



रेल विकास निगम लिमिटेड
Rail Vikas Nigam Limited

(A Government of India Enterprise)

STANDARD BILL OF QUANTITIES

FOR

**RAILWAY ELECTRIFICATION
AND
GENERAL ELECTRICAL**

WORKS

JULY, 2016

(BASE MONTH OF RATES 31.03.2015/ FOR NON-ADB CONTRACTS)



रेल विकास निगम लिमिटेड
Rail Vikas Nigam Limited

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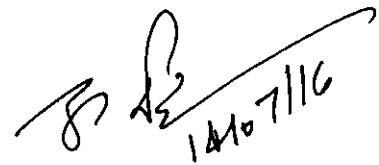
No.2016/Elect/SBOQ/125/Part-D

Dated:14.07.2016

ED/Elect, ED/Elect/P/CO, ED/Elect/P/SC
CPM/RE/RVNL/Pune, Vanarasi, Ambala
GGM/E/ BPL, MAS, BBS, JHS, SBC, Raipur & Kolkata-I & II
GM/Elect./RVNL/Pune
Manger/Elect./RVNL/Patna & Mumbai

Sub: RVNL's Standard Bill of Quantities for Railway Electrification and General Electrical Work updated upto 31.03.2015.

- 1. The Standard Bill of Quantities for Railway Electrification and General Electrical Work have been updated upto 31.03.2015 and some new SBOQ items have been included as well as description of some of the items have been revised to make it more clear.**
- 2. The rates mentioned are inclusive of all taxes and duties as on 31.03.2015. Therefore, while constructing the BOQ for ADB projects, the element of Excise Duty as on 31.03.2015 be deducted from the supply portion of each item.**
- 3. The standard BOQs should be followed uniformly for preparation of Estimates, including Detailed Estimates and Preparation of BOQ for invitation of works tenders.**
- 4. In the Bill of Quantities, if any new item is required to be added, the same should be incorporated at the end of the relevant Schedule, duly justifying the same and the rates may be got vetted from Associate Finance.**


14/07/16

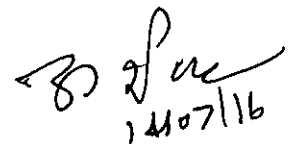
5. While submitting Estimate/BOQ to the Corporate Office for approval/sanction, the following certificate should invariably be recorded in the forwarding letter by in-charge of the project(CPM/GGM/GM-Electrical)

“No changes have been made in the description, unit and rate of items of the SBOQ, except for the following.”

- (i) The rates of item no(s)have been analysed and vetted by Finance and the same has been adopted in the BOQ. The corresponding changes have been made in the Explanatory Notes. The rates incorporated should be extrapolated as on 31.03.2015
- (ii) The rates being obtained for similar items of work on Zonal Railways in adjacent sections have been kept in view and any substantial deviation in the rates has been justified (if no such rate is available, In-charge of the Project/Electrical may certify the same).
- (iii) New item No..... in Bill No..... and item No..... in Bill No..... have been added for which rates have been analysed and vetted by Finance.

6. This supersedes previous SBOQ for General Electrical & Railway Electrification works. Any discrepancy which may come to notice and any suggestions in this regard may please be sent to the ED/Elect.

7. This is issued with the approval of CMD.



(A.K. Tyagi)

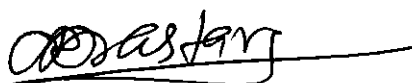
GGM/Elect./Project

Copy to:

1. Secy to CMD- for kind information to CMD please.
2. DP, DF, DO, DPE, D/Vig- for kind information please.
3. All EDs/RVNL
4. All CPM/GGM/GM/DGM/RVNL
5. JGM/Tender cell

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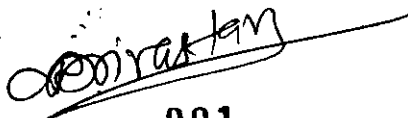
Preamble to SBOQ for Railway Electrification and General Electrical Works

A. General Instructions

1. The bill of quantities (BOQ) shall be read in conjunction with the Instruction to bidders, General Conditions of Contract, Particular Conditions of Contract, Works requirements, Technical specifications & Drawings, Explanatory notes detailed after BOQs of RE & General Electrical works separately, Payment conditions, pre-bid clarifications and Addenda and Corrigenda if any.
2. The summary of schedules is as under:

SN	Schedule No.	Description
1	16000	RE-General
2	17000	Switching Post Building
4	19000	OHE - Ferrous other than steel structures and SPS
5	20000	OHE - Non Ferrous 'A'
6	21000	OHE - Non Ferrous 'B'
9	24000	TSS
12	27000	TSS-Spares
13	28000	Tools & Plants
14	29000	SCADA
15	30000	Common Items for OHE/TSS
16	33000	General Electrical Works

3. The quantities given in the Bill of Quantities are estimated and provisional, and are given to provide a common basis for bidding. The basis of payment will be the actual quantities of work ordered and carried out, as measured by the Contractor and verified by the Engineer and valued at the rates and prices tendered in the priced Bill of Quantities, where applicable, and otherwise at such rates and prices as the Engineer may fix within the terms of the Contract. The Surplus quantities, if any after execution & not required by Railway, as determined by the engineer during the progress of the work or at the completion of the work, shall be taken back by the contractor and the recovery of such material will be adjusted from the pending claims.


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4. In the Bill of Quantities, quantity and unit rates and thereby the amount against each item have been indicated. From this, the estimated price of each bill has been worked out and indicated in the summary sheet in BOQ. The Bidder shall quote rates as percentage above/below/at par for each schedule in the summary sheet. If no percentage as above, below or at par is indicated for any particular bill, the same will be considered as percentage at par.
5. The rates for each bill shall be written in indelible ink or type written in the summary sheet against each bill, in both words and figures, while clearly indicating whether the percentage quoted is above/below/at par over the estimated rate in the respective columns. The price for each bill shall accordingly be calculated and written against each bill in both words and figures. The total price, as the sum of prices of all bills shall be shown at the bottom of the summary sheet. The total price shall also be written in both words and figures.
6. General directions and descriptions of work and materials are not necessarily repeated or detailed in the Bill of Quantities. References to the relevant specifications and sections of the contract documentation should be referred to before quoting rates in the Bill of Quantities.
7. The rates and prices Bid in the priced Bill of Quantities shall, except as otherwise provided under the Contract, include all construction equipment, plant, labour, supervision, materials, erection, maintenance, insurance, profit, royalty, octroi, taxes and duties, together with all general risks, liabilities and obligations set out or implied in the Contract.
8. The rates are deemed to be inclusive of all lead (except as otherwise specifically provided in the description of the particular item), lifts, ascend, descend, handling, rehandling crossing of nallah/streams/tracks any other obstructions.
9. All enabling works for executing the work e.g. approach road to site, launching arrangements, procuring right of way, arrangement of water and electricity etc is to be arranged by the contractor at his own cost and deemed to be included in the quoted rates. Where a temporary tube well or any other water source are constructed by the contractor in the railway land for the purpose of taking power /water for construction purposes, no charge would be recovered from the contractor but written permission will however, be obtained by the contractor from the Engineer who may, at his discretion, refuse such permission for such construction of temporary arrangement. The contractor shall also be required to restore the site to its proper condition as directed by the Engineer.
10. Storage of Material: All the material at site will have to be properly stacked & stored so as to facilitate inspection. The material should be properly protected from the detrimental effects of nature and fire, theft etc. The contractor shall be responsible for watch & ward and any loss or deterioration on account of above shall lead to rejection of material and contractor has to replace the same at his own cost. All the disposable material should be disposed off outside the railway boundary at a designated place as directed by the Engineer.



11. The method of measurement of completed work for payment shall be in accordance with provisions in Works Requirements (Specifications) except as otherwise specifically provided in the description of item or particular bill of quantities or explanatory notes to the particular bill of quantities.
12. Trees falling in the alignment or any other site of the works which belongs to the railways will be trimmed and stacked at a nominated place at his /their own cost as directed by Engineer and the same will be Railway/Employer's property. Trees of the forest department will be trimmed and deposited in the nearest forest depot. No separate payment on this account shall be made to the contractor.

B. Instructions for quoting by the bidders

1. The prices for supply of materials and erection are in accordance with the technical specifications, approved drawings and designs. The contractor should note that no item of materials, equipment, fittings and components shall be supplied by the Employer.

2. UNIT PRICE:

- i) The unit price indicated under "Supply" in the bills is the all inclusive price of materials and all incidental charges for transport, loading/unloading and handling etc.
 - ii) The price also include taxes, duties, levies (including octroi) applicable on Works contracts, insurance/bank guarantee/indemnity bond charges etc.
 - iii) The prices also include provision for losses and wastages in transit and erection.
 - iv) The price quoted also include RITES/RDSO representative inspection and testing charges unless otherwise specified in the bill of quantities or Technical Specification. In case of change of inspection from RDSO/RITES to RVNL/CONSIGNEE, 1% of the cost of material will be deducted by RVNL as inspection charges.
 - (v) The unit price indicated under "Erection" in the bills should be inclusive of the cost of erection and testing and also include all cost of administration of the contract, insurance premia, banker's charges, cost of stamps/storage/loading/unloading and handling of materials and also include the cost of transportation which the contractor may incur for carriage of material to the site of works. The unit prices should also include cost of works and adjustment that may become necessary during or after the tests for commissioning.
 - (vi) If for any item of work, rates for supply and erection are not separately mentioned, 80% of the item price shall be considered as supply rate and balance 20% shall be taken as erection rates.
3. The whole cost of complying with the provisions of the contract shall be included in the items/bills provided in the BOQ and, where no items/bills are provided, the cost shall

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be deemed to be distributed among the rates and amount entered for related Items of Works.

C. NOTES SPECIFIC TO PAYMENT: INVOICING PROCEDURE

1. All invoices shall be submitted with original supporting documents or certified true copies of supporting documents wherever these are acceptable to the Engineer as per contract. Where copies of original documents are required in support of several invoices, true certified copies of the original documents may be forwarded to the Engineer, with his consent.
2. Invoices shall be submitted only on the basis of provisions in Contract Agreement and prices. The quantities and measurement of works completed should be approved by the Engineer prior to the submission of invoices. For this purpose, the schedule of quantities and measurement submitted by the contractor for approval of the Engineer may be only up to the extent of work completed except in the case of payments on Provisional Acceptance.

D. PAYMENT PROCEDURE

1. ON ACCOUNT PAYMENT AGAINST SUPPLY OF MATERIAL

On Account Payment will be made as described below:

- (i) "On Account Payment" shall be made for the items specified in detailed terms of payment of each schedule under clause No. 4.0 of this preamble.
- (ii) 'On Account Payment' shall be made to the extent of 85% of the accepted supply rate, after receipt, acceptance, accountal, proper storage and protection against loss, damage or deterioration on the items mentioned in each schedule.
- (iii) 'On Account Payment' made to the contractor will subsequently be adjusted against progress payments and against payment due on provisional acceptance.
- (iv) All invoices shall be accompanied with the following, for the purpose of arranging 'On Account Payment' against the contract:
 - a. Supplier's Delivery Challans.
 - b. Inspection certificate granted by the authorized approved agency/Purchaser's representative as per contract agreement.
 - c. Certificate of receipt of material at Contractor's depot/work sites duly accepted by the Engineer.
 - d. Comprehensive Insurance Policy for supply and safe custody of material.
 - e. Indemnity Bond for any loss, theft, damage, or deterioration of material for equivalent amount for which On Account Payment is claimed.
 - f. Quality assurance documents.



2. **PROGRESS PAYMENT AGAINST SUPPLY AND ERECTION OF MATERIAL:**
On completion of each item of BOQ, the contractor shall receive payment to the extent of 95% of the supply and erection costs after making any recoveries and adjusting of On Account Payment, which may be due.
3. **REMAINING 5% PAYMENT:** The balance 5% of each item of the BOQ shall be paid to the contractor after commissioning of the portion of the work or handing over of the installation/material to the employers/Railways representative. This is applicable for all schedules.

4.0 PROCEDURE OF SCHEDULE WISE PAYMENTS

4.1 Schedule 16000:

(i) Schedule No. 16001 (Design & Drawing)

The payment shall be made as under:

- (a) 50% of Scheduled rates shall be paid after "in principle approval of design/drawings by RVNL".
- (b) 45% of Scheduled rates shall be paid after the submission & acceptance of as erected/ completion drawings by RVNL.

(ii) All other items except item No. 16001:

- (a) **On Account Payment** shall be made only for item Nos. 16009 & 16010 and as per terms and conditions given in clause No. D(1) under "Payment Procedure".
- (b) The **Progress Payment** to the extent of 95% of all the items in the schedule shall be paid for the supply and erection prices after adjustment of "**On Account payment**" & other recoveries, if any, wherever applicable.

4.2 Schedule 17000:

- i) 50% of the Schedule rate shall be paid on Casting of the Roof of the Switching Station Building.
- ii) 45% of the Schedule rate shall be paid on completion of the building in all respects and certification by the Engineer.

4.3 Schedule 19000:



- (i) **On Account Payment** will be made only for item No. 19004 and as per terms and conditions given in clause No. D(1) under "Payment Procedure".
- (ii) **Schedule No. 19003:** On completion of erection of bracket assemblies, the contractor shall receive payment to the extent of 85% of prices for supply and erection of bracket assemblies. After final adjustment of OHE and SED checking, contractor shall receive another 10% payment".
- (iii) The **Progress Payment** to the extent of 95% of all the items in the schedule shall be paid for the supply and erection prices after adjustment of "**On Account payment**" & other recoveries, if any, wherever applicable.

4.4 Schedule 20000:

- (i) **On Account Payment** will be made only for item Nos. 20002 & 20003 and as per terms and conditions given in clause No. D (1) under "Payment Procedure".
- (ii) **Item No. 20001:** On completion of erection of the items the contractor shall receive payment to the extent of 85% of the prices for supply and erection.
- (iii) The **Progress Payment** to the extent of 95% of all the items in the schedule shall be paid for the supply and erection prices after final adjustment of OHE and SED checking and after adjustment of "**On Account payment**" & other recoveries, if any, wherever applicable.

4.5 Schedule 21000:

- (i) **On Account Payment** will be made only for item Nos. 21003, 21004, 21005 & 21014 and as per terms and conditions given in clause No. D(1) under "Payment Procedure".
- (ii) The **Progress Payment** to the extent of 95% of all the items in the schedule shall be paid for the supply and erection prices after adjustment of "**On Account payment**" & other recoveries, if any, wherever applicable.

4.6 Schedule 24000:

- (i) **Item No. 24001 (Design & Drawing of TSS)**
 - (a) 50% of Scheduled rates shall be paid after the "in principle approval of design/drawings by RVNL".
 - (b) 45% of Scheduled rates shall be paid after the submission & acceptance of as erected/ completion drawings by RVNL.

- (ii) **On Account Payment** will be made only for item Nos. 24004 to 24014, 24032 to 24036, 24038 and as per terms and conditions given in clause No. D(1) under "Payment Procedure".
- (iii) The **Progress Payment** to the extent of 95% of all the items in the schedule shall be paid for the supply and erection prices after adjustment of "**On Account payment**" & other recoveries if any wherever applicable except item No. 24001 which will be paid as per (i) above.

4.7 Schedule 27000 & 28000:

95% of the accepted price shall be paid on receipt & accountal of material at site or required destination after inspection and production of documents as listed below:

- (i) Supplier's Delivery Challans.
- (ii) Inspection certificate granted by the authorized approved agency/Purchaser's representative as per contract.
- (iii) Certificate of receipt of material at Contractor's depot/work sites duly accepted by the Engineer.
- (iv) Quality Assurance Documents including Guarantee/Warrantee, if any.

4.8 Schedule 29000:

(i) Item No. 29001 (Design & Drawing of SCADA)

- (a) 50% of Scheduled rates shall be paid after the "in principle approval of design/drawings by RVNL".
- (b) 45% of Scheduled rates shall be paid after successful completion of the work and handing over of the soft & hard copies of as erected/completion drawings & software to RVNL.

(ii) On Account Payment shall be made only for item Nos. 29002 to 29010 & 29012 to 29015 and as per terms and conditions given in clause No. D(1) under "Payment Procedure".

(iii) The Progress Payment to the extent of 95% of all the items in the schedule shall be paid for the supply and erection prices after adjustment of "**On Account payment**" & other recoveries if any wherever applicable except item No. 29001 which will be paid as per clause (i) above.

4.9 Schedule 30000:

- (i) (a) **On Account Payment** shall be made only for item Nos. 30001 to 30003 and 30005, 30009 and as per terms and conditions given in clause No. D(1) under "**Payment Procedure**".



- (b) The progress payment of the above items to the extent of 95% of the supply and erection prices shall be paid after adjusting of "On Account payment" & other recoveries.

- (ii) **Item Nos. 30006, 30007:** On completion of foundation work, the Contractor shall receive payment to the extent of 75% of the prices (for supply and erection taken together) of foundation and another 20% after mast erection, muffing, backfilling etc.

- (iii) **Item No. 30008:** On completion of work, Contractor shall receive progress payment to the extent of 95% of the prices.

- (iv) **Item No. 30009:** On completion of erection of structures, the Contractor shall receive payment to the extent of 85% of the prices for supply and erection of structures and another 10% after erection of respective bracket assemblies/equipment.

4.10 SCHEDULE No. 33000 (General Electrical Works):

- (i) 85% of the accepted supply rate shall be paid on receipt of material at site, after inspection & against submission of an indemnity bond.

- (ii) Further payment of supply & erection cost to cover 95% of the total item cost shall be paid on completion of the work and on certification by the Engineer after adjusting already paid amount & other recoveries if any.

5. FINAL SETTLEMENT

On expiry of the defect liability period and issue of the taking over certificate of the entire installation, the Bank Guarantee for Performance security shall be released to the contractor after adjustment of any dues payable by the contractor.

6. RECOVERIES FROM THE CONTRACTOR

All the recoveries for materials supplied and services rendered by the Purchaser to the Contractor and other refunds due from the Contractor shall be made by deductions from payments due to the Contractor covering the value of supply and erection in the progress payment and from payments due on provisional Acceptance.

7. TAXES AND DUTIES

- (i) All taxes, duties and levies (including octroi, works contract tax, service tax) arising out of the transactions between the contractor and his sub-contractor/Suppliers for this work will be deemed to be included in the accepted rates, unless otherwise specified in the BOQ or technical specification.



(ii) Where the law makes it statutory for the Purchaser to deduct any amount towards sales tax or any other taxes on works contract, the same shall be deducted and remitted to the concerned authority.

8. PRICE VARIATION

Coefficients governing the adjustment of changes in cost to be read with clause 13.8 of GCC applicable to various schedules are also included.

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Bill of Quantities					
Schedule 16000					
RE- General					
Item No	SOR ITEM	Description	Unit	Rate(In Rs.)	
				Supply	Erection
16001	OHE-1	Preparation and submission of designs and drawings for Overhead Equipment, Switching Station, Sectioning diagram, Power supply diagram, Schematic diagram of Switching Stations, Traction working rule diagram and Instructions etc. required for commissioning of OHE	TKM	1395	20226
16002	OHE-2	Supply and Erection of large Span wire (130 sq.mm) including its fittings with insulators:			
		(a) With Porcelain Insulators 1050mm CD	Mtr	615	50
		(b) With Composite Insulators 1050mm CD	Mtr	581	50
16003	OHE-3	Supply and Erection of materials for Termination of single conductor of overhead equipment or a terminating wire			
		(a) With Porcelain Insulators 1050mm CD	Each	8224	754
		(b) With Composite Insulators 1050mm CD	Each	6589	754
16004	OHE-4	Supply and Erection of materials for Termination of all aluminum 25 KV feeder conductor single (spider) including feeder wire			
		(a) With Porcelain Insulators 1050mm CD	Mtr	410	165
		(b) With Composite Insulators 1050mm CD	Mtr	385	165
16005	OHE-5	Supply and Erection of material for Termination of copper cross feeder with gantries including cross feeder wire			
		(a) With Porcelain Insulators 1050mm CD	Set	34841	884
		(b) With Composite Insulators 1050mm CD	Set	31572	884
16006	OHE-6	Supply and Erection of Terminal boards in control cubicles,	Each	8383	377
16007	OHE-7	Supply and Erection of iron clad 240V AC and 110V D.C. board with fuse box in control cubicles,	Set	5557	172
16008	OHE-8	Supply and Erection of Lead Acid Batteries 40 AH with Battery Chargers:	Set	199420	7089
16009	OHE-9(a)	Supply, Erection, Oil Filtration, Testing and Commissioning of 25 KV/240 Volt, 5 KVA, LT supply transformer with 25 KV D. O. fuse switch assembly, anticlimbing device, post insulators, copper jumper and earth electrode etc:			
		(a) With Porcelain Insulators 1050mm CD	Set	81902	12026
		(b) With Composite Insulators 1050mm CD	Set	80267	12026
16010	OHE-9(b)	Supply, Erection, oil Filtration, Testing and Commissioning of 25 KV/240 Volt, 25 KVA, LT supply transformer with 25 KV D. O. fuse switch assembly, anticlimbing device ,post insulators, copper jumper and earth electrode etc:			
		(a) With Porcelain Insulators 1050mm CD	Set	232375	22953
		(b) With Composite Insulators 1050mm CD	Set	230740	22953
16011	OHE-10	Modification to existing OHE	Mtr	0	31
16012	OHE-11	Manning of switching station i.e. SP/SSP and TSS:	Per month	0	35389
16013	OHE-12(a)	Electrification of switching station building as per specification	Each	0	30339
16014	OHE-12(b)	Supply & Erection of Earthing arrangement at switching station	job	14595	6936
16015	OHE-13	Loading/Unloading transportation and handing over of all type of materials etc. other than contractor material	MT/KM	0	53
16016	OHE-14	Extra on Erection rate of work under power block:			

Bill of Quantities				
Schedule-17000				
Switching Post Building				
Item No	SOR ITEM	Description	Unit	Rate (in Rs)
17001	OHE-15	Construction of Switching Station building, RCC work, plastering, brick masonry, retaining wall, filling, compacting and leveling work etc as per RDSO standard drawing and supply and erection of name board of switching station	Each	434225
17001(a)	OHE-15(a)	Extra for every 0.3 m or part there of higher plinth over normal plinth height (On ground floor area only)	Sq.m	538
17001(b)	OHE-15(b)	Extra for every 0.3 m or part there of deeper foundations over normal depth (On ground floor area only)	Sq.m	538
17001(c)	OHE-15(c)	Extra for open foundation on poor soil having every 0.3 m or part there of higher plinth over normal plinth height (On ground floor area only)	Sq.m	1024

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Bill of Quantities					
Schdule 19000					
OHE - Ferrous other than steel structures and SPS					
Item No	SOR ITEM	Description	Unit	Rate (In Rs)	
				Supply	Erection
19001	OHE-16	Supply and Erection of a guy rod assembly.	Each	7112	1104
19002	OHE-17	Supply and Erection of protective screen on FOBs/ROBs	Sq.m	3682	398
19003	OHE-18	Supply and Erection of bracket assembly with insulators as per OHE plan:			
		(a) With Porcelain stay & bracket Insulators 1050mm CD	Each	16979	951
		(b) With Composite stay & bracket Insulators 1050mm CD	Each	15195	951
19004	OHE-19	Supply and Erection of regulating equipment (3 pulley type) with counter weight assembly for conventional OHE	Each	56034	4113
19005	OHE-20	Supply and Erection of material for termination of double Overhead Equipment conductor			
		(a) With Porcelain Insulators 1050mm CD	Each	11903	1038
		(b) With Composite Insulators 1050mm CD	Each	10118	1038
19006	OHE-21	Supply and Erection of anti-creep with galvanized steel wire			
		(a) With Porcelain Insulators 1050mm CD	Each	27934	2918
		(b) With Composite Insulators 1050mm CD	Each	24365	2918
19007	OHE-22	Supply and Erection of a structure bond/longitudinal bond/ transverse and special bond:.	TKM	19938	6361



012

Bill of Quantities					
Schedule 20000					
OHE - Non Ferrous 'A'					
Item No	SOR ITEM	Description	Unit	Rate(in Rs)	
				Supply	Erection
20001	OHE-23(a)	Supply and Erection of Over Head Equipment i.e. contact & catenary wire (excluding cost of supply of contact & catenary wires), jumper wire, dropper wire, contact/catenary clips, fasteners and all other material required at turn out/overlaps/diamond crossings etc. Final checking of OHE and adjustment, inspection to be done by tower wagon for commissioning of conventional OHE.	TKM	0	46243
20002	OHE-23(b)	Supply of contact wire (HDGCC 107 Sq.mm) only.	MT	708465	0
20003	OHE-23(c)	Supply of cadmium copper catenary wire (65 Sq. mm) only	MT	708465	0

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Bill of Quantities					
Schedule 21000					
OHE - Non Ferrous "B"					
Item No	SOR ITEM	Description	Unit	Rate(In Rs)	
				Supply	Erection
21001	OHE-24	Supply and Erection of anti-creep with cadmium copper catenary wire.			
		(a) With Porcelain Insulators 1050mm CD	Each	65775	4703
		(b) With Composite Insulators 1050mm CD	Each	63009	4703
21002	OHE-25	Supply and erection of section insulator assembly and associated fittings & fasteners for OHE with Bar Insulator			
		(a) With Porcelain Insulators 1050mm CD and Bar Insulator	Each	76420	5024
		(b) With Composite Insulators 1050mm CD and Porcelain Bar Insulator	Each	75038	5024
21003	OHE-26	Supply and Erection of PTFE type short neutral section assembly	Each	901853	5152
21004	OHE-27	Supply and Erection of 25 KV, S.P Isolators and with insulator with/without earth contact assembly:	Each	78797	5196
21005	OHE-28	Supply and Erection of 25 KV double pole isolator and with insulator with/without earth contact assembly:	Each	122498	5690
21006	OHE-29	Supply and Erection of all types of copper jumpers	Each	6859	379
21007	OHE-30	Supply and Erection of insulated catenary cable in the span under over-line structure.	Mtr	3120	97
21008	OHE-31	Supply of materials and erection of a large copper jumper (160sqmm) between aluminium bus / OHE and cross feeder with all associated fittings:	Each	8828	379
21009	OHE-32	Supply and Erection of solid copper busbar 18 mm dia.	Mtr	1804	163
21010	OHE-33	Supply and Erection of all types of connectors for aluminium/copper bus bar required for commissioning of switching stations with fasteners.	Each	4835	66
21011	OHE-34	Dismantling of traction structure, portals, TTC and associated SPS by cutting:	MT	0	1418
21012	OHE-35	Supply and Erection of safety items i. e. Fire extinguishers, set of fire bucket with stand and first aid box, key box with suitable key chain, locks and other misc items required for commissioning of switching station.	Set	12847	2128
21013	OHE-36	Supply and Erection of 25 KV AC OHE danger board/danger board for height gauge, public/staff caution board and special boards required for commissioning of OHE/SWSs	Each	145	127
21014	OHE-37	Supply, Erection and commissioning of light weight section insulator assembly 25 KV as per drawing no.6.2758.0 RDSO spec.no. TI/Spec/OHE/LWDSI/007	Each	314313	28293
21015	OHE-38	Supply, installation and commissioning of the maintenance free earth as per RDSO specification No. RDSO/PE/SPEC/PS/0109(REV.O)-2008	Each	0	384436

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Bill of Quantities					
Schedule-24000					
TRACTION SUB-STATION					
Item No	SOR ITEM	Description	Unit	Rate	
				Supply (In Rs)	Erection (In Rs)
24001	TSS-1	Design and drawings for 220/27 or 132/27 KV or 110/27 KV traction sub-station including feeding post and capacitor bank	Each	0	93217
24002	TSS-2	DELETED			
24003	TSS-3	Construction of baffle wall complete with reinforcement, brick work, plastering etc	Cum	2811	884
24004	TSS-4(a)	Supply, erection, testing & commissioning of 132 KV double pole SF-6 gas circuit breakers with interlock	Each	675777	5946
24005	TSS-4(b)	Supply, erection, testing & commissioning of 220 KV double pole SF-6 gas circuit breakers with interlock	Each	1273925	5946
24006	TSS- 5(a)	Supply and erection of 132 KV double pole isolators (manually operated)	Each	273015	2579
24007	TSS- 5(b)	Supply and erection of 220 KV double pole isolators (manually operated)	Each	273015	2579
24008	TSS-6(a)	Supply & erection of 132 KV current transformer assembly (400-200/5A)	Each	229105	1330
24009	TSS-6(b)	Supply & erection of 220 KV current transformer assembly (200-100/5A)	Each	229105	5027
24009A	TSS-6(c)	Supply & erection of 110 KV current transformer assembly (400-200/5A)	Each	152221	1330
24009B	TSS-6(d)	Supply & erection of 132 KV current transformer assembly (1200-800-400/5-5-5A)	Each	286488	1330
24010	TSS-7 (a)	Supply & erection of 120 KV lightning arrestors	Each	134059	942
24011	TSS-7 (b)	Supply & erection of 198 KV lightning arrestors	Each	134059	1643
24011A	TSS-7 (c)	Supply & erection of 96 KV lightning arrestors	Each	55814	942
24012	TSS -8(a)	Supply, erection, testing & commissioning of 25 KV single pole Vacuum circuit breaker with interlocking of rating 1600 amps	Each	352901	4175
24012A	TSS -8(b)	Supply, erection, testing & commissioning of 25 KV single pole Vacuum circuit breaker with interlocking of rating 2000 amps	Each	417722	4175
24013	TSS -9(a)	Supply & erection of 25 KV current transformers (1500-750/5A)	Each	64083	549
24013A	TSS -9(b)	Supply & erection of 25 kV current transformers (3000-1500/5 Amps)	Each	74064	549
24013B	TSS -9(c)	Supply & erection of 25 KV current transformers (200-100/5A)	Each	48379	3241

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Bill of Quantities					
Schedule-24000					
TRACTION SUB-STATION					
Item No	SOR ITEM	Description	Unit	Rate	
				Supply (In Rs)	Erection (In Rs)
24014	TSS-10	Supply, erection, testing and commissioning of control & relay numeric panel suitable for double transformer traction sub -stations of 220/27 or 132/27 KV or 110/27 KV	Each	1716179	10779
24015	TSS-11	Supply & erection of tubular aluminum bus bars 50mm x 39mm dia	Mtr	484	37
24016	TSS-12	Supply & erection of 'Zebra' ACSR conductor	Mtr	299	8
24017	TSS-13	Supply & erection of all type of connectors, bus splice & TEE connectors etc required for commissioning of TSS equipments	Each	1853	23
24018	TSS-14	Supply & erection of copper jumper with fittings and fasteners required for TSS	Each	2783	385
24019	TSS-15(a)	Supply & erection of 110/132 KV support insulators with fittings and fasteners	Each	27964	446
24020	TSS-15(b)	Supply & erection of 220 KV support insulators with fittings and fasteners	Each	27964	697
24021	TSS-16	Supply & erection of 25 KV support insulators with fittings and fastener	Each	3419	128
24022	TSS-17(a)	Supply & erection of 110/132 KV termination with/without adjuster complete with disc insulators	Each	10137	232
24023	TSS-17(b)	Supply & erection of 220 KV termination with/without adjuster complete with disc insulators	Each	10137	355
24024	TSS-18	Supply & erection of low maintenance lead acid batteries set with 2 nos. of suitable battery charger	Set	711316	7825
24025	TSS-19	Supply & erection of 240Volt AC and 110 V DC Distribution boards in the control room	Each	26194	556
24026	TSS-20	Supply and erection of earth electrode	Each	2190	853
24027	TSS-21	Supply and erection of earth leads 75 x 8 mm mild steel flat laid in the ground or exposed as per site requirement	Mtr	155	45
24028	TSS-22	Supply and erection of earth leads 50 x6 mm mild steel flat laid in the ground or exposed as per site requirement	Mtr	76	36
24029	TSS-23	Supply and erection of 8 SWG GI Wire for earthing	Mtr	14	15
24030	TSS-24	Supply and erection of 32mm dia MS rod for earth mat	Mtr	178	15

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Bill of Quantities					
Schedule-24000					
TRACTION SUB-STATION					
Item No	SOR ITEM	Description	Unit	Rate	
				Supply (In Rs)	Erection (In Rs)
24031	TSS-25	Supply & erection of earth screen wire including termination	Mtr	196	10
24032	TSS-26(a)	Supply, erection, testing & commissioning of 132/27 KV, 21.6/30.24 MVA, ONAN/ONAF, single phase traction power transformers	Each	27986915	213807
24033	TSS-26(b)	Supply, erection, testing & commissioning of 220/27 KV, 21.6/30.24 MVA, ONAN/ONAF, single phase traction power transformers	Each	39376406	213807
24033A	TSS-26(c)	Supply, erection, testing & commissioning of 110/27 KV, 21.6/30.24 MVA, ONAN/ONAF, single phase traction power transformers	Each	20014319	213807
24033B	TSS-26(d)	Supply, erection, testing & commissioning of 132/27 KV, 30/42 MVA, ONAN/ONAF, single phase traction power transformers	Each	32340121	213807
24034	TSS-27(a)	Supply and erection of 25 Kv double pole isolator 1600 Amp with insulators	Each	77583	2471
24034A	TSS-27(b)	Supply and erection of 25 Kv double pole isolator 3150 Amp with insulators	Each	155296	2471
24035	TSS-28(a)	Supply and erection of single pole isolator 1600 Amp with insulators	Each	42898	2471
24035A	TSS-28(b)	Supply and erection of single pole isolator 3150 Amp with insulators	Each	78793	2471
24036	TSS-29	Supply, erection, testing & commissioning of 25 KV shunt capacitor bank of 2400 KVAR rating at 25 KV including lowloss series reactor, 25 KV neutral current transformer, and other accessories etc.,	Each	2345400	49131
24037	TSS-30	Excavation of Earth to the depth of 2 meter below ground level for burying 13mtrs long rail and connecting it as per RDSO drawing (Rail will be supplied by RVNL)	Each	0	2537
24038	TSS-31(a)	Supply, erection, testing and commissioning of 110 KV Potential Transformer assembly	Each	197484	1248
24038A	TSS-31(b)	Supply, erection, testing and commissioning of 132 KV Potential Transformer assembly	Each	223541	1248
24039	TSS-32	Dismantling and shifting of Traction Power Transformer with associated equipments from the existing bay and keeping at suitable place in substation as directed by engineer	Job	0	61916

NOTE:
1.Provision of cross track, control room building and approach road shall be made in the civil portion of the estimate.
2.Provision of yard lighting and water jet pump shall be made in the general electrical portion of the estimate.

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Bill of Quantities			
Schedule 27000			
TSS Spares			
Item No	Description of item	Unit	Rate(In Rs.)
27001	SF-6 Gas Cylinder with filling arrangement	Each	44104
27002	25KV CB Bushing	Each	46991
27003	Interruptor Bushing	Each	16840
27004	Earth fault Relay	Each	10745
27005	Buchholz Relay	Each	24057
27006	Relay Testing Kit	Set	218111
27007	HRC fuse 2A, 4A, 10A, 15A, 32 Amp	Set	1604
27008	Transformer Oil	Litre	42
27009	Capacitor unit of capacitor bank	Set	820170
27010	Portable oil centrifuging system capacity up to 5000 LPH portable type.	Each	632521

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Bill of Quantities			
SCHEDULE -28000			
Tools & Plants (OHE & PSI)			
Item No	Description	Unit	Rate(in Rs.)
28001	Tirfor 2.5T/1.5T	Nos	10651
28002	Trifor 5T/3T	Nos	14555
28003	Pull lift 3 T	Nos	13225
28004	Pull lift 3/4 T	Nos	5858
28005	Aluminium / Light weight metal conduit Platform ladder trolley	Nos	15090
28006	Rail jumpers with clamps at both ends	Nos	1633
28007	Earthing discharge rod complete	Nos	11538
28008	Aluminium Straight ladder extensive (11 M)	Nos	7811
28009	Portable Electric Drill 21mm, single phase, 230V (for drilling) Ralli Wolf, Hitachi, Black & Decker makes only	Nos	15090
28010	First aid box filled with medicines as per standard	Nos	1775
28011	Two Fold Stretcher Made of high quality aluminium alloy tubes.Aprox dimensions:- High position 1900x560x900mm, Low position 1900x500x280mm, weight 40 kgaprox suitable forload weight up to 120kg. Make Unisurge- India or equivalent as approved by Engineer	Nos	8040
28012	Fire bucket (10 Ltrs) capacity with one stand and cover for set of 4/6 buckets at each switching station/TSS	Nos	214
28013	Portable fire extinguisher dry chem. Powder (10 Ltr)	Nos	6213
28014	Portable fire extinguisher foam type (cap 9 Ltr)	Nos	6746
28015	D' Shackles set of on each (1", 3/4", 5/8", 1/2")	Nos	1775
28016	Set of Steel sling with Eye each end of 2 M & 3 M	Nos	2219
28017	Digimatic Digital Micro meter 0-25 mm resolution 0.001mm. Mitutoyo make or equivalent as approved by Engineer	Nos	9039
28018	Bench Vice 6", All steel, fixed based. Make GB tools or equivalent as approved by Engineer	Nos	4052
28019	Canvass Tarpaulin 12 m x 12m	Nos	3550
TESTING AND MEASURING EQUIPMENTS			
28020	DELETED		
28021	Binoculars Nikon-8252 ACULON A211 10-22x50 zoom Binocular or equivalent as approved by Engineer	Nos	12570
28022	Vernier Calipers Digital, range 0-200mm Mitutoyo make Model 500-197-30or equivalent as approved by Engineer	Nos	9535
28023	Walkie Talkie Sets (2W output)	Nos	8877
28024	Digital Multimeter 1000V, 10A Motwane make DM352 or equivalent as approved by Engineer	Nos	13986
28025	Magic Pole ladder 8'	Nos	10651
28026	Drop out fuse pull rod	Nos	1775
28027	1/2" square drive socket set containing 19 sockets with 6 attachments	Nos	1775
28028	Transformer oil Acidity testing Kit	Nos	8877
28029	Motor operated insulation tester 5 Kv	DELETED	
28030	Pocket size clip on Tong tester	Nos	2664
28031	DELETED		
28032	DELETED		
28033	Digital time interval meter 15 - 1000 seconds	Nos	1775
28034	Insulation tester 2.5 KV	Nos	4438
28035	DELETED		
28036	Insulation Megger 500 V Motwanemake or equivalentas approved by Engineer	Nos	11538



28037	Transformer Oil BDV testing Kit single phase, 240V AC, Motorized/Manual/Continuously variable between 0-60 KV at 2KV/sec. Transpower make or equivalent as approved by Engineer	Nos	33963
28038	125 Litre cap oil filtration plant	Nos	177520
28039	Auto transformer 2 A capacity	Nos	2664
28040	Load cell tester suitable for 40 AH and 200 AH battery	Nos	1775
28041	Emergency Telephone	Nos	7989
28042	Spanner set double ended, 24 size 12 pieces set (6mm to 42mm) Gedore or Tapraia make with ISI Mark	Set	8535
28043	Cogex or Similar 52 pieces socket set (box spanners)	Set	6401
28044	Primary current injection testing kit (0 - 3000 amps)	Each	1260654
28045	Insulation Megger with selectable range of 500 V, 1000 V, 2500 V and 5000 V, digital numeric and graphic display in hard carrying case with all standard accessories. Make Motwane or equivalent as approved by Engineer	Each	463909
28046	Digital earth tester make Megger model no. DET4TR2 with all standard accessories and carrying case make Motwane or equivalent as approved by Engineer	Each	136644
28047	Thermal Imaging camera with software	Each	1719108
28048	Tan delta field test set	Each	1271528
28049	Supply, installation, testing & commissioning of GPS based OHE monitoring & current collection system as per RDSO spec No. TI/SPC/OHE/OLIVER/0050(01/06) or latest	Each	636604
NOTE: The above list is provisional and may be updated as per zonal railway or specific sectional requirement within about the same overall cost.			

DR. S. K. SINGH

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Bill of Quantities					
Schedule-29000					
SCADA					
Item No	SOR ITEM	Description	Unit	Rate (In Rs)	
				Supply	Erection
29001	SCADA-1	Preparation and supply of Design & Drawing for SCADA at RCC,TSS,SP & SSP.	Job	109587	0
29002	SCADA-2	Supply, Erection, Testing & commissioning of SCADA equipments for RCC as per RDSO latest specification	Set	3727913	341832
29003	SCADA-2(a)	Supply, installation & Testing of standard SCADA software	Set	1568546	210358
29004	SCADA-3	Supply, Erection, Testing & commissioning of RTU's as per latest RDSO specifications for			
29005	SCADA-3(a)	FP/TSS	Each	611733	31553
29006	SCADA-3(b)	SP.	Each	470564	21036
29007	SCADA-3(c)	SSP.	Each	470564	21036
29008	SCADA-4	Supply, Erection, Testing & commissioning of Maintenance 400AH Free/Low Maintenance type Lead Acid battery.	Set	1076120	68367
29009	SCADA-4(a)	Supply, erection, testing & commissioning of 2x5 kVA dual redundant hot standby UPS System as per latest RDSO Specification.	Set	331173	24717
29010	SCADA-5	Supply & Erection of Furniture at RCC	Set	292380	21036
29011	SCADA-6	Modification/up gradation, testing & commissioning in existing standard SCADA software at RCC Equipments for configuration, integration/ hooking up of additional RTUs of adjacent section i.e- RCC,TSS,SP and SSP	Job	0	829335
29012	SCADA-7	Supply, Erection, Testing and commissioning of GPS Receiver with 3 nos digital clock at RCC	Job	261424	15777
29013	SCADA-8	Supply, Erection, Testing and commissioning of Hardware & Software for TPC/Head quarter and Railway Board.	Job	818781	78884
29014	SCADA-9	Supply of 10% spare cards for operation & maintenance as per latest RDSO Specification.	Job	345080	0
29015	SCADA-10	Supply of Spl. T & P for maintenance. as per latest RDSO Specification.	Set	418278	0
29016	SCADA-11(a)	Erection, integration, testing & commissioning for existing and new equipments for TSS.	Job	0	174806
29017	SCADA-11(b)	Erection, integration, testing & commissioning for existing and new equipments for SSP.	Job	0	58269
29018	SCADA-11(c)	Erection, integration, testing & commissioning for existing and new equipments for SP.	Job	0	145672

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Bill of Quantities					
Schedule 30000					
Common Schedule of OHE/TSS					
Item No	SOR ITEM	Description	Unit	Rate (In Rs)	
				Supply	Erection
30001	CS-1	Supply and erection of 25 KV,1600 Amp vacuum Interruptor	Each	312901	3577
30002	CS-2	Supply and erection of 25 KV Potential Trasformer Type-I or Type-II	Each	63761	673
30003	CS-3	Supply and erection of 42 KV Lightning Arrestor with surge monitor, counter and cable	Each	22993	471
30004	CS-4	Supply and installation of cables for SWS/TSS	Mtr	178	14
30005	CS-5	Supply, erection, oil filtration, testing & commissioning of 25KV/240V 10 KVA Auxiliary (LT) Supply Transformers oil type with DO fuse switch, anti climbing device, pedestal insulators, copper jumper and earth electrode etc.			
		(a) With Porcelain Insulators 1050mm CD	Set	82726	11043
		(b) With Composite Insulators 1050mm CD	Set	81211	11043
30006	CS-6	Providing and Laying of Concrete for foundation and plinth in all types of Soils and Soft Rock.	CUM	4027	1303
30007	CS-7	Providing and Laying of Concrete for foundation and plinth in Hard and Rocky Soil requiring chiseling/Blasting	CUM	4161	1938
30008	CS-8	Providing and laying of Reinforced Concrete for Pier/Coloumn/Pile, Cable Trench and Trench Cover	CUM	5998	
30009	CS-9	Supply and erection of all types of galvanised Steel Structures, Small Parts Steel etc.	MT	86646	2730
30010	CS-10	Supply and erection of Fencing Panels, Uprights, Gate and Anti-Climbing device	Mtr	2539	86
30011	CS-11	Supply and erection of Aluminium Jumper with Fastners	Each	1999	212
30012	CS-12	Supply and erection of Copper Strips for equipment earthing	Mtr	1206	127
30013	CS-13	Supply and erection of Aluminium Bus Bar 36mmx28mm	Mtr	297	44
30014	CS-14	Supply and spreading of gravel/ ballast in the swich yard (TSS/SP/SSP)	Cum	906	6
30015	CS-15	Dismantling of Redundant foundations with compressor powered machines/manually with contractor's own men and material including consumables like Diesel Oil etc	Nos	0	2434
30016	CS-16	Monthly charges for one crane operator for full time operation for one crane including Monthly charges for one Watch&Ward for one crane.	Per-Month	0	20186
30017	CS-17	Supply and Erection of anti theft transformer 240 volt/2.2 KV 5 KVA, with DO Fuse switch excavation of cable trench, laying of cables, earthing, jumpering, DG set ncluding dismantling of above equipments.	each location	64496	44850

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30018	CS-18	Dismantling of Switching station (SWS) Complete with building foundation, equipment and gantry structure with compressor powered machines/manually with contractor's own men and material . and loading, transportation, unloading and handing over of released material to nominated person at specified place as per instructions of the Engineer.	Each SWS	0	60957
30019	CS-19	Hiring charges for semi skilled Labour with proper tools for working during Non interlocking period.	Man-Days	0	315
30020	CS-20	supply and laying of dry stone boulder pitching of aprox 300mm thickness in exposed slopes at SWS, TSS and OHE Foundations etc .	cum	710	177
30021	CS-21	Extra Earthwork in filling at SWS, TSS and OHE Foundations	cum	166	41
30022	CS-22	Drilling of 50mm dia holes in the existing RCC trestle beam/pier/mass concrete beam/lined or unlined tunnels to the depth between 450mm to 1000mm with pneumatic drillers, compressor etc. and making the hole surface fit for insertion of bolts with all lead and lift. Supply and grouting of galvanized MS bolts of size 32/25 mm dia of varying length including nuts, check nuts, washers etc. Pressure Grouting the drilled holes (50mm dia) by epoxy grouting of approved quality of epoxy resin hardener and thinner. Payment includes supply, erection, grouting with suitable size bolts at regular intervals of earthing strip and its connection to brackets etc wherever required in tunnels. (All labour and materials shall be by the contractor).	Each Loc	19182	4796

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GENERAL SERVICES ELECTRICAL WORKS				
SCHEDULE -33000				
Bill No.33 :GENERAL SERVICES ELECTRICAL WORKS				
This schedule shall be read in conjunction with its Explanatory Notes and Technical Specifications for detailed description for various items included therein.				
Item No.	Description of Items	Unit	Rate(In Rs.)	
			Supply	Erection
SECTION - A :				
ELECTRIFICATION OF STAFF QUARTERS				
33001	Electrification of staff quarter complete with point wirings, circuit wirings, sub main wirings etc. with Fire Retardant (FR) PVC insulated, multi stranded, copper conductor, single core cable on surface /in recessed PVC conduits, along with provision of luminaries with lamps, call bells, ceiling & exhaust fans, distribution boards, loose wire box, geyser, energy meters in M.S. box including earthing with G.I. pipe electrode etc. as per Scale of fittings, and cable sizes, nos. of points permissible in each circuit and sub main/s etc. for each type of quarter as indicated in Explanatory Notes.			
i)	Type - I quarter	Each	0	30626
ii)	Type - II quarter	Each	0	32214
iii)	Type - III quarter	Each	0	40436
iv)	Type - IV quarter	Each	0	74809
v)	Type - V quarter	Each	0	102666
vi)	Extra for stair case light point controlled with two nos. two way switches	Each	0	658
ELECTRIFICATION OF GATE MAN LODGES AT LEVEL CROSSINGS				
33002	Electrification of gate man lodge complete with point wirings, circuit wirings etc. with Fire Retardant (FR), PVC insulated, multi stranded, copper conductor, single core cable on surface/in recessed PVC conduits including provision of luminaries with lamps, ceiling fan, distribution board, earthing with G.I. pipe electrode etc. as per Scale of fittings, Cable sizes, no. of points permissible in each circuit and sub mains as indicated in Explanatory Notes.	Each	0	19055
ELECTRIFICATION OF SERVICE BUILDINGS, PASSENGER SHELTER, SHEDS, PUMP HOUSE, SUB STATION BUILDINGS, OFFICES ETC AND ADDITIONAL REQUIREMENT OF QUARTERS, LC GATES ETC.				
33003 (i)	Wiring for light/ceiling fan/exhaust fan/call bell/light plug/group etc. points including circuit wiring, sub-main wiring with Fire Retardant (FR), PVC insulated, multi stranded, copper conductor, single core cable on surface/in recessed PVC conduits, distribution boards, sub distribution boards, earthing etc as required. Wiring shall be done as per sizes of cables, no. of points permissible in each circuit and sub main as indicated in Explanatory Notes.	Point	0	1189
33003 (ii)	Wiring for power plug point including circuit wiring, sub main wiring, with Fire Retardant (FR) PVC insulated, multi stranded, copper conductor, single core cable on surface/in recessed PVC conduits, distribution boards, sub distribution boards, earthing with G.I. pipe electrode etc as required. Wiring shall be done as per sizes of cables, no. of points permissible in each circuit and sub main as indicated in Explanatory Notes.	Point	0	2182
33003 (iii)	Extra for provision of industrial type iron clad plug socket with 32A DP MCB in M.S.Box	Point	0	596
33003 (iv)	Multiplug points(Power strip 3 no. 6A socket controlled by 16A switch) similar to Legrand cat no. 6745.48 OR as approved by engineer	No.	1418	71
33004	DELETED			

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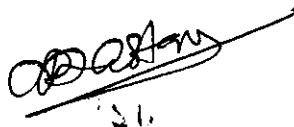
Item No.	Description of Items	Unit	Rate(In Rs.)	
			Supply	Erection
SECTION - B :PROVISION OF LUMINARIES,FANS,WATER COOLERS ETC.				
33005 (i)	Supply, installation, testing and commissioning of prewired 1x28watt, T-5, energy efficient, surface type luminary with epoxy powder coated CRCA sheet steel housing with reflector cover, complete with electronic ballast, T-5 tube etc. & earthing etc. as required.	No.	1590	250
33005 (ii)	Supply, installation, testing and commissioning of prewired 2x28watt, T-5, energy efficient, surface type luminary with epoxy powder coated CRCA sheet steel housing with reflector cover, complete with electronic ballast, T-5 tube etc. & earthing etc. as required.	No.	2171	542
33006 (i)	Supply, installation, testing and commissioning of prewired 2x28watt, T-5, energy efficient street light luminary, complete with T-5 tubes, electronic ballast etc.on bracket pipe of erected pole or on wall bracket of GI class "B" pipe & connections from junction box/overhead line/light point etc. to luminary with 1.5 sq.mm FRLS PVC insulated multistranded copper conductor single core/three cable as instructed & earthing etc as required.	No.	3217	506
33006 (ii)	Supply, installation, testing and commissioning of prewired 1x28watt, T-5, energy efficient street light luminary, complete with T-5 tubes, electronic ballast etc.on bracket pipe of erected pole or on wall bracket of GI class "B" pipe & connections from junction box/overhead line/light point etc. to luminary with 1.5 sq.mm FRLS PVC insulated multistranded copper conductor single core/three cable as instructed & earthing etc as required.	No.	2231	558
33006 (iii)	Supply, installation, testing and commissioning of prewired 2x14 watt, T-5, energy efficient street light luminary complete with T-5 tubes, electronic ballast etc.on bracket pipe of erected pole or on wall bracket of GI class "B" pipe & connections from junction box/overhead line/light point etc. to luminary with 1.5 sq.mm FRLS PVC insulated multistranded copper conductor single core/three cable as instructed & earthing etc as required.	No.	4103	1026
33006 (iv)	Supply, installation, testing and commissioning of prewired 4x14 watt, T-5, energy efficient street light luminary, complete with T-5 tubes, electronic ballast etc.on bracket pipe of erected pole or on wall bracket of GI class "B" pipe & connections from junction box/overhead line/light point etc. to luminary with 1.5 sq.mm FRLS PVC insulated multistranded copper conductor single core/three cable as instructed & earthing etc as required.	No.	7611	1902
33006 (v)	Supply, installation, testing and commissioning of CFL luminary Integral, powder coated die-cast aluminium housing, pot optics reflector with full glass cover, accessories with 85W CFL similar to Bajaj Cat Ref No BGEST 85 RF CFL FG E40.on bracket pipe of erected pole or on wall bracket of GI class "B" pipe & connections from junction box/overhead line/light point etc. to luminary with 1.5 sq.mm FRLS PVC insulated multistranded copper conductor single core cable & earthing etc as required.	Nos.	4444	889
33006 (vi)	Supply, installation, testing and commissioning of Light sensitive street light controller Bajaj Energy pack 25 KW or equivalent as approved by engineer for street light/High mast complete with infrared sensors, contactors and MCB, terminal board etc. for 25 KW load, Operative voltage 185-275V AC.	No	35276	1534
33006 (vii)	Supply, installation, testing and commissioning of Integral floodlight luminaries with pressure die cast aluminium housing and option of narrow & wide beam light distribution, similar to, Philips Fitting cat. ref. MWF331 1xHPITP 400W or equivalent as approved by engineer complete with all other accessories. lamp as required.	No	10496	502

Item No.	Description of Items	Unit	Rate(in Rs.)	
			Supply	Erection
33007	Supply, installation, testing and commissioning of metal halide street light luminary complete with MH/HPSV lamp, on bracket pipe of erected pole or on wall bracket of class"B"G.I.pipe & connections from junction box/overhead line/ light point etc. to luminary with 1.5 sq.mm FRLS PVC insulated multistranded copper conductor, single core/three cable as instructed & earthing etc as required.			
(i)	1 x 70 Watt.	No.	5833	916
(ii)	1 x 150 Watt	No.	6807	1068
33008	Supply, installation, testing and commissioning of 230V A.C. ceiling fan with double ball bearing and suitable capacitor complete with wiring with 1.5sq.mm FR, PVC insulated, copper conductor, single/three core cable as instructed, etc. as required.			
i)	1200 mm (without Regulator)	No.	1644	257
ii)	1400 mm (without Regulator)	No.	1786	280
33009	Supply and fixing of stepped type, electronic fan regulator with suitable rating for the CFL fan , on the existing phenolic laminated sheet cover plate/modular plate of switch box, including connections,testing & commissioning as required.	No.	335	75
33010 (i)	Supplying, installation, testing and commissioning of 11-23 watts, 250 volts, 2 pin, compact fluorescent lamp (CFL) complete with electronic ballast or equivalent LED lamp etc. as approved by Engineer.	No.	176	28
33010 (ii)	Supply,erection, testing and commissioning of Recessed type LED luminaries for 2x2 Grid ceiling 3300 lumens. similar to Phillips cat. No. RC365B LED33-5000 PSU OD WH	No	12530	626
33010 (iii)	Supply, erection, testing and commissioning of LED down lighter, housing aluminum die cast, white powder coated and PMMA diffuser having system wattage 15w and lumen efficacy ≥ 50 Lumens/watt as per IS/IE rules and RVNL technical specification. Make Crompton Greaves, Philips, Bajaj, Havells.	No	1856	464
33010 (iv)	Supply, erection, testing and commissioning of LED Street light fitting with luminaries, 220-240V AC 50 Hz, CRI >70, IP-65, power factor >0.95. Cool white, Integral driver, Lumen output 3500lm,confirming to IEC 60598 and IS 10322 and RVNL specification. Make Crompton Greaves, Philips, Bajaj, Havells.			
	(a) Street Light LED 45 W	No	10582	418
	(b) Street Light LED 36 W	No.	8600	418
	(c) Street Light LED 72 W	No.	14600	418
33010 (v)	Supply and installation of 1x20W LED Tube light fitting complete with LED Lamp similar to Philips Model No-TMC 501 P1xT-LED 22W P3241 or equivalent as approved by engineer	No.	1550	100
33010 (vi)	supply and installation of 5 watts Sleek LED mirror light with diffuser and LED lamp similar to Crompton greaves Ltd model LINNET LCL-05-CDL complete or equivalent as approved by engineer	No.	1500	27
33010 (vii)	Supply, erection, testing and commissioning of Flood Light LED light similar to Philips model BVP 410 LED 144 CW HE NB FG S3 XT IP-65,220-240V 140W or equivalent as approved by engineer, nominal made of LM6 PDC Housing and cover, mounting C clamp/fixture complete	No.	38500	500

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026

Item No.	Description of Items	Unit	Rate(In Rs.)	
			Supply	Erection
33011	Supplying, erection, testing and commissioning of exhaust fan suitable for 1-phase, 230 volts, AC supply system complete with capacitor, louver shutters, grouting bolts with nuts, making opening/modification in the wall to suit the size of the fan, making good the damages, connections with 1.5sq.mm, FR, PVC insulated, multistranded copper conductor, single core /three cable as instructed, earthing etc. as required.			
(i)	AC exhaust fan 300 mm 900 rpm with/without louver shutters.	No.	2651	415
(ii)	AC exhaust fan 150 mm with louver shutters	Nos.	1474	317
(iii)	AC exhaust fan 450 mm with/without louver shutters	Nos.	6360	317
(iv)	Supply, installation,testing and commissioning of Wall mounted single phase 230 V, 50Hz air circulating fan of 750 mm sweep including all accessories.	Nos.	8662	962
(v)	Supply, installation,testing and commissioning of Air curtain single phase, 230V, 1000 mm size.	Nos.	18048	785
(vi)	AC bracket fan 400 mm similar to Havell's Swing Remote or equivalent as approved by engineer.	Nos.	3637	159
33012	Supply, installation, testing and commissioning of self contained drinking water cooler 150 liters capacity complete with all connected standard fittings, accessories etc. and 5KVA , wall mounted, I.C. controlled electronic auto-voltage corrector with time delay relay, connection to earthing system etc as required.	Each	68039	10686
SECTION - C: L.T.SWITCH BOARDS AND FEEDER PILLAR				
33013	Supply, installation, testing & commissioning of cubical type, wall mounted, dust & vermin proof, LT switch board of different capacities.,.			
(a)	LT Switch Board 125 Amp comprising of the items indicated as under: i) Incoming MCCB 125A, 4 pole, 35kA, fixed type (Ics=100%Icu) - 1 No ii) Outgoing MCCB 63A, 25kA, fixed type (Ics=100%Icu) - 4 Nos iii) Outgoing MCB 40A, 4 pole, 10kA - 4 Nos iv) Outgoing MCB 32A, double pole, 10kA - 6 Nos v) Sleeved/Epoxy coated copper bus-bar 250 A in bus bar chamber vi) CT's, Indication lights	Nos.	73184	11495
(b)	LT Switch Board 63 Amp comprising items indicated as under: (i) Incoming MCCB 63A, 4 pole, 35kA, fixed type (Ics=100%Icu) - 1 No (ii) Outgoing MCCB 40A, 4 pole, 25kA, fixed type (Ics=100%Icu) - 3 Nos (iii) Outgoing MCB double pole, 6-32A, 10kA - 20 Nos (iv) Sleeved/Epoxy coated copper bus-bar 200A in bus bar chamber (v) Indication Lights	No	66717	10479
33014	DELETED			
33015	Supply, installation, testing & commissioning of weather proof, L.T. feeder pillar of different capacities			



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Item No.	Description of Items	Unit	Rate(in Rs.)	
			Supply	Erection
(i)	LT Feeder Pillar 63 Amp comprising of the items indicated as under: (i) Incoming MCCB 63A, 4 pole, 35kA, fixed type (Ics=100%Icu) - 1 No (ii) Outgoing MCCB 40A, 4 pole, 25kA, fixed type (Ics=100%Icu) - 4 Nos (iii) Outgoing MCB double pole, 40A, 10 KA - 4 Nos (iv) Sleeved/Epoxy coated copper bus-bar 200A in bus bar chamber (v) Indication lights	No.	75672	11884
(ii)	LT Feeder Pillar 125 Amp comprising of the items indicated as under: (i) Incoming MCCB 125A, 4 pole, 35kA (Ics=100%Icu) - 1 No (ii) Outgoing MCCB 63A, 4 pole, 25kA (Ics=100%Icu) - 4 Nos (iii) Outgoing MCB 40A, 4 pole, 10kA - 4 Nos (iv) Outgoing MCB 32A, DP, 10kA - 6 Nos (v) (v) Modular digital time switch and 3 phase contactor 63 A -- 2 set. (vi) Sleeved/Epoxy coated copper bus-bar 250 A in bus bar chamber (vii) Indication lights	No.	90314	14185
(iii)	LT Feeder Pillar 250 Amp comprising of the items indicated as under: i) Incoming MCCB 250 A FP 35KA(Ics=100%Icu) Fixed Type - 1 No ii) Outgoing MCCB 125 A FP 35KA(Ics=100%Icu) Fixed Type - 2 Nos iii) Outgoing MCCB 63 Amps FP 25KA (Ics=100%Icu) Fixed Type - 4 Nos iv) Outgoing MCB 40 Amps FP 10 KA - 4 Nos v) Outgoing MCB 32 Amps DP 10 KA - 6 Nos vi) Modular digital Time switch and 3 phase contractor 63 A -- 2 set vii) Sleeved / Epoxy coated Copper bus-bar 400 A in Bus Bar chamber Indication lights (viii)	No.	140029	21992
33016	DELETED			
SECTION - D : EXTERNAL ELECTRIFICATION WORKS				
33017	Supply and erection of different length , swaged type steel tubular pole , complete with the following: a) Double door, weather proof M.S. junction box (degree of protection not less than IP54) complete with MCB 6 amps, copper bus bar for looping 4-core, 3 nos. LT cables and clamping with pole, as required. b) Casting of foundation with concrete of M10 grade and providing muffing up to 300 mm above ground level,as required c) Erection of GI pipe class 'B' ISI marked up to junction box for passing cable. (Payment of G.I. pipe shall be made against the relevant BOQ item).			
i)	7 Meter long pole with canopy type single pipe bracket (for one luminary)	No.	11367	1786
ii)	7 Meter long pole with canopy type double pipe bracket (for two luminaries)	No.	11731	1843
iii)	9 Meter long pole with canopy type single pipe bracket	No.	17063	2682
33018	DELETED			
33019	Supply and erection of GI pipe - class 'B' ISI marked with accessories including bends etc. for support of cable with erected pole/recessing in wall/floor/passing earth strip OR passing cable as required:			
i)	32 mm dia	Meter	227	37
ii)	40 mm dia	Meter	270	42
iii)	50 mm dia	Meter	350	55



Item No.	Description of Items	Unit	Rate(In Rs.)	
			Supply	Erection
iv)	65 mm dia	Meter	441	71
v)	80mm dia	Meter	587	92
vi)	100mm dia	Meter	827	130
vii)	150mm dia	Meter	1345	212
33020	Supply, erection, testing & commissioning of control and distribution panel for colour light signalling supply in 25kV AC traction system as per RDSO technical specifications No.TI/SPC/PSI/CLS/0023 including latest amendment.			
(i)	For 5-10kVA AT	No	62446	9808
(ii)	For 25kVA AT	No	132862	20867
ELECTRIFICATION OF FOOT OVER BRIDGE				
33021	Electrification of foot over bridge complete with 3.5 meter long, 50 mm dia, G.I. pipe pole with Gi pipe bracket, luminary with lamp, M.S. junction box, connection from junction box to luminary with 1.5 sq.mm, Flame Retardant (FR), PVC insulated, copper conductor cable and connection to earthing system. etc. and as per scale of fittings indicated in Explanatory Notes.	No	0	11071
SECTION - E: POWER SUPPLY DISTRIBUTION ARRANGEMENT				
33022	Supply, installation, testing and commissioning of 11kV/415 Volt, Delta/Star connected, copper wound, power distribution transformer (outdoor type) conforming to IS:2026 (Latest Version), complete with all accessories as required.			
(i)	100 kVA	No.	226031	41350
(ii)	250 kVA	No.	366000	66957
(iii)	500 kVA	No.	471225	86206
(iv)	Extra for providing fencing /enclosure for above item as indicated in Explanatory Notes.	Kg	69	16
(v)	Extra for construction of foundation for transformer installation as required	Cu.M	4374	1237
33023	Supply, erection, testing and commissioning of 3 pole, 11kV, 400amps, gang operated switch complete with drop out fuses etc. as	No.	26712	4888
33024	Supply, installation, testing and commissioning of 11kV, 350 MVA, 630 A draw out type manually operated, 3 panel HT VCB board complete with CTs, PTs etc as required.	Set	1498318	274104
33025	Supply, installation , testing & commissioning of , 17 panel LT switch board comprising of following: i) Incoming ACB 800A, 4 pole, 50kA (manual draw out type) with CTR 400/5A - 2 Nos ii) ACB bus coupler 800A, 4 pole, 50kA (fixed type) - 1 No iii) On load change over switch 400A, 4 pole, utilisation cat. AC 23 - 1 No iv) Out going switch fuse unit/fuse switch unit cat AC23 (TPN) with HRC fuses (250 Amp) - 4 Nos v) Out going switch fuse unit/fuse switch unit cat AC 23 (TPN) with HRC fuses 125 Amp - 4 Nos. vi) Out going switch fuse unit/fuse switch unit cat AC 23 (TPN) with HRC fuses 63 Amp - 5 Nos. vii) Sleeved/epoxy coated copper bus-bar - 800A for phases and 400A for neutral.	No.	1002458	99132
33026	Supply, erection, testing & commissioning of 20 panel LT switch board comprising of the following: i). Incoming ACB 800A, 4 pole, 50kA (manual draw out type) with CTR 800/5A - 2 Nos ii). ACB bus coupler 1600A, 4 pole, 50kA (fixed type) - 1 No iii). On load change over switch 800A, 4 pole, cat AC 23 - 1 No. iv). Out going switch fuse unit/fuse switch unit cat AC 23 (TPN) with HRC fuses 400 Amp) - 3 Nos v). Out going switch fuse unit/fuse switch unit cat AC 23 (TPN) with HRC fuses 250 Amp) - 4 Nos vi) Out going switch fuse unit/fuse switch unit cat AC 23 (TPN) with HRC fuses 125 Amp - 4 Nos. vii) Out going switch fuse unit/fuse switch unit cat AC 23 (TPN) with HRC fuses 63 Amp - 5 Nos. viii)Sleeved/epoxy coated copper bus-bar - 1600A for phases and 800A for neutral.	No.	1546925	152973
33027	DELETED			

Item No.	Description of Items	Unit	Rate(in Rs.)	
			Supply	Erection
33028	DELETED			
33029	Supply, erection/fixing of Fire extinguishing equipments (ISI) Marked,Rubber mat (ISI marked) ,GI fire buckets filled with clean dry sandheld on free standing steel stand,First Aid Box with medicines (ISI marked) and associated materials,shock treatment chart on aluminum frame,Schematic diagram of HT/LT installation & transformer data on white hylem sheet with aluminium frame & fixing / providing in the sub stationarea as per details in explanatory notes.	Set	59538	9351
33030	Supply, installation, testing and commissioning of DG set with acoustic enclosure, complete with AMF panel and all other accessories and construction of plinth etc,			
(i)	82.5 kVA DG set with 160 amp, 4-pole, MCCB 50kA (lcs=100%lcu), 250 amps copper bus-bars, 4 pole contactors 250amp.	Set	1131176	111860
(ii)	160 kVA DG set with 250 amp, 4-pole MCCB 50 KA(lcs=100%lcu), 400 amps.copper bus-bars, 4.pole.contactors 400amps.	Set	1791725	177180
(iii)	250 kVA DG set with 400 amp, 4-pole MCCB 50kA (lcs=100%lcu), 600 amp copper bus-bars, 4 pole contactors 600amps.	Set	2569515	254095
33031	Supply, erection, testing & commissioning of 125 kVAR Automatic Power Factor Controller panel (capacitor bank) complete and connection with the main panel as per site requirement.	No.	475679	47038
SECTION - F: EARTHING ARRANGEMENT				
33032	Earthing with 3 meter long, 50 mm dia, G.I. pipe class 'B' earth electrode, adding of charcoal or coke and salt , providing masonry enclosure and cover plate with lifting arrangement etc. including connections with 4mm G.I.wire from earth electrode to switch board/electrical equipment as required.	Job	2498	393
33033	Earthing with 600mmx600mmx6mm thick G.I. earth plate, adding of charcoal or coke and salt , providing masonry enclosure and cover plate with lifting arrangement, watering pipe etc. as required.	Job	2775	435
33034	Earthing with 600mmx600mmx3mm thick copper earth plate, adding of charcoal or coke and salt , providing masonry enclosure and cover plate with lifting arrangement, watering pipe etc. as required.	Job	4902	769

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Item No.	Description of Items	Unit	Rate(in Rs.)	
			Supply	Erection
EARTH CONNECTIONS				
33035(i)	Supply and laying 25 mm x 6 mm G. I. strip at not less than 0.50 meter below ground or in recess as required.	Meter	56	10
33035(ii)	Supply and laying 40 mm x 6 mm G. I. strip at not less than 0.50 meter below ground or in recess as required.	Meter	92	14
33035(iii)	Supplying and fixing 40 mm x 5 mm copper strip on surface or in recess or in 50 mm dia G.I. pipe as required.	Meter	727	114
SECTION - G : CABLING				
33036	Supply, laying 1.1 KV grade LT XLPE insulated armoured, aluminum conductor cable , making good the damages, end terminations with aluminium crimping sockets/lugs, provision of cable route markers, testing and commissioning etc. as required as per Technical specifications:			
i)	2 Core 16 Sq.mm	Meter	242	55
ii)	2 core 25sq.mm	meter	279	66
iii)	2 Core 70 Sq.mm	Meter	477	76
iv)	2 Core 185 Sq.mm	Meter	985	97
v)	4 Core 16 Sq.mm	Meter	312	69
vi)	4.0 Core 35 Sq.mm	Meter	441	71
vii)	4.0 Core 70Sq.mm	Meter	703	111
viii)	4.0 Core 120Sq.mm	Meter	1111	110
ix)	4.0 Core 185Sq.mm	Meter	1555	155
x)	4.0 Core 300Sq.mm	Meter	2519	118
xi)	single core 400 sq.mm	Meter	810	128
xii)	Extra for provision of cable route marker	No.	293	14
SECTION - I : ELECTRIFICATION BY HIGH MASTS				
33037	Supply, erection, testing & commissioning of hot dipped galvanised , high mast system complete with all accessories, foundation, carriage arrangement suitable for 9 luminaries symmetrically arranged & control gear boxes and lighting finial etc., twin dome aviation obstruction lights, control panel, multi core flexible copper conductor cable, connection to earthing system and fencing panel as per requirement.			
i)	16 Meter high mast system with 6 nos. 2x400 watts MH luminaries and MH lamps	Job	803623	79470
ii)	16 Meter high mast system with 9 nos. 2x400 watts MH luminaries and MH lamps	Job	856917	84737
SECTION - H : LAYING OF 11 KV / 33 KV CABLES				
33038	Supply and laying of following sizes XLPE (E) insulated, armoured, aluminium conductor HT cable .			
(i)	11 KV, 3 core 70 sq mm	Meter	1271	200
(ii)	11 KV, 3 core 185 sq mm	Meter	2168	215
(iii)	33 KV, 3 core 300 sq mm	Meter	4819	227
(iv)	33 KV, 3 core 400 sq mm	Meter	6798	227
33039	DELETED			
33040	Supply of outdoor type, heat shrinkable, end termination kit, suitable for following cable sizes XLPE(E) insulated, armoured aluminium conductor cable and making termination, connections with overhead conductor, testing & commissioning etc.			
(i)	3 core 11 KV 70 to 185 sq mm	No.	9784	1537
(ii)	3 core 33 KV 240 to 400 sq mm	No.	30687	3035
33041	DELETED			

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