissioning of 1.5/2 Ton split Air Conditioner with rotary compressor R-22,refrigerant including electrical connection, additional copper pipe (if required) wiring & necessary masonry work. (Split A.C will be supplied by Railway). The price shall also cover the cost of supply & erection of plug, pvc/flexible pipe as per site requirement to avoid water dripping.

Item No: 60: Supply & installation of mobile charging arrangement.....

The price shall cover the rates for Supply & installation of mobile charging arrangement consisting with 04 nos. 5Amp. modular plug socket 240V 50Hz., 04nos. 6 Amp. modular switch along with indicator and fuse. Make of the PVC cable should be either of MES CAB/Havells/ Finolex/HPL/Polycab/reputed make. The Make: of Modular type switch, socket, bell push, fuse & indicator etc: Anchor/Legrand/Havells/reputed make. As per CEGE Letter no. SER-HQ-ELEC(POWR)/45/2023-O/o DY.CESE/GRC/SER Date: 24.07.2024 "Termination of wires in Switches, Sockets, MCB/MCCB/RCCB etc. shall be through terminal lugs only".

Item no. 61: Erection, testing & commissioning of LT ACB panel

The price shall cover the rates for Erection, testing & commissioning of LT ACB panel with appropriate spreader link for MCCB ,Cable gland & necessary item for seal the cable entry and outgoing point and complete the job including necessary masonry work. The cable termination through suitable cable glands, lugs, making of suitable size cement concrete plinth, with supply and erection of all types of nut and bolts, MS channel, angles etc as required to complete the work. . The price also includes the cost of requisite nuts & bolts for commissioning of the panel necessary item for seal the cable entry points and necessary accessories to complete job with all other Civil work as per site requirement. Incoming and outgoing cable entry point shall be on bottom side. Only Stainless Steel (SS) clamps, fasteners, nut-bolts to be used for fixing purpose and all wiring connections are to be done with provision of Pin Type Cu Terminal End Lugs

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as per size of cable. During commissioning any blank space of DB is to be covered by MCB dummy plate. (The cost of concrete foundation for plinth is excluded).

Item no. 62: Erection of Residual Current Device with Socket 16Amp.with Steel Enclosure (SRCD DBOX) for Geyser point. (similar to Havells Cat. No.Havells SRCD WOCP Dboxx Steel Encl).....

The price shall cover the rates for erection of Residual Current Device with Socket 16Amp.with Steel Enclosure (SRCD DBOX) for Geyser point. (similar to Havells Cat. No.Havells SRCD WOCP Dboxx Steel Encl) with complete wiring and including all accessories required to erect the item . Only Stainless Steel (SS) fasteners, nut-bolts to be used for fixing purpose and all wiring connections are to be done with provision of Pin Type Cu Terminal End Lugs as per size of cable.

Item no. 63: Erection of Ding Dong Door Bell.

The price shall cover the rates for erection of Call bell for building. Only Stainless Steel (SS) fasteners, nut-bolts to be used for fixing purpose and all wiring connections are to be done with provision of Pin Type Cu Terminal End Lugs as per size of cable.

Item no. 64,65 & 66: Erection including supply of Fabricated Fencing

The price shall cover the rates for fencing with supply and erection of Fabricated Fencing Uprights as per RDSO approved Drawing No.ETI/C/0186, painted with two coats of red oxide zinc chromate primer and finished with two coats of Aluminum paint to IS:2339 including barbed wire.

Erection including supply of Fencing Panels as per RDSO approved Drawing , painted with two coats of red oxide zinc chromate primer and finished with two coats of aluminum paint IS:2339

Erection including supply of Gates including locking device as per RDSO approved Drawing no.ETI/PSI/121 The gates will be painted with two coats of red oxide zinc chromate primer to IS: 2074 and finished with two coats of aluminum paint as per particulars specified in para 2.6.12 and IS:2339. NOTE: All fasteners, bolts, nuts, locknuts and washers etc. required for assembly and fixing of steel work shall be galvanized. The work should include all materials requires for fencing of substation with supply and erection of nuts bolts washer etc to complete the job in all respect.

Item no. 67: Earthwork in filling for embankment of building,

The price shall cover the rates for Earthwork in filling for embankment of building, low laying area, etc. in all classifications of soil as directed by Engineer in charge. The rate is inclusive of all labour and materials, machineries etc. with all lead, lift, descent, ascent, loading, unloading royalty, all taxes, tools and plant, breaking clods, dressing to final profile and dimensions etc. complete. The work is to be executed with contractor's earth of approved quality and specifications. The rate is also applicable for cutting of earth and levelling for the substation area.

Item no. 68: Supply, spreading, levelling, watering and ramming of moorum.

The price shall cover the rates for supply , spreading, levelling, watering and ramming of moorum.

Item no. 69: Supply, spreading and levelling of 20mm down graded ballast, padding 150mm.

The price shall cover the rates for Supply, spreading and levelling of 20mm down graded ballast, padding 150mm for the sub-station area.

Item no. 70: Dismantling of high mast tower up to 30mtr / lattice tower with all accessories as per site requirements and deposition to store.

The price shall cover the cost for Dismantling / Shifting of high mast tower up to 30mtr / lattice tower with all accessories as per site requirements with gas cutting or any other means without appreciable damage& including dismantling of associated foundation work above GL without appreciable damage the equipment All necessary precaution shall be taken to prevent damage to its associated fittings /Structures.

The work to be done neatly enabling salvaging of the workable parts for future use. The price shall also cover transportation and deposition of dismantled materials to the SSE's Store as directed by the site supervisor.

Item no. 71: Erection, fabrication , fixing including Supply of copper strip (25 x 3mm) for Earthing of transformer and to vital equipment including required nut, bolts, sockets etc.

The price shall cover the cost for Erection, fabrication , fixing including Supply of copper strip (25 x 3mm) for Earthing of transformer and to vital equipment including required nut, bolts, sockets etc.

SCHEDULE - J

Item No.1 Concrete for foundation & plinth in all types of soil, including hard/rocky soil (including excavation and supply of all materials viz. sand, cement & ballast etc.)

The price shall cover excavation, supply and handling of all materials and accessories temporary arrangements for excavation, concreting and grouting thereafter including supply of cement, sand, ballast & other materials whatsoever. Price also includes supply & handling of arrangements for shoring and shuttering where necessary, casting, grouting of mast/structure & finishing the top of concrete foundations with muff. Price also includes dismantling of temporary arrangement and removal and dressing of soil.

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The price shall also cover excavation in rocky soil or RCC/PCC plinth and casting of foundation. Price also cover all reinforced concrete work for foundations, including supply of steel for reinforcement and other materials required for reinforcement, shoring and shuttering wherever necessary, casting, grouting & finishing the tops of the foundation blocks. The price also includes dismantling of all connected temporary arrangements, back filling as required and removal of excess soil. The price shall also cover all concrete work for foundation or anchor block on bridge piers, irrespective of whether they are actually reinforced or not and those for pile foundation and counter weight foundations. The purchasers shall supply rails and fasteners required for counter weight foundations free of cost.

Mix of Concrete:-

Concrete for foundation shall be nominal mix of grade M. 10 obtained by mixing cement, coarse aggregate , final aggregate and water in accordance with proportions given vide Table 3 of IS: 456-1978 reproduced below. For grouting, muffing, embedding of structures in foundations and for cable trenches, nominal mix concrete M-15 obtained by mixing materials in proportions as indicated in Table-3 of IS: 456-1978 shall be used. Volume batching may be adopted vide Clause 9.2.2 of IS:456- 1978 reproduced below:-

TABLE 3: PROPORTIONS FOR NOMINAL MIX CONCRETE

(Clause 8,3,8,3.1 and 8,3,2)

Grade of Concrete	Total quantity of dry aggregate by mass per 50 Kg.of cement, to be taken as the sum of the individual masses of line & coarse aggregates Max.,	Proportion of fine aggregate coarse aggregate (by Mass)	Quantity of water per 50Kg of cement Max.
1	2	3	4
	Kg		Liters
M 5 (1:5:10)	800	Generally 1:2	60
M 7.5 (1:4:8)	625	But subject to	45
M 10 (1:3:6)	480	of 1: 1.5 and a	34
M 15 (1:2:4)	350	lower limit'	32
M 20 (1: 1.5:3	250	of 1: 2.5	30

NOTE: : The proportions of the fine to coarse aggregates should be adjusted from upper limit to lower limit progressively as the grading of the fine aggregate becomes fine and the maximum aggregate becomes large.

EXAMPLE:- For an average grading of fine aggregate specification for coarse and fine aggregate from natural source for concrete (Second revision) that is zone II of Table 4 of IS: 383- 1970, the proportions shall be 1: 1.5, 1:2 and 1:2.5 for maximum size of aggregate 10mm , 20mm and 40mm respectively.

‘In case uniformity in the materials used for concrete making has been established over a period of time. The proportioning may be done by volume batching, provided periodic checks are made on mass/volume relationship of the materials. Where weight-batching is not practicable, the quantities of fine and coarse aggregate (not cement) may be determined by volume, if the fine aggregate is moist and volume batching is adopted, allowance shall be made for bulking in accordance with IS: 2386 (Part-III)- 1963*

“ Methods of test of aggregates for concrete”

Part III Specific gravity ,density, , volds , absorption of bulking

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In judging the acceptability of the materials, quality of concrete and the method of works, the Purchaser will generally observe the provisions of the “Indian Standard Code of Practice for plain and reinforced concrete, IS: 456 – 1978. The crushing strength of concrete shall not be less than the limits given below:-

Crushing strength of 15 cm cubes by works test.

Concrete	At 7 days age.	At 28 days age.
a) M.10	70 Kg/cm ²	100 Kg/cm ²
b) M.15	100 Kg/cm ²	150 Kg/cm ²

For an average grading of fine aggregate the proportions shall be 1:1.5; 1:2 and 1:2.5 for maximum size of aggregates 10mm,20mm and 40mm respectively.

Notes for measurement of Item No. J1

- 1) The rates per cubic metre (Cu.m) under item 1 shall be same for any shape or size of concrete blocks. In calculating the individual volume of concrete, fraction of a cubic metre beyond the third decimal shall be rounded off to the next nearest third decimal.
- 2) The prices shall apply for concreting of all foundation for mast, gantries, portals, anchor blocks for guy rods and fencing uprights, TTC, dwarf mast etc.
- 3) For purposes of computation of volume of concrete under item 1, the volume of steel work embedded in the foundation block shall be ignored.
- 4) Cost of all concrete will be paid for only under item 1 and the prices of other items shall not include cost of concrete.
- 5) For purpose of computation of volume of concrete under item 1, the volume of concrete shall include the volume of sand and bitumen in sand cored foundation.
- 6) For purposes of computation of volume of concrete the volume of each muff for all masts shall be taken as 0.02 Cu.m except for masts with balance weights and for each upright of portal, each head span mast, 2 or 3 track cantilever masts, and special fabricated masts for which the volume of muff shall be taken as 0.08 Cu.m irrespective of the size and shape of muff, on a flat rate basis.
- 7) The prices under item 1 shall also include the cost of concrete for embedment of drain pipes, where required.
- 8) The prices under item 1 shall also cover the cost of concrete for diversion of masonry/earth drain wherever necessary for casting of foundation.
- 9) Cement for use in the works should be procured in legible markings.
- 10) Cement bags should bear the following information in legible markings.
 - a) Manufacturer's name
 - b) Registered trademark of manufacturer, if any.
 - c) Type of cement
 - d) Weight of each bag in Kg
 - e) Date of manufacture, generally marked as week, month & year of manufacture e.g. 01.01.2007, which means 1st week of JAN'2007.
 - f) For the work under item 1 the purchaser's Engineer shall certify where use of chisel and hammer or blasting has been necessary above and contractor shall arrange for supply of explosives and all tools and plants for blasting operation at his own cost. If half or more of the depth or width of excavation is in hard soil/concrete/masonry drains/walls or in rock, the payable volume of the foundation shall be the designed one as shown in the drawings for which the hole has been blasted, irrespective of the actual configuration assumed by the latter due to the blasting. The depth of the excavation shall be measured from the formation level to the maximum excavated point.

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- 11) Cube test: The contractor shall arrange concrete cube test as per relevant IS specification to be used in foundation. The cost of test shall be borne by the contractor i.e. price is inclusive. At least one cube test shall be carried out by the contractor for completion of each 50 Cu.m or its fraction of foundation casting for entire volume of work
- 12) Railways may also take samples during the course of work and get the cement tested to ascertain their conformity to specifications.