



PRE-PROJECT ELECTRICAL WORKS (SUPPLY & ERECTION) AT  
GORAKHPUR, UTTAR PRADESH [PACKAGE-V]

HURL

NIT NO. : PNPM/5001/E/201

AMENDMENT-1, DATED : 19.09.2017

SL. NO.	REFERENCE OF BIDDING DOCUMENT				AMENDED CLAUSE
	PART/SEC.	PAGE NO.	CLAUSE NO.	EXISTING CLAUSE	
1.	Section-A, ITB	08 of 28	9.2	<p><b>COMPLIANCE TO ALL THE PROVISIONS OF THE BIDDING DOCUMENT / NIL DEVIATION</b></p> <p>The Bidders are advised that while making their Bid and quoting prices, all conditions may appropriately be taken into consideration. No deviation, whatsoever, is permitted by the Owner to the provisions of Bidding Documents and its subsequent Amendment(s) / Clarification(s) / Addenda / Errata if any, issued by the Employer. Bidders are required to certify their full compliance to the complete Bidding Documents and its subsequent Amendment(s) / Clarification(s) / Addenda / Errata if any, issued by the owner by submitting the 'No Deviation Certificate' as per Annexure-1.3 in the tender documents. In case the Certificate as per Annexure-1.3 duly signed and stamped is not furnished <b>along with the bid</b>, the bid shall be rejected.</p> <p>Acceptance of above shall be considered as Bidder's confirmation that any deviation to the Bidding Documents found anywhere in their Bid Proposal, implicit or explicit shall stand unconditionally withdrawn, without any cost implication whatsoever to owner, failing which the bid shall be rejected and bid security shall be forfeited</p>	<p><b>COMPLIANCE TO ALL THE PROVISIONS OF THE BIDDING DOCUMENT / NIL DEVIATION</b></p> <p>The Bidders are advised that while making their Bid and quoting prices, all conditions may appropriately be taken into consideration. No deviation, whatsoever, is permitted by the Owner to the provisions of Bidding Documents and its subsequent Amendment(s) / Clarification(s) / Addenda / Errata if any, issued by the Employer. Bidders are required to certify their full compliance to the complete Bidding Documents and its subsequent Amendment(s) / Clarification(s) / Addenda / Errata if any, issued by the owner by submitting the 'No Deviation Certificate' as per Annexure-1.3 in the tender documents. In case the Certificate as per Annexure-1.3 duly signed and stamped is not furnished, the bid shall be rejected.</p> <p>Acceptance of above shall be considered as Bidder's confirmation that any deviation to the Bidding Documents found anywhere in their Bid Proposal, implicit or explicit shall stand unconditionally withdrawn, without any cost implication whatsoever to owner, failing which the bid shall be rejected and bid security shall be forfeited</p>



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	PART/SEC.	PAGE NO.	CLAUSE NO.	EXISTING CLAUSE	
2.	Section-A, ITB	09 of 28	9.3	<b>Any Bid not accompanied with EMD in original along with No Deviation Certificate and Integrity Pact shall be rejected by the OWNER/CONSULTANT as being non-responsive.</b> The owner allows only those bids to be opened whose EMD in original has been received by the owner before the Techno-Commercial bid opening.	<b>The bid must be accompanied by EMD in original along with No Deviation Certificate and Integrity Pact.</b> The owner allows only those bids to be opened whose EMD in original has been received by the owner before the Techno-Commercial bid opening.
3.	Section-A, ITB	10 of 28	13.1	Full compliance to the complete provisions of the Bidding Documents and its subsequent Amendment(s) / Clarification(s) / Addenda / Errata if any, issued by the owner will be checked first in terms of para clause 9.2 above.	Full compliance to the complete provisions of the Bidding Documents and its subsequent Amendment(s) / Clarification(s) / Addenda / Errata if any, issued by the owner will be checked first in terms of para clause 9.2 above. <b>In case, Annexure-1.3 duly signed &amp; stamped is not found in the techno-commercial bid, the bidder will be asked to furnish the same before price bid opening. Failure to comply with this requirement, the bid shall be rejected.</b>
4.	Section-A, ITB	27 of 28	40.0	<b>INTEGRITY PACT</b> : Bidders are required to unconditionally accept the "Integrity Pact (IP)", as per Annexure 1.17, (executed on plain paper) and submit the same duly signed on all pages by the bidder's authorized signatory along with the EMD. In absence of this document, the bid shall be rejected.	<b>INTEGRITY PACT</b> : Bidders are required to unconditionally accept the "Integrity Pact (IP)", as per Annexure 1.17, (executed on plain paper) and submit the same duly signed on all pages by the bidder's authorized signatory along with the EMD. <b>In case, Annexure-1.17 duly signed &amp; stamped is not found in the techno-commercial bid, the bidder will be asked to furnish the same before price bid opening. Failure to comply with this requirement, the bid shall be rejected</b>



**PRE-PROJECT ELECTRICAL WORKS (SUPPLY & ERECTION) AT  
GORAKHPUR, UTTAR PRADESH [PACKAGE-V]**

**HURL**

**NIT NO. : PNPM/5001/E/201**

AMENDMENT-1, DATED : 19.09.2017

SL. NO.	REFERENCE OF BIDDING DOCUMENT				AMENDED CLAUSE
	PART/SEC.	PAGE NO.	CLAUSE NO.	EXISTING CLAUSE	
5.	Section-B, Part-III, Schedule of Rates			Schedule of Rates (SOR), Rev.01	<b>Schedule of Rates (SOR), Rev.02 is attached.</b>  <b>Note: Bidders are requested to indicate their prices in Schedule of Rates, Rev.02.</b>

**PROJECT MANAGER  
PDIL, NOIDA**

**SCHEDULE OF RATES (SOR)**  
**FOR**  
**PRE-PROJECT ELECTRICAL WORKS**  
**(SUPPLY & ERECTION)**  
**AT**  
**GORAKHPUR, U.P.**  
**[NIT NO. : PNPM/5001/E/201]**

	SCHEDULE OF RATES FOR PRE-PROJECT ELECTRICAL WORKS AT GORAKHPUR, U.P.	5001/E/102/SOR	2	19.09.17	19.09.17	AP	SK	SK	Page 1 of 74	
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NIT NO. : PNPM/5001/E/201

NIT SUBJECT : PRE-PROJECT ELECTRICAL WORKS (SUPPLY & ERECTION) AT GORAKHPUR, U.P. [PACKAGE-V]

SUMMARY OF SCHEDULE OF RATES		
S.NO.	DESCRIPTION	AMOUNT (in Rs.)
1.	PART-A : SUPPLY OF ELECTRICAL ITEMS	
2.	PART-B : ELECTRICAL INSTALLATION WORKS	
3.	PART-C : CIVIL & STRUCTURAL WORKS	
4.	PART-D : OPERATION AND MAINTENANCE OF ELECTRICAL SUBSTATION	
5.	<b>TOTAL (S.NO. 1 + 2 + 3 + 4)</b>	
6.	TOTAL GST CHARGES	
	<b>GRAND TOTAL (S.NO. 5 + 6)</b>	

Note:

- 1.) If the bidder fails to quote for any item (other than Operation & Maintenance item) in the price bid i.e. Part-A, B & C of the Schedule of Rates (SOR), it will be implied that such item is included elsewhere in the quoted prices. However, the bid will be rejected in case the bidder does not quote the Operation and Maintenance item i.e. Part-D of the Schedule of Rates (SOR). Also, wherever bidder has indicated "Not Applicable" / "Nil" and the same is required during execution of the contract it will be considered as included in the price.
- 2.) Further, if the bidder does not quote GST in the price schedule/SOR by indicating 'Nil' / 'Not applicable' / 'NA' / 'kept the space blank', then GST amount payable by the contractor to the concerned authorities is deemed to have been included in their quoted price and no payment towards GST shall be made by the owner.

**NAME** : \_\_\_\_\_  
**SIGNATURE & SEAL OF TENDERER** : \_\_\_\_\_  
**PLACE** : \_\_\_\_\_  
**DATE** : \_\_\_\_\_

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## GENERAL INSTRUCTIONS TO BIDDER (FOR PART-A & PART-B)



1. The Schedule of Rates is to be read in conjunction with Technical Specification: Electrical Works (Supply & Erection) and other relevant sections / sub sections.
2. The rates shall be applicable for all floors, heights and depths.
3. This being an item rate contract, the unit rate shall prevail, does any discrepancy arise between unit rate and total price, unit rate shall be considered for evaluation and arriving at the Contract Value.
4. Owner / Consultant reserves the right to interpolate or extrapolate the rate for any item, which is not covered in the Schedule of rates, from the rates available for similar item / work in the Schedule of Rates.
5. Whenever it is mentioned in the specifications that the bidder shall perform certain work or provide certain facilities / materials or certain item or activity is in bidder's scope of services it is understood that the bidder shall do so at his cost within the item rates unless expressly stated otherwise.
6. Unit rates for erection shall inclusive of Unloading from Truck / Trailer, transportation from store (at site), handling, the cost of labour, supervision, all consumables, cost towards providing erection materials & hardware, necessary tools and tackles, and providing all the required facilities for execution and inspection, testing and commissioning, guarantees etc. Minor repair and touch painting work towards providing all required facilities for execution shall be in bidder's scope.
7. Work shall involve, at every stage, correct identification of all equipment including loose equipment from stores, identifying spare items / excess items, listing the same and carefully storing them under the custody of the contractor. Information to this extent shall be passed on to the concerned Engineer-in-charge / owner. Certification of balance items after erection and return to the Engineer in-charge / Owner so assigned.
8. All equipment shall be deemed to have clear tags, descriptive letter writing indicating locations / sources (from - to), cable sizes, circuit no., unit no., and any other writing required to make installation completely informative. All costs in view of above shall be deemed to have been included in installation / commissioning.
9. All primary & secondary injection tests & testing of relays and other equipment as per relevant IS, code of practice for testing and commissioning shall be deemed to have been included for testing & commissioning. No extra charges shall be provided for that.
10. Wherever quantity is indicated as lot, estimated quantity shall be indicated by the Contractor.
11. Any item specifically not indicated but considered necessary for completion of the job shall also be quoted by the Contractor under separate sheet. Work shall also include any other item of work required to complete the work in all respect as per the specifications, drawings and instructions of the Engineer-in-Charge whether specifically mentioned or not in the tender document.
12. This being a grass root job, the Contractor must visit HURL, Gorakhpur sites to assess the quantum and nature of work before quoting. However, the Contractor shall inform PDIL / HURL, 1 week prior to their visit.
13. Man-days rate for skilled, semi-skilled, un-skilled labour and engineers shall also be indicated to cover any other work not specified herein,

	<b>SCHEDULE OF RATES FOR PRE-PROJECT ELECTRICAL WORKS AT GORAKHPUR, U.P.</b>	5001/E/102/SOR	2	19.09.17	19.09.17	AP	SK	SK	Page 3 of 74	
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## GENERAL INSTRUCTIONS TO BIDDER (FOR PART-A & PART-B)

keeping Govt. circular on wages in consideration and in conformity with contract regulation and abolition act.

14. Quantities mentioned in the Schedule of Rates are indicative and not exhaustive in nature. Payment shall be made as per actual quantity used / certified at site by Engineer-in-charge.
15. Contractor shall indicate the prices of all electrical items as per attached documents. The quantities indicated in Schedule of Rates are estimated quantities and may change during detailed engineering as per site condition.  
Quantity of some or all the items may increase or decrease up to any extent at the time of actual execution, however the total contract value shall be limited to total increase or decrease of 25% only. Contractor shall supply the equipments at the same rate as per these change quantities, irrespective of the changes in quantity of individual items.
16. Un-priced Price Schedule indicating quoted against each item shall be attached with bid documents for conformity that all the items have been quoted. Unit rate sought, for which quantities have not been indicated in the schedule of rates, shall also be quoted. However, the same shall not be considered for evaluation. Payment shall be made as per quantities executed.
17. Owner reserve their right to execute any additional works / extra works, during the execution of work, either by themselves or by appointing any other agency, even though such works are incidental to and necessary for the completion of works awarded to the Contractor. In the event of such decisions taken by Owner, Contractor is required to extend necessary cooperation, and act as per the instructions of Engineer-in-Charge.
18. Before procurement of any equipment / material, the Contractor shall submit drawing / document, Compliance Statement supported by Product Catalogue for review / approval. PDIL / HURL shall indicate the quantity of equipment / material to be procured during approval of respective equipment Document.

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**PART-A : SUPPLY OF ELECTRICAL ITEMS**



ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
<b>1.</b>	<b>33KV RMU (OUTDOOR TYPE WITH KIOSK)</b>					
1.1	Supply of 33KV, 630A RMU with all accessories such as 4 nos. VCB, Line PT and auxiliary transformer with metering, protection and power pack with self sustained battery bank for duration of 6 hours etc. as specified in Technical specification Doc. No. 5001-TS-0801.	SET	1			
<b>2.</b>	<b>POWER &amp; DISTRIBUTION TRANSFORMERS</b>					
2.1	Supply of below Power & Distribution Transformers with all accessories, as specified in Technical Specification Doc. No. 5001-TS-0801.					
i.	3000 KVA, 33/3.43 kV Transformer (ONAN)	No.	1			
ii.	2000 KVA, 3.3/0.433 kV Transformer (ONAN)	No.	1			
<b>3.</b>	<b>HV &amp; LV SWITCH BOARD</b>					
3.1	Supply of HV Switch Board					
i.	3.3 KV, 150MVA, 1250 A switch board (Approx panels: 05) with all accessories, as specified in Technical Specification Doc. No. 5001-TS-0801.	No.	1			
3.2	Supply of LV Switch Board					
i.	415V, 3 Ph & N, 3200 A, 50kA for 1 sec., Draw out type, Double front, Power Control Centre as specified in Technical Specification Doc. No. 5001-TS-0801.	No.	1			
<b>4.</b>	<b>NGR</b>					
4.1	Neutral Grounding Resistors rated for $3.43/\sqrt{3}$	No.	1			

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**PART-A : SUPPLY OF ELECTRICAL ITEMS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	KV ± 10%, 400A for 30 seconds, 4.98 ohms ± 10%, for 33/3.43 KV, 3 MVA Transformers as specified in Technical Specification Doc. No. 5001-TS-0801.					
<b>5.</b>	<b>INTER LOCKED TYPE SWITCH SOCKET &amp; PLUG</b>					
5.1	Supply of Heavy duty Weather proof interlocking Switch Socket having enclosure with IP-65 degree of protection with matching Plug of following type as specified in Technical Specification Doc. No. 5001-TS-0801.					
i.	63A, 5-pin, 415V	Nos.	6			
ii.	25A, 3 pin, 240V	Nos.	3			
<b>6.</b>	<b>HT &amp; LT CABLES</b>					
6.1	33 KV (E) Grade, XLPE Insulated, PVC inner sheathed, Armoured, FRLS PVC outer sheathed cables as specified in Technical Specification Doc. No. 5001-TS-0801.					
i.	3C x 300 sq. mm (Al)	Mtrs.	500			
6.2	3.3 KV (UE) Grade, XLPE Insulated, PVC inner sheathed FRLS PVC outer sheathed cables as specified in Technical Specification Doc. No. 5001-TS-0801.					
i.	3C x 300 sq. mm (Al)	Mtrs.	250			
6.3	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables as specified in Technical Specification Doc. No. 5001-TS-0801.					
i.	3C x 10 sq. mm (Cu)	Mtrs.	1,000			
ii.	3C x 4 sq. mm (Cu)	Mtrs.	1,000			

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**PART-A : SUPPLY OF ELECTRICAL ITEMS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
iii.	3C x 2.5 sq. mm (Cu)	Mtrs.	7,200			
iv.	3.5C x 400 sq. mm (Cu)	Mtrs.	500			
v.	3.5C x 300 sq. mm (Al)	Mtrs.	500			
vi.	3.5C x 185 sq. mm (Al)	Mtrs.	500			
vii.	3.5C x 150 sq. mm (Al)	Mtr.	100			
viii.	3.5C x 70 sq. mm (Al)	Mtrs.	2,000			
ix.	3.5C x 50 sq. mm (Al)	Mtrs.	4,000			
x.	3.5C x 35 sq. mm (Al)	Mtrs.	3,000			
xi.	4CX16 sq. mm (Al)	Mtrs.	7,500			
xii.	5C x 2.5 sq. mm (Cu)	Mtrs.	500			
xiii.	7C x 2.5 sq. mm (Cu)	Mtrs.	500			
xiv.	19C x 2.5 sq. mm (Cu)	Mtrs.	200			
<b>7.</b>	<b>CABLE GLANDS</b>					
7.1	Supply of heavy duty Industrial double compression ET Thread rolled Aluminum cable glands suitable for the following sizes of cables as specified in Technical Specification Doc. No. 5001-TS-0801.					
A.	33 KV (E) Grade, XLPE Insulated, PVC inner sheathed, Armoured, FRLS PVC outer sheathed cables.					
i.	3C x 300 sq. mm (Al)	Nos.	2			
B.	3.3 KV (UE) Grade, XLPE Insulated, PVC inner sheathed, Armoured, FRLS PVC outer sheathed cables.					
i.	3 X 300 sq. mm (Al)	Nos.	6			

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**PART-A : SUPPLY OF ELECTRICAL ITEMS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
C.	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables.					
i.	3C x 10 sq. mm (Cu)	Nos.	10			
ii.	3C x 4 sq. mm (Cu)	Nos.	11			
iii.	3C x 2.5 sq. mm (Cu)	Nos.	180			
iv.	3.5C x 400 sq. mm (Cu)	Nos.	18			
v.	3.5C x 300 sq. mm (Al)	Nos.	10			
vi.	3.5C x 185 sq. mm (Al)	Nos.	4			
vii.	3.5C x 150 sq. mm (Al)	No.	5			
viii.	3.5C x 70 sq. mm (Al)	Nos.	9			
ix.	3.5C x 50 sq. mm (Al)	Nos.	4			
x.	3.5C x 35 sq. mm (Al)	Nos.	10			
xi.	4CX16 sq. mm (Al)	Nos.	10			
xii.	5C x 2.5 sq. mm (Cu)	Nos.	190			
xiii.	7C x 2.5 sq. mm (Cu)	Nos.	220			
xiv.	19C x 2.5 sq. mm (Cu)	Nos.	5			
xv.	1C x 185 sq. mm (Al)	Nos.	5			
xvi.	1C x 25 sq. mm (Al)	Nos.	5			
xvii.	1C x 16 sq. mm (Al)	Nos.	5			
<b>8.</b>	<b>CABLE LUGS</b>					
8.1	Supply of Tinned Copper / Aluminum crimping type lugs of following sizes for termination of cables.					
i.	300 sq. mm (Al), 33KV	Nos.	6			

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**PART-A : SUPPLY OF ELECTRICAL ITEMS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
ii.	300 sq. mm (Al), 3.3KV	Nos.	24			
iii.	2.5 sq. mm (Cu), 1.1KV	Nos.	1000			
iv.	4 sq. mm (Cu), 1.1KV	Nos.	35			
v.	10 sq. mm (Cu), 1.1KV	Nos.	30			
vi.	16 sq. mm (Al), 1.1KV	Nos.	50			
vii.	25 sq. mm (Al), 1.1KV	Nos.	30			
viii.	35 sq. mm (Al), 1.1KV	Nos.	10			
ix.	50 sq. mm (Al), 1.1KV	Nos.	20			
x.	70 sq. mm (Al), 1.1KV	Nos.	30			
xi.	95 sq. mm (Al), 1.1KV	Nos.	5			
xii.	150 sq. mm (Al), 1.1KV	Nos.	10			
xiii.	185 sq. mm (Al), 1.1KV	Nos.	15			
xiv.	200 sq. mm (Cu), 1.1KV	Nos.	20			
xv.	300 sq. mm (Al), 1.1KV	Nos.	30			
xvi.	400 sq. mm (Cu), 1.1KV	Nos.	48			
<b>9.</b>	<b>CABLE TERMINATION / JOINTING KITS</b>					
9.1	Supply of following types of cable termination / jointing kits:					
A.	Indoor type Heat shrinkable end termination kit of Raychem make suitable for 11/3.3 KV grade XLPE-A-FRLSPVC insulated armoured cables of following sizes					
i.	33kV (E), 3C x 300 sq. mm (Al) XLPE armoured cables	Nos.	3			
ii.	3.3 kV (UE), 3 X 300 sq. mm (Al) XLPE armoured cables	Nos.	7			
B.	Heat Shrinkable Raychem make straight					

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**PART-A : SUPPLY OF ELECTRICAL ITEMS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	through jointing kit suitable for 33/3.3/1.1 KV grade XLPE-A-FRLSPVC insulated armoured cables of following sizes					
i.	3C x 300 sq. mm (Al, 33 KV)	No.	2			
ii.	3C x 300 sq. mm (Al, 3.3 KV)	No.	2			
iii.	3.5C x 400 sq. mm (Cu, 1.1KV)	No.	2			
iv.	3.5C x 300 sq. mm (Al, 1.1KV)	No.	2			
v.	3.5C x 185 sq. mm (Al, 1.1KV)	No.	2			
vi.	3.5C x 70 sq. mm (Al, 1.1KV)	No.	2			
vii.	3.5C x 50 sq. mm (Al, 1.1KV)	No.	2			
viii.	3.5C x 35 sq. mm (Al, 1.1KV)	No.	2			
ix.	4C x 16 sq. mm (Al, 1.1KV)	No.	2			
x.	5C x 2.5 sq. mm (Cu)	No.	2			
xi.	7C x 2.5 sq. mm (Cu)	No.	2			
xii.	19C x 2.5 sq. mm (Cu)	No.	2			
<b>10.</b>	<b>CABLE RACK (PREFABRICATED LADDER TYPE GI CABLE TRAYS) &amp; ACCESSORIES</b>					
10.1	Supply of GI ladder type Cable trays and their accessories i.e. supply of all hardware required i.e. J-hooks, GI Nut, Bolt, Washers, coupling plate etc. of following sizes and as per Technical Specification Doc. No. 5001-TS-0801 and drawing enclosed.					
A.	Straight Run Cable Trays					
i.	600mm wide	Mtrs.	50			
ii.	450mm wide	Mtrs.	50			
iii.	300mm wide	Mtrs.	100			
B.	Horizontal Bends					

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**PART-A : SUPPLY OF ELECTRICAL ITEMS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
i.	600mm wide	Nos.	5			
ii.	450mm wide	Nos.	5			
iii.	300 mm wide	Nos.	5			
C.	Vertical Inside Bends					
i.	450mm wide	Nos.	5			
ii.	300mm wide	Nos.	5			
D.	Vertical Outside Bends					
i.	450mm wide	Nos.	5			
ii.	300mm wide	Nos.	5			
E.	Regular Tees					
i.	600mm wide	No.	2			
ii.	450mm wide	No.	2			
iii.	300mm wide	No.	2			
F.	Reducers					
i.	600/450mm wide	No.	1			
ii.	600/300mm wide	Nos.	5			
iii.	450/300mm wide	No.	1			
iv.	300/150mm wide	No.	1			
G.	Cross					
i.	600mm wide	No.	1			
<b>11.</b>	<b>CABLE RACK (ALUMINIUM PERFORATED TYPE CABLE TRAYS) &amp; ACCESSORIES</b>					
11.1	Supply of Aluminium perforated type Cable trays and their accessories i.e. supply of all hardware required i.e. J-hooks, GI Nut, Bolt, Washers, coupling plate etc. of following sizes and as per					

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**PART-A : SUPPLY OF ELECTRICAL ITEMS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	Technical Specification Doc. No. 5001-TS-0801 and drawing enclosed.					
A.	Straight Run Cable Trays					
i.	300mm wide	Mtrs.	50			
ii.	150mm wide	Mtrs.	50			
B.	Horizontal Bends					
i.	300mm wide	Nos.	5			
ii.	150mm wide	Nos.	2			
C.	Vertical Inside Bends					
i.	300mm wide	Nos.	5			
ii.	150mm wide	Nos.	2			
D.	Vertical Outside Bends					
i.	300mm wide	Nos.	5			
ii.	150mm wide	Nos.	2			
E.	Regular Tees					
i.	300mm wide	Nos.	4			
ii.	150mm wide	Nos.	2			
F.	Reducers					
i.	300/150mm	No.	1			
<b>12.</b>	<b>DISTRIBUTION BOARDS</b>					
12.1	Supply of following Distribution Boards as specified in Technical Specification Doc. No. 5001-TS-0801.					
i.	415 V, 3 Ph & N, floor mounted sheet steel enclosed Main Lighting Distribution Board (MLDB) as per Technical Specification 5001-TS-	No.	1			

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	0801. It shall consist of 1 no. incoming 630 A MCCB incomer with Outdoor bus contactor (Photocell + Astro timer controlled) having 15 nos. 63 A TPN SFU as outgoing feeders and in indoor bus having 3 nos. 63A SFU as outgoing feeders.					
ii.	415 V, 3 Ph & N, wall mounted sheet steel enclosed Welding Socket Distribution Board as per Technical Specification 5001-TS-0801. It shall consist of 1 no. incoming 400 A 4P MCCB incomer with mechanical interlock & following nos. of outgoing feeders: 6 nos. 63 A 4P MCCB.	No.	1			
iii.	415 V, 3 Ph & N, Feeder pillar box as specified in Technical Specification. It shall consist of 1 no. 63A TPN MCB incomer and 4 nos. 32A TPN MCCB outgoing feeders.	Nos.	6			
12.2	Supply of 415 V Lighting sub Distribution Board / Single Phase Socket Distribution Board, as specified in Technical Specification 5001-TS-0801.					
i.	415 V, 9-way wall/ Steel Structure mounted Sheet steel enclosed Lighting Sub Distribution Board in IP55 degree of protection having 1 No. Incoming (63 A TP & Switched Neutral Isolator switch) and 3 nos feeder circuit of 63A DP MCB having 9 Nos. outgoing of 16 A DP MCB (i.e. 3 nos. 16 A DP MCB per circuit) as specified in Technical Specification.	Nos.	3			
<b>13.</b>	<b>LIGHTING FIXTURES &amp; ACCESSORIES</b>					
13.1	Supply of Lighting Fixtures & Accessories					

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**PART-A : SUPPLY OF ELECTRICAL ITEMS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
A.	240V AC,1-Ph, hose and weather proof Lighting fixtures with integral control gear box, suitable for use in safe area having IP-65 degree of protection complete with all accessories and all hardware for fixing the lighting fittings with ceiling / wall / pole/ frame of following types as specified in Technical Specification Doc. No. 5001-TS-0801.					
i.	250 W HPSV Flood lighting fixtures	Nos.	20			
ii.	45 W LED Street Lighting Fixtures.	Nos.	300			
iii.	90 W LED Street Lighting Fixtures.	Nos.	25			
B.	240V 1-ph suspension/ wall mounted T5 type LED Lighting Fixture with/ without reflector having IP20 Protection					
i.	2 x 20 W LED Philips make suspension mounted Lighting Fixture with vitreous enameled reflector type fixture.	Nos.	20			
13.2	Supply of following lamps of Philips make for fixing to the fixtures as indicated above					
i.	250 W HPSV Flood light lamp (T)	Nos.	25			
ii.	45 W LED Lamp	Nos.	320			
iii.	90 W LED Lamp	Nos.	35			
iv.	20 W LED lamp (T5)	Nos.	50			
<b>14.</b>	<b>HIGH MAST</b>					
14.1	Supply of 30 m High Mast system, totally hot dip galvanized and suitable for wind loading as per IS: 875 Part III 1987 as well as prevailing wind condition at HURL Gorakhpur site. The mast shall be in three sections.	Nos.	6			
14.2	Accessories for 30 m high mast including head frame, stainless steel wire rope minimum 6 mm	SET	6			

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**PART-A : SUPPLY OF ELECTRICAL ITEMS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	dia. (7/19 construction), double drum winch, with 2 nos. FLP plugs and socket combine. Galvanized lantern carriage arrangement suitable for 24 nos. luminaries symmetrically and its control gear boxes and its lighting accessories.					
14.3	Supply of specially designed non-integral flood light luminaries 9 nos. 2X400W, 3 Nos. 1X400W SON T lamps and its control gear boxes. Supply of aviation obstruction lights with neon spiral light source (1 no. fitting per mast is necessary)	SET	6			
14.4	Supply of high powered three phase integral flameproof power tool for electrical operation of raising and lowering of lantern carriage with its FLP starter, FLP plug, FLP DOUBLE COMPRESSION ROLLED Aluminum cable glands & lugs suitable for 3.5Cx50 Sq. mm (Al) XLPE cable, supporting trolley, torque limiter and fixing chain.	SET	6			
<b>15.</b>	<b>JUNCTION BOXES</b>					
15.1	Supply of 63A, 415V, 3Ph & N hose proof & weatherproof junction boxes in cast aluminium (LM-6) enclosure with IP-65 degree of protection and suitable for 2 Nos. 3.5x 50 Sq. mm (Al)cable & 1 nos. of 3Cx2.5 sq.mm(Cu) cable with terminal blocks of suitable size for easy termination of cables and as specified in Technical specification Doc. No. 5001-TS-0801	Nos.	300			
15.2	Supply of Junction Boxes in cast aluminium (LM6) enclosure with IP-65 degree of protection and suitable for 3Cx2.5 sq.mm(Cu) cable with					

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	cable glands & terminal blocks of suitable size for easy termination of cables and as specified in Technical Specification Doc. No. 5001-TS-0801.					
i.	25A, 230V, 1Ph & N 4 Way type hose proof & weatherproof	Nos.	30			
<b>16.</b>	<b>PLANT LIGHTING POLES</b>					
16.1	Supply of hot dip galvanized MS tubular swaged lighting poles of following types suitable for wind velocity of 150 Km/Hr and along with suitable pole junction box.					
i.	9M high ground mounted poles	Nos.	25			
ii.	5M high ground mounted poles	Nos.	275			
<b>17.</b>	<b>EARTHING &amp; LIGHTNING MATERIAL</b>					
17.1	Supply of 3.8M, 100mm dia. heavy G.I. Pipe earth electrode having 100 micron zinc coating for earthing as per Technical Specifications 5001-TS-0801 complete with all accessories like earth bus, GI links for earth Pit connection etc. The hot dip galvanizing (minimum Zinc coating of 800 gms/ sq. M as per IS-2629) shall be done after all fabrication. The electrodes shall be made from one piece length of pipe	Nos.	44			
17.2	Supply of G.I. Earth Bus (50mm x 12mm x 390mm), with 10 Nos earthing holes and as per PDS: E 615 enclosed.	Nos.	25			
17.3	Supply of hot dip galvanized (minimum Zinc coating of 800 gms / sq. M as per IS-2629) Earthing strip / earth wire of the following sizes :					
i.	75mm X10mm	Mtrs.	6000			

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				FIGURES	WORDS	
ii.	50mm X 6mm	Mtrs.	500			
iii.	32mm X 6mm	Mtr.	100			
iv.	8 SWG GI wire	Mtrs.	500			
<b>17.4</b>	<b>Earthing Cables</b>					
A.	Supply of Single core XLPE insulated 3.3 KV (E) grade unarmoured FRLS PVC outer sheathed cable for earthing of following sizes					
i.	1C x 185 Sq.mm. (Al)	Mtrs.	50			
B.	Single core XLPE insulated 1.1 KV grade unarmoured FRLS PVC outer sheathed cable for earthing of following sizes.					
v.	1 x 185 sq. mm (Al)	Mtrs.	50			
vi.	1 x 25 sq. mm (Al)	Mtr.	50			
vii.	1 x 16 sq. mm (Al)	Mtr.	50			
<b>18.</b>	<b>MS Structure / Aluminium Sheet</b>					
18.1	Supply of MS structurals in channels, angles, flats, plates, rods etc. conforming to IS: 226.	Te	2			
18.2	Supply of 2 mm thick Aluminium sheet for fabrication of Rain protective hood	m <sup>2</sup>	5			
18.3	Supply of 8 mm thick MS Chequered plates.	Te	1			
<b>19.</b>	<b>G.I. / HDPE PIPES</b>					
19.1	Supply of G. I. pipes; Medium Class as per IS 1239 (part-1) of following sizes :					
i.	50 mm NB	Mtrs.	1300			
ii.	100 mm NB	Mtrs.	100			
iii.	150 mm NB	Mtrs.	100			
iv.	200 mm NB	Mtr.	50			

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
<b>20.</b>	<b>CABLE TRENCH MATERIAL &amp; ACCESSORIES</b>					
20.1	Supply of fine river sand in the trench around cables up to a depth of 250 mm (100 mm below the centre line of cable and 150 mm above cable the centre line of cable)	M <sup>3</sup>	1000			
20.2	Supply of Class B 9"x 4.5" x 3" bricks for cable trenches	Nos.	80000			
20.3	CABLE ROUTE MARKER					
	Supply of Cable route markers of Round shape made of MS of dia 200mm with suitable engraving as of HT/ LT/ Control/ Data Cable jointed with angle of 30X30X5 mm grouted in concrete of size 150mm x150mm x 500mm.	Nos.	20			
<b>21.</b>	<b>MISCELLANEOUS ITEMS</b>					
21.1	Supply of Caution boards / dangers boards written in ENGLISH & HINDI of the following voltages as per IS 2551 :					
i.	33 KV	Nos.	2			
ii.	3.3 KV	Nos.	2			
iii.	415 Volts	Nos.	5			
21.2	Supply of rubber hand gloves with IS mark suitable for the following voltages as per relevant IS :					
i.	33 KV	Set	1			
ii.	3.3 KV	Set	1			
iii.	415 Volts	Set	1			
21.3	Supply of Shock treatment chart conforming to Indian Electricity Rules in Aluminum frame with glass.	Nos.	5			

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
21.4	Supply of Do & Don't chart as per Indian Electricity Rules in Aluminum frame with glass.	Nos.	2			
21.5	Supply S/S Single Line Diagram in Aluminum frame with glass.	Nos.	1			
21.6	Supply of portable CO2 type fire extinguisher (4.5 litre capacity).	Nos.	4			
21.7	Sand buckets with stand (each with at least 3 sand buckets).	Nos.	4			
21.8	CPR (CARDIO PULMONARY RESUSCITATION) Charts.	Nos.	2			
21.9	High Voltage danger signage (Skull & bones).	Nos.	10			
21.10	Exit Route / Emergency Exit Route Signage.	Nos.	2			
21.11	First aid boxes.	Nos.	2			
21.12	Discharge Rod	Nos.	2			
21.13	LT & HT megger	Nos.	2 (each)			
21.14	Earth megger	Nos.	2			
21.15	Multi-meter	Nos.	2			
21.16	Tong Tester	Nos.	2			
21.17	Contact resistance meter	Nos.	2			
21.18	Breaker handling trolley for HT & LT switchboards	Nos.	1 (for each type & rating)			
21.19	Supply of fire retardant / extinguishing Elect. Insulated Synthetic Mat suitable for all voltages not exceeding 11 KV System (with H.T. Trolley movement) Electrically insulated PVC synthetic sheet along with suitable Resin/ Chemical bound (Hardener)/ Adhesive /Pigment/ PVC Strip etc & having minimum current leakage as per IS with dielectric strength test at 22KV,					

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	breakdown strength of 45KV and without adverse effect of mineral oil, high insulation resistance (min. 600 Mega ohm per Km.) including material for water proofing of floor & sealing of all joints having Min. width of 1000 mm ± 20mm. Mats shall conform to BIS: DOC NO. ET-02 (5440) Dt.30/04/04, meet requirements of IS 15652:2006, 5216 (part-1, 2&3), IS 8437, IS 3043 & IEC 479 Pub-1 & tested for Tensile/ Elongation properties, Insulation Resistance, effects of Acid Alkaline Diesel & Transformer Oil, Leakage Current Test, Fire Test etc.					
i.	Up to 3.3KV Voltage grade having nominal thickness of 2.0mm ± 10%	Mtrs.	15			
21.20	Supply of Hume Pipes NP3 of following sizes with socket at one end:					
i.	200 MM DIA	Mtr.	20			
21.21	Supply of 240V, 1-Ph, 50Hz, 1400mm sweep high speed ceiling fan with electronic regulator.	No.	4			
21.22	Supply of 240V room lighting boards having following features:					
i.	1 no. Switch and socket for 5 / 15 Amp. 2 nos. 5 Amp switches with regulators for ceiling Fan 2 nos. 5 Amp switches for lighting	Nos.	5			
ii.	1no Switch and socket for 5 / 15 Amp. 3nos 5 Amp switches for lighting	No.	5			
22.	Item wise unit prices of following spares for two years operation and maintenance:					

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
<b>A.</b>	<b>33 KV RING MAIN UNIT</b>					
i)	Trip bar spring and any other spring used in the circuit breaker mechanism	Set	1			
ii)	Shunt trip coil	Set	1			
iii)	Closing coil	Set	1			
iv)	Spring Charging handle	No.	1			
v)	Door panel key	Set	1			
vi)	Relay (of each Type)	No.	1			
vii)	Ring Core Protection CTs having ratio 150/1 (metering, Protection )	Set	1			
viii)	Space Heater	Set	1			
ix)	Voltmeter	No.	1			
x)	Touch-proof Cable Termination Kits for connection of HT cables	Set	1			
xi)	Operating handle for Disconnecter / Earth Switch operation	No.	1			
xii)	Thermostat	No.	1			
xiii)	Ammeter Selector Switch	No.	1			
xiv)	Push Button Element of each type	Nos.	2			
xv)	Push Button Actuator of each type	Nos.	2			
xvi)	Indication Lamp (of each type & colour)	Nos.	2			
<b>B.</b>	<b>TRANSFORMERS</b>					
i)	Bushings complete with accessories for all 3 phase & neutral for all voltage grades.	Set	1			
ii)	Complete set of gaskets	No.	1			
iii)	Equaliser pie and Explosion vent diaphragm	Set	1			
iv)	PRV with alarm and trip	Set	1			
v)	Oil Level Gauge	No.	1			
vi)	Complete charge of Silica gel with breather	Set	1			

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
vii)	Gland packing / O-rings for every valve	Set	1			
viii)	Buchholz Relay	No.	1			
ix)	Analogue type OTI	No.	1			
x)	Analogue type WTI	No.	1			
xi)	CT for WTI	No.	1			
<b>C.</b>	<b>HV SWITCHBOARDS</b>					
i)	<b>BREAKERS (OF EACH RATING)</b>					
a.	Trip bar spring and any other spring used in the circuit breaker mechanism	Set	1			
b.	Shunt trip coil	Set	1			
c.	Closing coil	Set	1			
d.	Secondary Isolating contact blocks	Set	1			
e.	Micro Switch for Spring Charging	Set	1			
f.	Micro Switch for Service/Test position	Set	1			
g.	Rack in/Rack out handle	No.	1			
h.	Spring Charging handle	No.	1			
i.	Door panel key	Set	1			
ii)	<b>CONTROL SWITCHES</b>					
a.	Trip-Neutral-Close Control Switch	No.	1			
b.	Local-Remote or Auto-Manual Selector Switch	No.	1			
c.	Thermostat	No.	1			
d.	Ammeter Selector Switch	No.	1			
e.	Voltmeter Selector Switch	No.	1			
f.	Push Button Element of each type	Nos.	2			
g.	Push Button Actuator of each type	Nos.	2			
h.	Indication Lamps (1 no. of each type)	Nos.	2			
iii)	<b>MINIATURE CIRCUIT BREAKER (OF EACH RATING)</b>	No.	1			
iv)	<b>RELAYS (OF EACH TYPE)</b>					

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
a.	Relays of each type	No.	1			
v)	METERS					
a.	Ammeter of each type	No.	1			
b.	Voltmeter	No.	1			
c.	KWh Meter	No.	1			
vi)	INSTRUMENT TRANSFORMERS	No.	1			
vii)	FUSES (OF EACH RATING)					
a.	Fuse link	No.	1			
b.	Fuse fittings	No.	1			
viii)	MISCELLANEOUS					
a.	Alarm bell	No.	1			
b.	Alarm buzzer	No.	1			
c.	Surge Suppressor	Nos.	3			
d.	Vacuum Bottle (3.3KV, 1250A)	Nos.	3			
<b>D.</b>	<b>LV SWITCHBOARDS</b>					
i)	BREAKERS (OF EACH RATING)					
a.	Trip bar spring and any other spring used in the circuit breaker mechanism	Set	1			
b.	Cluster Contacts	Set	1			
c.	Arc Chute Assembly	Set	1			
d.	Shunt trip Coil	Set	1			
e.	Closing Coil	Set	1			
f.	Motors for MWS operated breakers	No.	1			
g.	Secondary Isolating Contact Blocks	Set	1			
h.	Shutter Assembly	Set	1			
ii)	SWITCHES (OF EACH RATING)					
a.	Trip-Neutral-Close Control Switch	No.	1			
b.	Local-Remote or Auto-Manual Selector Switch	No.	1			

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				FIGURES	WORDS	
c.	Thermostat	No.	1			
d.	Ammeter Selector Switch	No.	1			
e.	Voltmeter Selector Switch	No.	1			
f.	Push Button Element of each type	Nos.	2			
g.	Push Button Actuator of each type	Nos.	2			
iii)	FUSES (OF EACH RATING)					
a.	Fuse Link	No.	1			
b.	Fuse Fittings	No.	1			
iv)	CONTACTOR (OF EACH RATING)					
a.	Contactors with Auxiliary Contacts	Nos.	2			
b.	Operating Coil	Nos.	2			
c.	Auxiliary Contact Block	Nos.	2			
v)	RELAYS					
a.	Relays of each type	No.	1			
b.	Glass cover of each case	No.	1			
vi)	INDICATION LAMPS					
a.	Indicating Lamp Globes of each colour	No.	1			
b.	Indication Lamp Fittings	No.	1			
c.	Indicating Lamp Bulbs	No.	1			
vii)	METERS					
a.	Ammeter of each type	No.	1			
b.	Voltmeter	No.	1			
viii)	TRANSFORMERS					
a.	Current Transformer of each rating	No.	1			
b.	Potential Transformers	No.	1			
ix)	MCB (OF EACH RATING)	No.	1			
x)	MISCELLANEOUS					
a.	Alarm Bell	No.	1			
b.	Alarm Buzzer	No.	1			

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
c.	Power contactor (each type)	No.	1			
d.	SFU (each type)	No.	1			
e.	Maintenance truck for ACB	No.	1			
<b>E.</b>	<b>NEUTRAL EARTHING RESISTOR</b>					
i.	Bushing with accessories	Set	1			
ii.	Support insulators	Set	1			
iii.	Resistor element	Set	1			
<b>F.</b>	<b>FOR LIGHTING FIXTURE</b>					
i.	Reflector of each type	Nos.	5			
ii.	Lamp holder of each type.	Nos.	5			
iii.	Capacitor for each type.	Nos.	5			
iv.	Ballast of each type.	Nos.	5			
v.	Heat resistant toughened glass cover of each type	Nos.	5			
vi.	Cable glands of each type	Nos.	5			
vii.	Allen keys of different sizes as applicable.	Nos.	3			
<b>G.</b>	<b>FOR INTERLOCKING SWITCH SOCKET &amp; PLUG</b>					
i.	Switch of each rating	Nos.	2			
ii.	Fuse base of each rating	Nos.	2			
iii.	Fuse of each rating	Nos.	2			
iv.	Plug Top	Nos.	2			
<b>H.</b>	<b>MLDB/LSDB/ACDB/DCDB</b>					
i.	630A 4P MCCB	No.	1			
ii.	Power Contactor for MLDB	No.	1			
iii.	400 A 4P MCCB	No.	1			

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**PART-A : SUPPLY OF ELECTRICAL ITEMS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
iv.	63 A TPN MCCB	Nos.	2			
v.	63 A TPN SFU	Nos.	2			
vi.	63 A DP SFU	Nos.	4			
vii.	32 A TPN MCB	Nos.	2			
viii.	32 A DP SFU	Nos.	4			
ix.	16 A DP MCB	Nos.	4			
x.	Terminal block.	Nos.	4			
<b>TOTAL OF PART-A :</b>						<b>Rs.</b>

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**PART-B : ELECTRICAL INSTALLATION WORKS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
<b>1.</b>	<b>POWER TRANSFORMER / SERIES REACTOR</b>					
1.1	Handling, Installation, Testing and Commissioning of Power Transformers / Series Reactor excluding filtration and dehydration of oil / winding, Power and Control cable termination but including transportation of transformer/series reactor and its accessories from owner's stores, dressing of foundation, placing in position on M S base channel / flat, assembly of all accessories supplied loose, topping up with tested oil, all labour and material complete as per drawings / specification and direction of the transformer manufacturer.					
i)	3000 KVA, 33/3.43 kV Transformer	No.	1			
ii)	2000 KVA, 3.3/0.433 kV Transformer	No.	1			
1.2	Filtration and Dehydration of oil / winding of transformer / series reactor with streamline filter machine (to be arranged by the Contactor) for bringing the dielectric strength of the oil to the required level as per IS, complete with all labour and material including transportation oil drums from stores.	Litre	4500			
<b>2.</b>	<b>33KV RING MAIN UNIT</b>					
2.1	Installation, testing and commissioning of following sheet steel enclosed switch boards, free standing, floor mounting, cubicle type, including transportation from the owner's store to the site of erection, assembly, mounting, fixing and wiring of loose components like					

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**PART-B : ELECTRICAL INSTALLATION WORKS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	relays/meters, interconnection of shipping sections and inter panel wiring as necessary, inter bus bar jointing and earthing, operational and functional checking, installation on foundation including levelling and aligning, supply of foundation nuts and bolts, drilling of gland plates with requisite holes, fixing of cable glands supplied loose, plugging of all unused cable entries and other holes found in switch boards for making the same dust and vermin proof with all labour and materials to make the installation complete as per approved drawings, technical specifications and direction of engineer-in-charge, but excluding termination of incoming & outgoing cables. Job shall include rigidly fixing the frame including grouting, if necessary					
i)	33 KV, 21KA for 3 Sec., 630 A RMU	Unit	1			
<b>3.</b>	<b>HV &amp; LV SWITCH BOARD</b>					
3.1	Installation, testing and commissioning of following sheet steel enclosed switch boards, free standing, floor mounting, cubicle type, including transportation from the owner's store to the site of erection, assembly, mounting, fixing and wiring of loose components like relays/meters, interconnection of shipping sections and inter panel wiring as necessary, inter bus bar jointing and earthing, operational and functional checking, installation on foundation including levelling and aligning, supply of foundation nuts and bolts, drilling of gland plates with requisite holes, fixing of cable					

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**PART-B : ELECTRICAL INSTALLATION WORKS**



ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	glands supplied loose, plugging of all unused cable entries and other holes found in switch boards for making the same dust and vermin proof with all labour and materials to make the installation complete as per approved drawings, technical specifications and direction of engineer-in-charge, but excluding termination of incoming & outgoing cables. Job shall include rigidly fixing the frame including grouting, if necessary					
A.	HV SWITCH BOARD					
i.	3.3 KV, 150 MVA, 1250 A switch board (Approx Panels: 5)	No.	1			
B.	LV SWITCH BOARD					
i.	415V, 3 Ph & N, 3200 A ,50kA Draw out type, Double front, Power Control Centre	No.	1			
<b>4.</b>	<b>NGR</b>					
4.1	Installation of sheet steel enclosed, free standing, floor mounting, cubicle type, including transportation from the owner's store to the site of erection, assembly, mounting, earthing, installation on foundation including levelling and aligning, supply of foundation nuts and bolts, drilling of gland plates with requisite holes, fixing of cable glands supplied loose, plugging of all unused cable entries for making the same dust and vermin proof with all labour and materials to make the installation complete as per approved drawings, technical specifications and direction of engineer-in-charge, but excluding termination of cables. Job shall include rigidly fixing the					

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**PART-B : ELECTRICAL INSTALLATION WORKS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	frame including grouting, if necessary.					
i.	Neutral Grounding Resistors rated for 3.43/√3 KV ± 10%, 400A for 30 seconds, 4.98 ohms ± 10%, for 33/3.45 KV, 3.15 MVA Transformers.	No.	1			
<b>5.</b>	<b>WEATHER PROOF / HOSE PROOF SWITCH SOCKET</b>					
5.1	Installation, testing and commissioning of interlocked type switch sockets with matching plugs complete with cable glands, lugs, terminal blocks etc. of following ratings:					
i.	63A, 5-pin, 415V (Weather Proof)	Nos.	6			
ii.	25A, 3-pin, 240V (Weather Proof)	Nos.	3			
<b>6.</b>	<b>LAYING OF CABLE TRAYS</b>					
6.1	Installation, laying and connecting of pre-fabricated ladder type GI cable trays and horizontal & vertical bends and regular Tees of different radii of various sizes on already erected supports or risers, including joining various cable trays by bolting with G.I. bolts, nuts & washers as per approved drawings (including fixing J-hooks, reducer coupler plate, adjustable coupler plate) as per the desired cable route and as per the drawings and directions of Engineer-in-charge. Job also includes supply of all hardware required i.e. J-hooks, GI Nut, Bolt, Washers etc.					
A.	Straight Run Cable Trays					
i.	600mm wide	Mtrs.	50			
ii.	450mm wide	Mtrs.	50			
iii.	300mm wide	Mtrs.	100			
B.	Horizontal Bends					

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**PART-B : ELECTRICAL INSTALLATION WORKS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
i.	600mm wide	Nos.	5			
ii.	450mm wide	Nos.	5			
iii.	300 mm wide	Nos.	5			
C.	Vertical Inside Bends					
i.	450mm wide	Nos.	5			
ii.	300mm wide	Nos.	5			
D.	Vertical Outside Bends					
i.	450mm wide	Nos.	5			
ii.	300mm wide	Nos.	5			
E.	Regular Tees					
i.	600mm wide	No.	2			
ii.	450mm wide	No.	2			
iii.	300mm wide	No.	2			
F.	Reducers					
i.	600/450mm wide	No.	1			
ii.	600/300mm wide	Nos.	5			
iii.	450/300mm wide	No.	1			
iv.	300/150mm wide	No.	1			
G.	Cross					
i.	600mm wide	No.	1			
6.2	Installation, laying and connecting of Al perforated type cable trays and horizontal & vertical bends and regular Tees of different radii of various sizes on already erected supports or risers, including joining various cable trays by bolting with G.I. bolts, nuts & washers as per approved drawings (including fixing J-hooks, reducer coupler plate, adjustable coupler plate through supply of GI Nut Bolts, Washers etc) as per the desired cable route and as per the					

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**PART-B : ELECTRICAL INSTALLATION WORKS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	drawings and directions of Engineer-in-charge.					
A.	Straight Run Cable Trays					
i.	300mm wide	Mtrs.	50			
ii.	150mm wide	Mtrs.	50			
B.	Horizontal Bends					
i.	300mm wide	Nos.	5			
ii.	150mm wide	Nos.	2			
C.	Vertical Inside Bends					
i.	300mm wide	Nos.	5			
ii.	150mm wide	Nos.	2			
D.	Vertical Outside Bends					
i.	300mm wide	Nos.	5			
ii.	150mm wide	Nos.	2			
E.	Regular Tees					
i.	300mm wide	Nos.	4			
ii.	150mm wide	Nos.	2			
F.	Reducers					
i.	300/150mm	No.	1			
<b>7.</b>	<b>LAYING OF CABLES</b>					
7.1	Horizontal and vertical laying, testing (before and after laying) and commissioning of following HV (33KV & 3.3KV) / LV Power & Control cables in readymade trenches, on pre-fabricated cable trays / racks, on already installed risers, support hangers, saddles etc. pulling through pipes on walls / columns, steel structures including transportation of cable drums from storage yard to the site, unrolling the drum, laying the required length of cables including supply and fixing of necessary saddles, saddle bars, cable					

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**PART-B : ELECTRICAL INSTALLATION WORKS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	tags, Al clamps for cables laid vertical on walls / columns / structures, risers with all labour, consumable materials and necessary hardware to make installation complete in all respect as per approved standard drawings and direction of engineer-in-charge.					
A.	33 KV (E) Grade, XLPE Insulated, PVC inner sheathed, Armoured, FRLS PVC outer sheathed cables.					
i.	3C x 300 sq. mm (Al)	Mtrs.	500			
B.	3.3 KV (UE) Grade, XLPE Insulated, PVC inner sheathed, FRLS PVC outer sheathed cables.					
i.	3C x 300 sq. mm (Al)	Mtrs.	250			
C.	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables.					
i.	3C x 10 sq. mm (Cu)	Mtrs.	1000			
ii.	3C x 4 sq. mm (Cu)	Mtrs.	1000			
iii.	3C x 2.5 sq. mm (Cu)	Mtrs.	7200			
iv.	3.5C x 400 sq. mm (Cu)	Mtrs.	500			
v.	3.5C x 300 sq. mm (Al)	Mtrs.	500			
vi.	3.5C x 185 sq. mm (Al)	Mtrs.	500			
vii.	3.5C x 150 sq. mm (Al)	Mtr.	100			
viii.	3.5C x 70 sq. mm (Al)	Mtrs.	2000			
ix.	3.5C x 50 sq. mm (Al)	Mtrs.	4000			
x.	3.5C x 35 sq. mm (Al)	Mtrs.	3000			
xi.	4C x 16 sq. mm (Al)	Mtrs.	7500			

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**PART-B : ELECTRICAL INSTALLATION WORKS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
xii.	5C x 2.5 sq. mm (Cu)	Mtrs.	500			
xiii.	7C x 2.5 sq. mm (Cu)	Mtrs.	500			
xiv.	19C x 2.5 sq. mm (Cu)	Mtrs.	200			
D.	Single core XLPE insulated 3.3 KV grade unarmoured FRLS PVC outer sheathed cable for earthing					
i.	1C x 185 sq. mm (Al)	Mtrs.	50			
E.	Single core XLPE insulated 1.1 KV grade unarmoured FRLS PVC outer sheathed cable for earthing.					
i.	1 x 185 sq. mm (Al)	Mtrs.	50			
ii.	1 x 25 sq. mm (Al)	Mtr.	50			
iii.	1 x 16 sq. mm (Al)	Mtr.	50			
<b>8.</b>	<b>TERMINATION OF CABLES</b>					
8.1	End termination and subsequent testing of XLPE/PVC insulated single core / multi core armoured Cables of 33KV/3.3KV/1.1 KV grade, Al / Cu cable using suitable Heat Shrink Termination Kit, excluding supply of glands & lugs but including Glanding, all labour and consumable materials to make installation complete in all respect. The rate shall include drilling, taping of cable insulation, crimping of lugs to the conductor, connection of the lugs to equipment terminal, supply and fixing of G.I. nuts, screws, bolts, washers and other necessary hardware, PVC tape of required grade for taping, making cable entries dust and					

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**PART-B : ELECTRICAL INSTALLATION WORKS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	vermin proof, earthing etc. as per instruction of manufacturer, approved drawings, specifications and directions of engineer-in-charge.					
A.	33 KV (E) Grade, XLPE Insulated, PVC inner sheathed, Armoured, FRLS PVC outer sheathed cables.					
i.	3C x 300 sq. mm (Al)	Nos.	2			
B.	3.3 KV (UE) Grade, XLPE Insulated, PVC inner sheathed, Armoured, FRLS PVC outer sheathed cables.					
i.	3C x 300 sq. mm (Al)	Nos.	6			
C.	1.1 KV Grade, XLPE Insulated, PVC inner Sheath, FRLS PVC outer sheathed cables.					
i.	3C x 10 sq. mm (Cu)	Nos.	10			
ii.	3C x 4 sq. mm (Cu)	Nos.	11			
iii.	3C x 2.5 sq. mm (Cu)	Nos.	180			
iv.	3.5C x 400 sq. mm (Cu)	Nos.	18			
v.	3.5C x 300 sq. mm (Al)	Nos.	10			
vi.	3.5C x 185 sq. mm (Al)	Nos.	4			
vii.	3.5C x 150 sq. mm (Al)	No.	5			
viii.	3.5C x 70 sq. mm (Al)	Nos.	9			
ix.	3.5C x 50 sq. mm (Al)	Nos.	4			
x.	3.5C x 35 sq. mm (Al)	Nos.	10			
xi.	4C x 16 sq. mm (Al)	Nos.	10			
xii.	5C x 2.5 sq. mm (Cu)	Nos.	190			
xiii.	7C x 2.5 sq. mm (Cu)	Nos.	220			
xiv.	19C x 2.5 sq. mm (Cu)	Nos.	5			

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
D.	Single core XLPE insulated 3.3 KV grade unarmoured FRLS PVC outer sheathed cable for earthing					
i.	1C x 185 sq. mm (Al)	Nos.	5			
E.	Single core XLPE insulated 1.1 KV grade unarmoured FRLS PVC outer sheathed cable for earthing					
i.	1C x 185 sq. mm (Al)	Nos.	5			
ii.	1C x 25 sq. mm (Al)	No.	5			
iii.	1C x 16 sq. mm (Al)	No.	5			
<b>9.</b>	<b>STRAIGHT THROUGH JOINTS</b>					
9.1	Straight through jointing of HT& LT armoured cables of following sizes excluding supply of straight through jointing kit including all labour and materials complete as per Technical Specification and direction of engineer-in-charge.					
i.	3C x 300 sq. mm (Al, 33 KV)	No.	2.			
ii.	3C x 300 sq. mm (Al, 3.3 KV)	No.	2			
iii.	3.5C x 400 sq. mm Cu, 1.1KV)	No.	2			
iv.	3.5C x 300 sq. mm (Al, 1.1KV)	No.	2			
v.	3.5C x 185 sq. mm (Al, 1.1KV)	No.	2			
vi.	3.5C x 70 sq. mm (Al, 1.1KV)	No.	2			
vii.	3.5C x 50 sq. mm (Al, 1.1KV)	No.	2			
viii.	3.5C x 35 sq. mm (Al, 1.1KV)	No.	2			
ix.	4C x 16 sq. mm (Al, 1.1KV)	No.	2			
x.	5C x 2.5 sq. mm (Cu)	No.	2			
xi.	7C x 2.5 sq. mm (Cu)	No.	2			
xii.	19C x 2.5 sq. mm (Cu)	No.	2			

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
<b>10.</b>	<b>DISTRIBUTION BOARDS</b>					
10.1	Installation, testing and commissioning of following floor / wall mounted Distribution Boards, including supply and fabrication of epoxy painted MS frame, operational and functional checking, drilling of gland plates with requisite holes, fixing of cable glands, plugging of all unused cable entries and other holes found in the boards to make the same dust and vermin proof with all labour and consumable materials to make installation complete as per approved drawings, specifications and directions of engineer-in-charge.					
i.	415 V, 3 Ph & N, floor mounted sheet steel enclosed Main Lighting Distribution Board (MLDB) as per Technical Specification 5001-TS-0801. It shall consist of 1 no. incoming 630 A MCCB incomer with outdoor bus contactor having 15 nos. 63 A TPN SFU as outgoing feeders and in door bus having 3 nos. 63A SFU as outgoing feeders.	No.	1			
ii.	415 V, 3 Ph & N, floor mounted sheet steel enclosed Welding Socket Distribution Board (WSDB) as per Technical Specification 5001-TS-0801. It shall consist of 1 no. incoming 400 A 4P MCCB incomer with mechanical interlock & following nos. of outgoing feeders: 6 nos. 63 A 4P MCCB.	No.	1			
iii.	415 V, 3 Ph & N, Feeder pillar box as per Technical Specification 5001-TS-0801. It shall consist of 1 no. incoming 63 A TPN MCCB	Nos.	6			

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	incomer and 4nos. 32A TPN MCB outgoing feeders.					
10.2	Installation, testing and commissioning of following wall mounted Lighting sub Distribution Boards / Single Phase Socket Distribution Boards, including supply and fabrication of epoxy painted MS frame, operational and functional checking, drilling of gland plates with requisite holes, fixing of cable glands, plugging of all unused cable entries and other holes found in the boards to make the same dust and vermin proof with all labour and consumable materials to make installation complete as per approved drawings, specifications and directions of engineer-in-charge.					
i.	415 V, 9-way wall mounted Sheet enclosed Hose & Weather Proof Lighting Sub Distribution Board in IP55 degree of protection having 1 No. Incoming (63 A TP & Switched Neutral Isolator switch) and 3 nos feeder circuit of 63A DP MCB having 9 Nos. outgoing of 16 A DP MCB (i.e. 6 nos. 16 A DP MCB per circuit).	Nos.	3			
<b>11.</b>	<b>LIGHTING FIXTURES AND JUNCTION BOXES</b>					
11.1	Installation, connection, testing and commissioning of pre-wired fluorescent/ LED/ HPMV / Sodium vapour Lighting fixtures along with integral /non-integral control gears, lamps, tubes, chokes, starters, condensers, mounting accessories, including cable glanding, crimping of lugs on cable conductor & connecting cables					

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**PART-B : ELECTRICAL INSTALLATION WORKS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	at fixtures, earthing, junction boxes, etc. including supply of all connecting materials like clamps, supports, conduits, down rods etc. as required as well as transportation from store to site of erection with all labour and material to make installation complete in all respect as per approved drawings, specifications and directions of engineer-in-charge. The rates shall be valid for all mounting heights.					
i.	250 W HPSV Hose proof & weather proof Streetlight fixtures with separate control gear complete with weatherproof cable glands, plug suitable for 3 X 2.5 mm <sup>2</sup> XLPE-A-PVC cable and stopping plug.	Nos.	20			
ii.	45 W LED Hose proof & weather proof Street Lighting Fixture complete with weatherproof cable glands, plug suitable for 3 X 2.5 mm <sup>2</sup> XLPE-A-PVC cable and stopping plug.and installation of suspension rod and other mounting accessories	Nos.	300			
iii.	90 W LED Hose proof & weather proof Street Lighting Fixture complete with weatherproof cable glands, plug suitable for 3 X 2.5mm <sup>2</sup> XLPE-A-PVC cable and stopping plug.and installation of suspension rod and other mounting accessories	Nos.	25			
iv.	2x20 W LED recess/suspended mounting FTL type Lighting Fixture including supply and installation of mounting accessories.	Nos.	20			
11.2	Installation, connection, testing and commissioning of Junction Boxes, including cable glanding, crimping of lugs on cable conductor & connecting cables, earthing etc.					

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	including supply of all connecting materials like clamps, supports etc. as required as well as transportation from store to site of erection with all labour and material to make installation complete in all respect as per approved drawings, specifications and directions of engineer-in-charge. The rates shall be valid for all mounting heights.					
i.	63A, 415V, 3 Ph. & N, 4 way hoseproof & weather proof junction boxes in cast aluminium (LM6) enclosure complete with terminal block, rolled aluminium cable glands suitable for 2Nos. 3.5Cx50 Sq. mm (Al) & 1 no. 3 x 2.5mm <sup>2</sup> cable and threaded plug.	Nos.	300			
ii.	25A, 230V, 1 Ph. & N, 4 way hoseproof & weather proof junction boxes in cast aluminium (LM6) enclosure complete with terminal block, rolled aluminium cable glands suitable for 3 x 2.5mm <sup>2</sup> cable and threaded plug.	Nos.	30			
<b>12.</b>	<b>HIGH MAST</b>					
i.	Erection and commissioning of the high mast with the help of suitable equipment alongwith all its accessories such as head frame, SS wire rope, double drum winch etc. This includes supply of foundation bolts manufactured from special steel along with nuts, washers, anchor plates and templates.	Nos.	6			
ii.	Installation, testing and commissioning of specially designed non-integral flood light luminaries 9 nos. 2X400W, 3 Nos. 1X400W SON T lamps and its control gear boxes. Installation, testing & commissioning of aviation	Nos.	6			

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**PART-B : ELECTRICAL INSTALLATION WORKS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	obstruction lights with neon spiral light source (1 no. fitting per mast is necessary).					
iii.	Installation, testing and commissioning of high powered three phase flameproof power tool for electrical operation of raising and lowering of lantern carriage with its FLP starter, FLP plug, FLP DOUBLE COMPRESSION ROLLED Aluminum cable glands & lugs suitable for 3.5Cx50 Sq. mm (Al) XLPE cable, supporting trolley, torque limiter and fixing chain.	Nos.	6			
<b>13.</b>	<b>PLANT LIGHTING POLES</b>					
13.1	Erection and commissioning of following hot dipped galvanised mild steel tubular swaged lighting poles including transportation of required items from owner's issue point to site and installation of poles, junction box, supply of requisite cable glands and tinned copper lugs, cable termination, necessary hardware required for excavation, providing concrete foundation ( ratio of cement : sand : stone chips = 1:2:4) for ground installation, disposal of surplus earth within 30 m lead, earthing and painting with all labour to make installation complete in all respect as per instruction and directions of engineer-in-charge.					
i.	9M high ground mounted poles	Nos.	25			
ii.	5M high ground mounted poles	Nos.	275			
<b>14.</b>	<b>EARTHING SYSTEM</b>					
14.1	<b>EARTH PIT</b>					
i.	Installation, testing and commissioning of earth	Nos.	40			

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	pits as per earthing layout drawings (excluding supply of safe earth electrodes & accessories) including digging the earth up to required depth, erecting safe earth electrode, disposal of surplus earth (as directed by engineer-in-charge) and back filling of the pit as required including supply of erection material providing necessary brick works and other civil works, fixing G.I. L-shaped test links and brackets, twisted piece and connecting to it earth electrodes and earth strips with all labour and materials to complete installation work in all respect as per approved drawings, specifications and directions of engineer-in-charge					
ii.	Installation, testing and commissioning of lightning earth pits as per lightning layout drawings (excluding supply of non treated type directly buried G.I. pipes) including digging the earth upto required depth, erecting non treated type directly buried G.I. pipes, disposal of surplus earth (as directed by engineer-in-charge) and back filling of the pit as required including supply of erection material providing necessary brick works and other civil works, fixing G.I. L-shaped test links and brackets, twisted piece and connecting to it earth electrodes and earth strips with all labour and materials to complete installation work in all respect as per approved drawings, specifications and directions of engineer-in-charge.	Nos.	4			
<b>14.2</b>	<b>EARTH BUS BAR</b>					
iii.	Installation and commissioning of hot dip	Nos.	25			

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	galvanised earth bus bar of size 360 mm x 75 mm x 10 mm with 10 holes of 14 mm dia. including all labour and materials to complete installation in all respect as per approved drawings, specifications and directions of engineer-in-charge.					
<b>14.3</b>	<b>EARTHING GRID</b>					
A.	Installation, testing and commissioning of Hot dip galvanised G.I. earthing strip running on O.H. cable trays / cable trays in underground cable trenches / buried under soil in already excavated cable trenches of depth 600mm or supported by G.I. saddles & saddle bars as mentioned below including interconnection between different earth pits, strip / cable for connection to various equipments & system neutral, necessary hardware for connection and interconnection between earth bus bars including all labour and miscellaneous materials to make installations complete in all respect as per approved drawings, specifications, instructions and directions of engineer-in-charge.					
i.	75mm X 10mm	Mtrs.	6000			
ii.	50mm X 6mm	Mtrs.	500			
iii.	32mm X 6mm	Mtr.	100			
iv.	8 SWG G.I. Wire	Mtrs.	500			
<b>15.</b>	<b>FABRICATION OF STEEL STRUCTURE</b>					
15.1	Fabrication and installation of MS frame supports and brackets for various equipment base frame, miscellaneous electrical equipment	Te	2			

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	support, made of channels, angles, flats etc. of different sections including bolting, welding, riveting, supply of necessary anchor bolts and grouting etc. including 2 coats of zinc rich anti-rust epoxy primer and 2 finished coats of epoxy paint including breaking wall, floor etc. and making good the same with all labour and consumable materials to complete installation in all respect as per approved drawings, specifications and directions of engineer-in-charge					
15.2	Fabrication & installation of 2 mm thick Al sheet for rain protective hood for outdoor equipment e.g. motors, switch sockets, junction boxes etc.	m <sup>2</sup>	5			
15.3	Fabrication and Installation of 8mm thick chequered plate in flooring, steps, covers over cable trenches in switch board room, painting with one coats of bitumen paint in the 50% thinner with two coats of black bitumen paints including supply of all consumables and paints.	Te	1			
<b>16.</b>	<b>G.I. PIPES / HDPE PIPES</b>					
19.1	Installation of G.I. pipes of following sizes for cable protection, floor sleeves etc. fixed on a steel structure, concrete, laid in trenches including concrete cutting, bending, threading etc.to a clamp, nuts, bolts sockets, reducers, spacers, plug, bushing, chipping of concrete floor, breaking of concrete cable trench, walls and complete with all labour and material as per directions of engineer-in-charge.					
i.	50 mm NB	Mtrs.	1300			

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
ii.	100 mm NB	Mtrs.	100			
iii.	150 mm NB	Mtrs.	100			
iv.	200 mm NB	Mtr.	50			
19.2	Cutting, chipping, breaking of RCC floor and wall for making holes/cut out/grooves etc. and making good the damage after laying pipes, cable etc. With cement, sand mortar as required.	m <sup>3</sup>	5			
19.3 1 3.	Same as above but for brick walls.	m <sup>3</sup>	5			
19.4	Drilling of hole under Road for laying of Pipe for Cable pulling					
i.	200 NB Dia.	Mtrs.	20			
ii.	150 NB Dia.	Mtrs.	20			
<b>17.</b>	<b>EXCAVATION AND BACK FILLING</b>					
i.	Excavation 500 mtr. length x 800 mm wide x 1050 mm deep and 6000 mtr. Length x 300 mm x 750 mm deep for laying of cables including disposal of excavated earth, lead up to 100 mtrs. and lift up to 1.5 mtrs., disposed earth to be levelled and neatly dressed	M <sup>3</sup>	2000			
ii.	Back filling with excavated earth in trench including consolidating each deposited layer by ramming, dressing etc.	M <sup>3</sup>	1200			
<b>18.</b>	<b>FINE RIVER SAND</b>					
i.	Spreading of approved fine river sand in cable trenches up to a depth of 250 mm (100 mm below the centre line of cable and 150 mm above cable the centre line of cable) including	M <sup>3</sup>	1000			

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	all labour and materials to make the installation complete in all respect as per approved drawings, specifications and directions of engineer-in-charge.					
<b>19.</b>	<b>BRICKS</b>					
i.	Spreading of approved first class bricks of 4 inch thickness in cable trenches for cable protection including all labour and materials to make installation complete in all respect.	Nos.	80000			
<b>20.</b>	<b>MISCELLANEOUS</b>					
20.1	Fixing of Caution boards / dangers boards written in ENGLISH & HINDI of the following voltages.					
i.	33 KV	Nos.	2			
ii.	3.3 KV	Nos.	2			
iii.	415 Volts	Nos.	5			
20.2	Fixing of shock treatment chart written in English and Local language duly framed and approved by engineer-in-charge.	Nos.	5			
20.3	Fixing of Do & Don't chart as per Indian Electricity Rules in Aluminum frame with glass	Nos.	2			
20.4	Fixing of S/S Single Line Diagram in Aluminum frame with glass.	No.	1			
20.5	Installation of portable CO2 type fire extinguisher (4.5 litre capacity).	Nos.	4			
20.6	Installation of Sand buckets with stand (each with at least 3 sand buckets).	Nos.	4			
20.7	Fixing of CPR (CARDIO PULMONARY RESUSCITATION) Charts.	Nos.	2			
20.8	Fixing of High Voltage danger signage (Skull &	Nos.	10			

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	bones).					
20.9	Fixing of Exit Route / Emergency Exit Route Signage.	Nos.	2			
20.10	Fixing of synthetic insulating mats in front of various panel boards as per directions of engineer-in-charge including supply of all consumables for fixing.					
i.	Up to 3.3KV Voltage grade having nominal thickness of 2.0mm ±10%	Mts.	15			
20.11	Grouting and Installation of Cable Route Marker	Nos.	20			
20.12	Installation of Hume Pipes of following sizes:-					
i.	200 mm Dia.	Mtr.	20			
20.13	Installation , testing and commissioning of 240V, 1-Ph, Wall Mounting Fans / Exhaust Fans / Ceiling Fans (with Electronic Regulator) / Man Cooler Fans etc on wall / Ceiling / Steel Structure including supply, fabricating and grouting of MS Frame / Hooks and other hardware etc.	No.	4			
20.14	Installation, testing and commissioning of 240V room lighting boards along with required wiring (concealed in PVC conduit / on wall) having following features:-					
i.	1 no. Switch & Socket for 5 / 15 Amp 2 nos. 5 Amp switches with regulators for ceiling Fan 2 nos. 5 Amp switches for lighting	No.	5			
ii.	1no Switch & Socket for 5 / 15 Amp 5nos 5 Amp switches for lighting	No.	5			
20.15	Installation and commissioning of 32 Amps D.P./ 63/ 125A T.P.N. switch/ Welding receptacles/ Photocell Switch/ Energy Meter/ Telephone DP	No.	5			

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	or other equipment of equivalent size in box on suitable angle iron frame or in a M.S. Box including grouting on walls or welding with structure.					
<b>21.</b>	<b>MAN-HOUR RATE</b>					
21.1	Electrician / Wireman	Man Days	Unit Rate			
21.2	Cable Jointer	Man Days	Unit Rate			
21.3	Supervisor	Man Days	Unit Rate			
21.4	Helper	Man Days	Unit Rate			
<b>TOTAL OF PART-B :</b>						<b>Rs.</b>

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## PREAMBLE TO SCHEDULE OF RATES (FOR PART-C)



### 1.00 GENERAL

- 1.01 The plans have been evolved tentatively based on information available with Owner / Consultant but the dimensions and details etc. are liable to changes. The Tenderers shall not be entitled to claim any higher rate or compensation on this account. The tender drawings are intended mainly to give an indication of the probable type of construction. The successful Tenderers will, however, be required to execute the work as per detailed approved drawings issued to them from time to time. Steel structures can be changed to R.C.C. or vice versa. Owner reserves the right to add / delete any of the building works mentioned in the N.I.T., during the currency of the contract.
- 1.02 The Tenderers shall note that the quantities of the different Items, as given in the "Schedule of Rates" are tentative based on tentative tender drawings and are subject to variation and they shall not be entitled to claim any higher rate or compensation on this account. Owner / Consultant reserves the right to change / modify the size and type of sections at any time. Owner / Consultant does not guarantee work under each item of the Schedule of Quantities. The total quantum of work may vary up to 25% on either side and nothing extra will be paid on this account. Quantum of individual item may vary to any extent.
- 1.03 The Tenderers shall be fully responsible for the correct setting out and execution of the work in accordance with approved drawings which will be supplied to them progressively. All tools, tackles, construction equipments etc., required for the successful execution / construction of the complete work, shall be responsibility of the Tenderers.
- 1.04 The quantities given in the "Schedule of Rates" are approximate and are given only for the guidance for quoting rates. Payments on bills shall, however, be made on actual measurements of quantities of work done as per approved drawings. Unless otherwise specified, measurements of quantities shall be taken as per Indian Standards IS: 1200.
- 1.05 The rates to be inserted in the "Schedule of Rates" are to be inclusive of the value of the work described under several items including all costs and expenses which may be required for the construction of the work described together with all taxes, general risks, liabilities and obligations such as temporary buildings / hutments, fencing, watching, lighting, insurance, labour regulations, indemnity, maintenance and the like. The prices shall be inclusive of all labours, materials, tools, plants, equipment, hoists, tackles, scaffoldings, the sundries, etc., as may be necessary for the completion of the work in all respects.
- 1.06 No work shall be undertaken at site until detailed approved drawings have been issued by the Owner / Consultant in writing. Subsequent revision in the drawings which become necessary shall be incorporated and revised drawings issued to the Contractor who shall execute the work as per the latest revised drawings. Nothing extra will be paid on this account and no claim whatsoever will be entertained on this account. The Owner / Consultant reserves to themselves the right to modify / revise / alter etc. in any drawing supplied to the Contractor.
- 1.07 Any fabrication / construction done before final approval of the drawings shall be the Contractor's responsibility.

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## PREAMBLE TO SCHEDULE OF RATES (FOR PART-C)

- 1.08 In case of any discrepancy between the description of items given in the "Schedule of Rates" and Specifications, drawings and other documents, the decision of the Owner / Consultant in writing shall be final, binding and conclusive for the purpose of this contract.
- 1.09 The term "Design and drawings" mentioned in the description of Items in the "Schedule of Rates" means the detailed approved design drawings marked "Good for Construction".
- 1.10 The work "As described", "As shown", "As directed" or "As approved", "As mentioned" in the description of Items shall mean as directed in design or detailed drawings and as directed by the Engineer-in-Charge.
- 1.11 The Owner shall furnish the Contractor with only reference points of the job site and a level bench mark, and the Contractor shall at his own cost and initiative, set out the works to the satisfaction of the Engineer-in-Charge but shall solely be responsible for the accuracy of such setting up not withstanding satisfaction as aforesaid of the Engineer-in-Charge or any other assistance rendered by the Engineer-in-Charge for the purpose.
- 1.12 The Contractor shall provide, fix and be responsible for the maintenance of all stakes, templates, level marks, profiles and the like and shall take all precautions necessary to prevent their removal or disturbance, and shall be responsible for the consequence of such removal or disturbance and for their efficient and timely reinstatement. The Contractor shall also be responsible for the maintenance of all survey marks, boundary marks, distance marks and centre line marks, whether existing or supplied / fixed by the Contractor.
- 1.13 Before commencing the work, the Contractor shall at his own cost and initiative provide all necessary references, level posts, pegs, bamboos, flags, ranging rods, strings and other materials for proper layout of the work in accordance with the scheme for fixing bench marks acceptable to the Engineer-in-Charge. The centre of longitudinal or face line and cross line shall be marked by means of small masonry pillars. Each pillar shall have distinct mark at the center to enable a TOTAL STATION to be set over it. No work shall be started until all these points are approved by the Engineer-in-Charge in writing.
- But such approval shall not relieve the Contractor of any of his responsibilities in respect of the adequacy or accuracy, thereof. The Contractor shall also provide all labour, material and other facilities necessary for the proper checking of layout and inspection of the points during construction.
- 1.14 Pillars bearing geodetic marks located at the site / unit of works under construction should be protected and fenced by the Contractor.
- 1.15 On completion of works, the Contractor must submit to the Engineer-in-Charge the geodetic documents according to which the work was carried out.
- 1.16 The Contractor shall be exclusively responsible for the provision and maintenance of horizontal and vertical alignments and levels and for the correctness of every part of the work in accordance there with and shall at his own cost rectify any errors or imperfections therein.
- 1.17 The Contractor shall at all times during the progress and continuance of the works be responsible for and effectively maintain and uphold in good, substantial, sound and perfect condition of all / and every part of works and shall make good from time to time and at all times as often as the Engineer-in-Charge shall require any damage or defect that may during the above period arise in or be any way connected with works.
- 1.18 The portion which is under HOLD shown in the approved drawing or the portion which would be brought under HOLD during execution on account of coordinating different activities of other working agencies shall be taken up by the Contractor to execution only after the said HOLD is withdrawn. The Contractor on this account shall not be entitled to claim for any compensation.



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- 1.19 The Contractor shall maintain adequate drainage facilities at the work site at all times during the execution of the work.
- 1.20 No compensation shall be made by the Owner / Consultant for any damage done by rain or traffic during the execution of the work.
- 1.21 The Contractor shall afford all reasonable facilities such as scaffolding etc., and cooperation to the various other agencies and Contractors, for services not included in this contract, who may be working on the site simultaneously so that entire work can proceed smoothly and simultaneously to a successful completion. The Tenderer must take all the aforesaid factors into consideration while quoting his rates. Nothing extra shall be paid on any ground out of or relating to the aforesaid factors.
- 1.22 For details of works, materials and workmanship, attention is invited to the "Schedule of Rates", Scope Drawings, Special Conditions of Contract, Materials and Job Specifications, this section, etc. and the Tenderers must quote the rates keeping in full view the requirement of the said documents.
- 1.23 Except otherwise clearly stated, CPWD Specifications with Correction Slips ( latest) shall be followed in all Civil, Structural and other allied Works and in absence of CPWD Specifications for any work, relevant Indian Standard codes of practices (latest) shall be followed. Where there are no Specifications available for any work either in CPWD Specifications or in IS Codes of practices, the work shall be carried out as per the direction of Engineer-in-Charge.
- 1.24 The following notations have been used throughout the "Schedule of Rates" and Materials and job Specifications:

1.	Cu.M	Cubic Metre
2.	Sq.M	Square Metre
3.	m.	Metre
4.	mm	Millimeter
5.	Cm. / Cms.	Centimeter / Centimeters
6.	No. / Nos.	Number / Numbers
7.	Tonne / Te.	Metric Tonne
8.	Kg.	Kilogram
9.	RCC	Reinforced Cement Concrete
10.	PCC	Plain Cement Concrete

- 1.25 The quoted rates shall be applicable for all heights, depths etc. except otherwise clearly stated in the description of items and nothing extra shall be paid to the contractor on this account.

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- 1.26 Description of items and mode of measurement for payment indicated herein shall override those given elsewhere if these are at variance.
- 1.27 Any materials / accessories / fittings etc. which may not be specifically mentioned in the description of items but which are normally used or necessary are to be provided by the contractor without any extra cost to Owner / Consultant and the work must be completed in all respects.

### 2.00 DEFINITION OF PLINTH

- 2.01 The portion of a structure between the surface of the finished ground and the surface of the floor immediately above the ground will be considered as plinth, which is generally 300 mm to 600 mm above finished ground level of the site area.
- 2.02 Plinth Level as shown in the drawing shall be treated as plinth level for the purpose of payment.

### 3.00 MATERIALS

- 3.01 The supply / procurement of all materials, required for the job, shall be the responsibility of the Contractor unless otherwise stated in the "Schedule of Rates" and elsewhere in the tender documents. The quality of the materials procured by the Contractor shall be subject to the approval of Engineer-in-Charge or his authorized representative before the materials are allowed to be used in the works. All the materials to be procured by the Contractor shall be in conformity with the CPWD Specifications with correction slips (latest) and in absence of which as laid down in the relevant Indian Standard Codes of practices (latest).
- 3.02 Transport of all materials shall be the Contractor's responsibility and it shall be at their own risk and cost.
- 3.03 The Engineer-in-Charge shall determine the suitability of materials to be used on the job and the Contractor shall get all materials approved by the Engineer-in-Charge. Any material procured and brought to site by the Contractor, found not to conform to the specifications and does not meet the approval of the Engineer-in-Charge, for use, will be rejected, and the Contractor shall remove and dispose off the same at his own cost and he shall not have any claim for compensation in this regard.



### 4.00 TESTS

- 4.01 According to the nature and importance of works, Owner / Consultant will demand the conduct of tests on concrete and other building materials etc., in which case the Contractor shall get the same done at his own cost in a laboratory to be approved by the Owner / Consultant.
- 4.02 Providing and operating necessary measurements and testing devices, materials and consumables are included in the scope of work and the rates quoted shall be deemed to include the cost of such tests which are required to ensure achievement of specified quality of work.

### 5.00 EXECUTION OF WORK

#### 5.01 EARTH WORK

- a. The prices for all excavations shall include for removing and clearing away all shrubs, bushes, roots etc.
- b. The prices for all excavations shall also include for all leveling and ramming foundation beds, trimming of sides and bottom, grading to proper level as required.

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- c. Removal and carrying shall include for all loading, unloading and handling as may be necessary and also all necessary means of transport (Mechanical or animal or manual) as required.
- d. The prices are also to include removal of water caused by rain, seepage, spring due to water table or any other cause, either by pumping or by bailing, that may accumulate in the trenches, foundations, pits, etc. It is likely that the subsoil water may encounter during excavation. The Contractor shall be responsible to remove all water accumulated in trenches, foundations, pits, etc. due to subsoil seepage, rainwater or from any other sources. For the above reasons, if the Contractor is required to install some special type of dewatering system, the same shall be arranged by the Contractor at his own cost and nothing extra shall be payable. The Contractor shall be fully responsible for removal of all water from the working area including necessary shoring and strutting, etc., wherever required, in order to maintain safe working condition and good engineering practice at his own cost and nothing extra shall be paid on this account.
- e. Where excavations are made in excess of the depth required the Contractor shall, at his own expenses, fill up to the desired level with lean concrete of nominal mix. 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size).
- f. In case of hard / dense soil, the last 150 mm depth of such depth specified in the drawing or decided by the Owner shall be excavated just prior to the laying of plain cement concrete bed.
- g. In case surplus excavated materials are to be disposed off at different leads as per items in the "Schedule of Rates" the distance for such disposal shall be measured over the shortest practicable route as decided by Engineer-in-Charge and not necessarily the route actually taken by the Contractor for disposal. For the purpose of measurement of lead, the area excavated shall be divided into blocks (mutually agreed) and for each block the distance from center of the block to center of disposed material pertaining to this block shall be taken.
- h. For payment of Earthwork in foundations / pits / trenches, etc., the excavation in earthwork volume shall be calculated by multiplying the base area as per the dimensions of mat (lean) concrete indicated in the drawing for different foundations by the specified depth of excavation considering vertical cut up to the bottom of mat concrete level from ground level. Extra excavation carried out by the Contractor with sloping sides or with larger base area or with extra deepening of trenches / pits / foundations, etc. for working convenience shall not be measured and paid for.
- The payment for back filling and disposal of surplus excavated material shall also be made on the same basis as that for excavation. Therefore excavation, back filling and disposal of surplus earth resulting from the excavation over the mat concrete dimensions and for the depth beyond bottom level of mat concrete as indicated in the drawings shall not be paid for. However, for the cases where waterproofing / acid proofing is indicated as per drawings on outer sides, the mode of measurement shall be as per IS: 1200.
- i. Nothing extra shall be paid for sorting / screening of the excavated materials to obtain good earth for filling.
- j. Nothing extra shall be paid on account of any lift for disposal of excavated materials.
- k. Proper precautions shall be taken during the excavations to prevent any damage to the existing structures, pipes, sewer lines etc. If such damage occurs, it shall be rectified by the Contractor at his own expense.



### 5.02 PLAIN AND REINFORCED CEMENT CONCRETE WORKS

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- a. The prices for concrete beds and slabs are to include for laying on any type of subgrade, laying to falls or camber and for preparing surface to receive concrete.
- b. All concrete surfaces shall be finished to a fair face to give smooth and even surfaces and nothing extra shall be paid on this account.
- c. The prices are to include leaving pockets, cutouts and holes and to provide wooden boxes or any other suitable arrangement in R.C.C for providing pockets for bolts as per approved working drawings and nothing extra shall be paid on this account.
- d. All pockets / holes are to be properly covered by suitable means, so that dirt, rain water etc., should not enter the pockets / holes etc. No deduction in R.C.C quantity shall be made for pockets and nothing extra shall be paid for providing pockets as mentioned in para 5.02c above.
- e. For measurement of openings in plain concrete / R.C.C work, refer clause No. 4.13 of IS: 1200 (Part-3).
- f. Threads of bolts etc., which have already been fixed in the pockets, are to be greased and properly covered with gunny bags or polythene sheet to protect it from damage from all sources and nothing extra shall be paid on this account.
- g. The prices shall include for all rebating, throating, chamfering, weathering, moulding etc. to accord with the details shown in the approved working drawings.
- h. Nothing extra shall be paid for any intricate work for foundation of equipments and machinery (Static / Dynamic) in R.C.C walls and other superstructure work or in concreting in small and thin sections in P.C.C or R.C.C work.
- i. The prices for concrete are to include for hoisting and / or lowering to any heights and / or depth required and in any type of form work, packing around reinforcement wherever required and finishing the surfaces to fair and even surfaces.
- j. The prices shall include for working up or hacking of concrete surface for providing keys for further concrete work and shall also include all plane, rebated or grooved construction and other joints.
- k. All reinforced cement concrete used shall be of controlled concrete with designed mix and weigh batched conforming to IS : 456 unless otherwise specified. In all concrete and R.C.C work, broken graded coarse aggregate shall be used. The design mixes of concrete of different grades shall be established at the beginning of the work considering the required workability. However, if batching plant facility is not available, only nominal mix concrete is permissible.
- l. Concrete admixtures for workability, if necessary, may be used in R.C.C., if decided by the Engineer-in-Charge. No extra payment for material or mixing etc. shall be made on this account.
- m. Machine and equipment foundations shall mean all foundations including pedestals of vessels, towers, pumps, compressors, motors or any other equipment or machinery (both static and dynamic), pipe supports etc., and / or the like.
- n. The prices shall include applying cement slurry on reinforced cement concrete surfaces, keys of construction joints etc. @ 2.75 Kg/Sq.m of surface area of receiving cement concrete including roughening and proper cleaning etc., complete as directed by Engineer-in-Charge.
- o. The prices shall include for performing water tightness for all water retaining R.C.C structure as stipulated in IS: 3370 (Part-I), wherever specified in

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the drawing.

p. Cement to be used for plain & reinforced cement concrete and other works shall be of Ordinary Portland Cement conforming to IS : 269 unless otherwise stated in the "Schedule of Rates" and elsewhere in this Section of NIT.

q. Any concrete having honeycomb is not acceptable and shall be rejected and redone at contractor's cost.

### 5.03 REINFORCEMENT AND EMBEDMENTS

a. Wastage in cutting will not be paid for. Steel actually fixed in position only will be paid by the linear measurement including hooks and laps. Lapping of bars will be allowed only where the required bar length exceeds the standard lengths available. All other laps provided, unless otherwise specified in the drawings, shall not be measured and paid for. Weight of binding wire shall not be measured for payment.

b. Bars shall be issued in lengths and in forms as available in the stores. Nothing extra shall be paid for decoiling and straightening of the bars.

c. Reinforcement are to be tack welded in addition to binding by 18 S.W.G annealed wire wherever necessary to improve efficiency of the joint. Bars of 28 mm diameter and above shall be provided with stitch weld in addition to binding with 18 SWG annealed wire and nothing extra shall be paid for stitch welding. Welding of mild steel plain and deformed reinforcements shall conform to IS: 2751, 'Code of practice for welding of mild steel plain and deformed bars for reinforced concrete construction'.

d. The Contractor shall prepare the bar bending schedule for all reinforced cement concrete work as per the approved / "good for construction" drawings furnished by the Owner / Consultant and nothing extra shall be paid on this account.

### 5.04 SHUTTERING

a. The prices for shuttering shall include for providing splayed edges, notching, chamfering, allowances for overlaps and passing at angles, battens, strutting bolting, wedging, easing, striking and removing.



b. The concrete work should have ply wood / steel shuttering as not to require any plastering, after striking out the shuttering. Any concrete having honeycomb is not acceptable and is liable to be rejected and redone at Contractor's cost.

c. The prices are also to include for all necessary supports, struts, braces, etc., dressing with shuttering compound and / or other approved method to prevent adhesion between concrete and form work and all raking for circular cutting and waste.

d. The prices shall also include for all labour and materials necessary for providing form work at all heights and depths and including striking, dismantling the form work assembly etc. after the necessary stripping period of concreting is over and also making all the joints in shuttering fully leak-proof providing low density polythene sheets / bitumen paper.

e. The prices shall also include for forming detailed design required for the form work and / or all other sundry labour.

f. All shuttering shall be either plywood or steel shuttering to produce plain, smooth and even surfaces, which will thus be integrally finished. If any impressions of the shuttering joints are noticed after the striking of the shuttering, the same should be treated by rubbing with Carborundum stones

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and nothing extra shall be paid on this account.

- g. In case of dowel bars projecting out from R.C.C works such as columns, beams etc. nothing extra shall be paid for any special provision like making holes that may be required to be left in the form work.

### 5.05 MASONRY WORKS

The prices for brick work shall include the following:



- a. Fair face of brick work with selected brick with class designation 75 or as specified in the description of relevant Items in the "Schedule of Rates" from the lot.
- b. Raking out joints for plastering and pointing done as separate process of finishing joints, flush as the work proceeds.
- c. All rough and / or fair cutting and waste unless specifically stated otherwise.
- d. Plumbing to angles.
- e. Providing holes left or formed for fixing pipes etc.
- f. Forming reveals to the jambs, where fair cutting on exposed face is not involved.
- g. All masonry work shall be done using mortar with coarse sand.

### 5.06 WOOD WORK AND JOINERY

- a. All joiner's work shall include necessary nails and screws, and all other necessary materials.
- b. The description includes all necessary keys, wedges, dowels, hard or bamboo pins, pined tenon joints and cleaning of nail heads.
- c. Nothing extra will be paid for rebated and / or splayed meeting stiles of doors and Windows.

### 5.07 STRUCTURAL STEEL WORK

- a. The weight of structural steel work for the sake of payment shall be calculated by linear measurements and unit weight taken from the relevant IS codes based on approved fabrication drawings assuming all members to be cut square without making any deduction for bolts, bevel ends or edges, beveling of plates. Gusset plates shall be paid for minimum rectangle enveloping their actual periphery.
- b. Welds, black-bolts, high tensile bolts, nuts, plain and tapered washers etc. shall not be measured and paid for. Rate for the structural steel work shall be deemed to include the same. Nothing extra shall be paid on this account.
- c. Nothing extra shall be paid over the unit rates for structural members to be built up by butt or fillet welding as indicated in the approved fabrication drawings or as per the instruction of Engineer-in-Charge, from either:
- i. Plates.



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- ii. Two or more rolled steel sections.
- iii. One or more rolled steel sections and plates.
- d. Nothing extra shall be paid over the unit rates for sealing the joints of box sections made out of channels or joists by continuous butt welding.
- e. All paints and primers specified in various Items in the "Schedule of Rates" shall be best quality of approved brand and manufacturer such as M/s. Asian Paints, M/s. Berger Paints (India) Ltd., M/s. Johnson & Nicholson and / or other equivalent paint approved by the Engineer-in-Charge.
- f. On box / compound sections, the painting shall be done before fabrication on all those surfaces which become inaccessible after fabrication.
- g. Prior approval of the Engineer-in-Charge shall have to be obtained for changing the sections due to non-availability of certain sections and using built-up sections / compound sections and nothing extra shall be paid on this account.
- h. The word "Fabrication" wherever used for the description of work herein shall include:  
Straightening, cutting, notching, beveling, drilling or cutting holes, necessary welding, fastening, etc. to prepare the structural member as per fabrication drawings.
- l. The word "Erection" wherever used for description of work shall include:  
Hoisting, putting in position at all required heights, aligning and fixing with necessary welding, bolting and / or other fasteners as per approved drawings and technical specifications with all safety standards.
- j. Preparation of "AS-BUILT" construction drawings incorporating all approved changes at site shall be in Contractor's scope of work and it shall be considered included in relevant Items of the "Schedule of Rates".
- k. For sand blasting / painting by the specialized agency other than indicated in the NIT, if proposed by the Contractor, the same shall be got approved from the Engineer-in-Charge at site.
- l. The Contractor shall prepare design of joints and detailed fabrication and erection drawings in sequence of erection on the basis of detailed design drawings supplied by the Owner / Consultant from time to time. Nothing shall be paid extra on this account. The above fabrication drawings must show clearly all shop and site joints and connection with erection marks on each loose parts.
- m. The Contractor shall submit his design calculations for the design of joints. All joints shall be designed for full strength of the members or otherwise as indicated in the design drawings.
- n. The design calculations of joints and fabrication drawings will be checked and approved by the Owner / Consultant as per mutually agreed time schedule and the Contractor should strictly adhere to these approved drawings and specifications. Fabrication work shall be taken up only with the approved fabrication drawings.

### 5.08 STEEL AND ALUMINIUM DOORS, WINDOWS & VENTILATORS

- a. The prices are to include for necessary hardware fittings and fixtures as specified and fixing to frames with necessary lugs etc., all necessary chases,

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holes, etc., grouting of holes and making good to match after doors, windows and ventilators, etc. are fixed. The price of steel doors / windows / ventilators is also to include application of required primer and paint of approved shade, make and manufacturer.

b. The prices shall also to include for providing good quality glass panes of required thickness as indicated in the "Schedule of Rates".

### 5.09 FLOORS AND BASES

a. The price for hard core shall include for all labour in laying to falls or camber, hand packing, edges of haunches forming splayed edges, watering and rolling with power driven roller and ramming wherever required to solid compaction.

b. The prices shall include also for works at all heights and depths.

### 5.10 FINISHING WORKS



a. The prices shall include for work at any height / depth and for all necessary scaffolding etc. as required.

b. The prices shall include for providing and laying of materials for all the Items of plaster and also raking to form key for plaster and for all work in narrow width, formed angles, chamfered external angles and for making good the faces.

### 5.11 MISCELLANEOUS

a. The Contractor may have to splice shorter length of structural steel members to obtain required length at site. If extra pieces of materials are required for splicing (say for lap jointing) then the same will be measured and paid for in the relevant structural steel items and nothing extra on any other account shall be paid to the Contractor for such splicing.

b. The Contractor should note that steel wedges, packing plates, shim plates, etc. used by them for leveling and alignment of structural members are to be considered erection devices and these should be taken out after proper alignment is over to the satisfaction of Engineer-in-Charge. Such erection devices shall neither be measured nor paid for.

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**PART-C : CIVIL & STRUCTURAL WORKS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATES (in Rs.)		AMOUNT (in Rs.)	
				FIGURES	WORDS		
01.	A-01	Earthwork in excavation in foundations of buildings, footings, columns, plinth beams, walls, machine/ equipment foundations, isolated pits, pavements, trenches for pipelines /cables, pipe sleepers, drains, etc., to the required levels and grades in both dry and wet conditions, including dressing of sides and ramming of bottoms, getting out excavated earth with lift up to 1.5 M and disposal of surplus excavated materials within a lead of 50 M including stacking, levelling and dressing etc., complete as per direction of Engineer-in-Charge(E.I.C.) in all kinds of soils as defined in IS: 1200 including providing temporary supports to all service lines such as overhead and underground water, sewage and drain pipes, cables etc. and shoring and strutting including dewatering wherever necessary, complete in all respects as per direction of Engineer-in-Charge.	Cu.M.	200			
02.	A-02	Same as Item No. A-01, but lift from 1.5 M to 3.0 M.	Cu.M.	45			
03.	A-03	Removal and carriage of surplus excavated earth, debris, etc., from the site of work to other areas anywhere within the factory/plant battery limits beyond the initial lead of 50 M and spreading and levelling the same in layers not exceeding 20 cm thickness including loading and unloading as per the direction of Engineer-in-Charge.	Cu.M.	5			

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATES (in Rs.)		AMOUNT (in Rs.)	
				FIGURES	WORDS		
04.	A-04	Backfilling with available excavated good earth (excluding rocks / boulders), as approved and directed by Engineer-in-Charge, in trenches, plinth, under floors, sides of foundation etc., at all depths in layers not exceeding 20 cms. in thickness including consolidating and dressing each deposited layer by ramming and watering with lead upto 50 metres, complete in all respects.	Cu.M.	160			
05.	A-05	Supplying and filling in foundations, trenches, plinth, under floors and sides of foundations, etc., with coarse sand at all depths in layers not exceeding 20 cms in thickness including consolidating and dressing each deposited layer by ramming and watering, etc., complete in all respects as per direction of Engineer-in-Charge.	Cu.M.	45			
	<b>B.</b>	<b>PLAIN CEMENT CONCRETE :</b>					
06.	B-01	Providing and laying plain cement concrete, machine mixed and mechanically vibrated in foundations, plinth, under floors, etc., including all necessary cost of centring and shuttering :					
	(a)	1:5:10 (1 cement: 5 coarse sand:10 graded stone aggregate 20 mm nominal size).	Cu.M.	5			
	(b)	1:4:8 (1 cement: 4 coarse sand:8 graded stone aggregate 20 mm nominal size).	Cu.M.	15			

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				FIGURES	WORDS		
07.	B-02	Providing and laying 100 mm thick plinth protection in plain cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size), finished smoothly to the require slope including necessary earth work an disposal of surplus earth within the factory/plant battery limits over a bedding of 75 thick concrete 1:4:8 (1 cement: 4 coarse sand: 8 graded stone aggregate 40 mm nominal size)..	Sq.M.	80			
	<b>C.</b>	<b>REINFORCED CEMENT CONCRETE : IN FOUNDATION AND PLINTH</b>					
08.	C-01	Providing and laying reinforced cement concrete of grade M-25(using 20 mm. nominal gauge graded stone aggregate) machine mixed and mechanically vibrated and finished to a fair face but including the cost of centring and shuttering excluding reinforcement in foundation and plinth, for rafts, footings, bases of columns, pedestals, beams, walls, columns, slabs, machine and equipment foundations, pile caps, box sections, pipe supports, etc., complete in all respects as per direction of Engineer-in-Charge.	Cu.M.	80			
		<b>IN SUPERSTRUCTURE</b>					
09.	C-02	Providing and laying reinforced cement concrete of grade M-25 ( using 20 mm. nominal gauge graded stone aggregate),	Cu.M.	35			

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				FIGURES	WORDS	
	machine mixed, mechanically vibrated and finished to a fair face but including the cost of centring and shuttering excluding reinforcement in superstructure at all heights for columns, pillars, posts, attached pilasters, portals, struts, inclined posts, pedestals ,Beam, walls, Roof, Slabs etc., complete in all respects as per direction of Engineer-in-Charge.					
10.	C-03	Providing and fixing in position precast reinforced cement concrete of grade M-25( using 12.5 mm. nominal gauge graded stone aggregate), machine mixed, mechanically vibrated and finished to a fair face including centring, shuttering etc. but excluding the cost of reinforcement in :				
	(a)	Trench/ drain cover slabs, in foundation and plinth.	Cu.M.	5		
	<b>D</b>	<b>REINFORCEMENT AND EMBEDMENTS :</b>				
11.	D-01	Supplying, cutting, bending, hoisting, placing in position and binding with 18 SWG annealed wire, HYSD reinforcements for all R.C.C. works including all necessary handling at all heights and depths complete in all respects and as per direction of the Engineer-in Charge.	Te.	11		
12.	D-02	Supplying, fabricating and fixing in position M.S. anchor plates, hooks, insert	Kg	700		

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				FIGURES	WORDS	
	plates, M.S. angle inserts and the like including welding M.S. lugs, etc., and embedding in cement concrete /R.C.C. works as per approved drawings complete in all respects and as per direction of Engineer-in-Charge.					
E	<b>BRICK WORK :</b>					
13.	E-01	Providing and constructing brick work using locally available best quality bricks in cement mortar 1 : 6 ( 1 cement: 6 coarse sand ) in:				
	a.	Foundation and plinth.	Cu.M.	5		
	b.	Superstructure at all heights.	Cu.M.	80		
14.	E-02	Providing and constructing half brick masonry using locally available best quality bricks in cement mortar 1:4 (1 cement: 4 coarse sand) with two numbers 6 millimetre diameter m.s. reinforcement at every third course embedded in cement mortar in superstructure at all heights. (The rate shall include the cost of reinforcement).	Sq.M.	5		
F	<b>STRUCTURAL STEEL</b>					
15.	F-01	Supplying, transporting, de-rusting, fabricating, erecting, hoisting and fixing in position with necessary welding and/or bolting with MS bolts conforming to property class 4.6				

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**PART-C : CIVIL & STRUCTURAL WORKS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATES (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	of IS: 1367 at all heights as per approved fabrication drawings of all types of structural steel work in columns, portals, girders, lattice girders, beams, crane girders, M.S rails, monorails, bracings, trusses, purlins, rafters, side runners, sag rods, hand railings, staircase stringers and steps, walkway, toe-plates, floor grids, sag rods with M.S. rounds, side walling, conveyor gantries, trestle for pipe and cable racks, gusset plates, etc., either made of rolled steel joists, channels, angles, tees, flats, plates or built up from plates and/or rolled steel sections including necessary site and shop fasteners, complete in all respects as per approved fabrication drawings, standards and direction of Engineer-in-Charge :					
a	With providing and applying two coats of chlorinated rubber paint of approved quality on structural steel work after the preparation of surfaces including providing and applying finished coats paint of approved make in 3 coats at a dry film thickness of minimum 200 microns( for three coats) on structural steel work complete in all respects as per specifications and direction of Engineer-in-Charge. (1 kg. of epoxy base paint of approved make covers average 8 to 9 Sq.M. per coat. Surface preparation by sand blasting / power driven brushes will be paid separately).	Tonne	1			

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				FIGURES	WORDS	
16..	F-02					
	a.	Tonne	0.5			
17.	F-03					

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				FIGURES	WORDS	
	members, M.S. Gusset plates including providing and fixing in position at all heights hard drawn steel wire fabric mesh of size 75 mm x 25 mm and weight not less than 7.75 kg/sq.m. welded with frames, including providing and fixing necessary lock plate, handles, locking arrangement and other fittings, drilling of holes wherever required, welding etc. including providing necessary hinge plates welded to insert plates embedded in RCC columns, bolts and nuts for hinge etc. including providing and applying painting, complete in all respects as per drawings and direction of Engineer-in-Charge (M.S. insert plates embedded in RCC shall be paid separately) :					
a.	With providing and applying two coats of high build zinc phosphate primer of approved brand and manufacture compatible to chlorinated rubber paint at a dry film thickness of 50 micron per coat on structural steel work after preparation of surfaces including providing and applying two coats of chlorinated rubber based paint of approved colour, brand and manufacture at a dry film thickness of 50 microns per coat (Surface preparation by sand blasting/ power driven brushes will be paid separately).	Tonne	1			
<b>G.</b>	<b>ALUMINIUM DOORS, WINDOWS AND</b>					

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**PART-C : CIVIL & STRUCTURAL WORKS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATES (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	<b>VENTILATORS :</b>					
18.	G-01	Sq.M	7			

Providing and fixing in position at all heights anodised aluminium glazed doors and glazing of approved standard tubular sections (3 mm thick x 101.5 x 44.5 mm size anodised with 20 micron) fixed with 65 x 30 mm and 65 x 50 mm teak wood spacer member as per drawing including fixing with 16 x 3.15 mm lugs x 10 cm long embedded in cement concrete blocks 15 cm x 10 cm x 10 cm size of concrete nominal mix 1:3:6 (1 cement: 3 coarse sand: 6 graded stone aggregate 20 mm nominal size) or with wooden plugs and screws, or with rawal plugs and screws or with fixing clips or with bolts and nuts or frames fixed to adjoining structural steel members as per design and as required, including providing and fixing 5.5 mm glass panes with snap on anodised aluminium beading and PVC gasket of approved make with matching screws, providing aluminium or aluminium alloy fixtures such as hinges, concealed bolts, base-tie, lock strike, lock operable from inside or outside, kicking plate at bottom, handles, rubber buffers, etc., applying a coat of lacquer, complete in all respects as per direction of Engineer-in-Charge (The rates shall be inclusive of cement concrete blocks. Anodised aluminium doors may be of approved manufacturer such as Ajit India/ ECIE/ AI Karma make or



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**PART-C : CIVIL & STRUCTURAL WORKS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATES (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	its approved equivalent).					
19.	G-02	Providing and fixing in position at all heights hydraulic floor springs with double action of ECIE or Everite make or equivalent I.S.I. marked approved including foundation box, etc. complete.	Each	2		
20.	G-03	Providing and fixing fully glazed anodised aluminium windows and ventilators, openable or partly openable of extruded hollow tubular sections standard INDAL/HINDALCO/JINDAL sections as given below, joints mitred and jointed with aluminium corner cleats and screws to match the section of frames including providing and fixing 4mm thick plain sheet glass conforming to IS:1761, anodising shall be 20 microns of natural aluminium shade as approved with snap fit aluminium beading and high quality EPDM/NEOPRENE weather proof gasket lining including polysulphide sealant filled between aluminium tube frame and wall; complete along with all aluminium fixtures such as handles, projected hinges, peg stays, tower bolts, spring catch all complete as per drawings and technical specification. SECTIONS TO BE USED FOR :-  Outer frame - INDAL 9142 OR Equivalent of HINDALCO/JINDAL Shutter - INDAL 9838 or Equivalent				

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**PART-C : CIVIL & STRUCTURAL WORKS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATES (in Rs.)		AMOUNT (in Rs.)				
				FIGURES	WORDS					
	of HINDALCO/JINDAL Mullion - INDAL 9476 or Equivalent of HINDALCO/JINDAL Snap Beading - INDAL 4122,4660 or Equivalent of HINDALCO/JINDAL									
	(a) Openable window and ventilators (top hung or centre hung)	Sq.M	1							
	(b) Partly fixed and partly openable windows and ventilators.	Sq.M	1							
	(c) Fixed type windows and ventilators.	Sq.M	5							
H.	ROOFING :									
21.	H-01	Providing high impact Polypropylene reinforced cement 6 mm thick corrugated sheets (as per IS: 14871) roofing up to any pitch and fixing with polymer coated J, or L hooks, bolts and nuts 8 mm dia. G.I. plain and bitumen washers or with self drilling fastener and EPDM washers etc including all necessary fixtures .	Sq.M	200						
I	<b>WATER PROOFING:</b>	<b>DELETED</b>								
J	<b>FLOORS AND BASES :</b>									
22.	J-01	Supplying and laying hard core under floors including watering, ramming, blinding and well consolidating with broken stone aggregates 90 mm to 40 mm in layers of								
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**PART-C : CIVIL & STRUCTURAL WORKS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATES (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
	maximum compacted thickness of 100 mm including filling the voids with smaller stone chips and with blinding materials fine river sand. (Payment shall be made for finished thickness of hard core) :					
a.	Consolidation by hand/ mechanical rammers	Cu.M	130			
K	<b>FINISHING :</b> Note: Rate should include provision of Chicken wire mesh 200 wide at the junction of brick and RCC at all locations ( inside and outside)					
23.	K-01 Providing at all heights 12 mm thick cement plaster on brick work, exposed surfaces of RCC lintels, beams, etc., complete in all respects and as directed with cement plaster mix :					
a.	1:6 (1 cement: 6 coarse sand).	Sq.M	700			
24.	K-02 Providing at all heights 15 mm thick cement plaster on rough side of single or half brick walls, etc., complete in all respects and as directed with cement plaster mix :					
a.	1:6 (1 cement: 6 coarse sand).	Sq.M	25			
25.	K-03 Providing at all heights 6 mm thick cement plaster 1:4 (1 cement: 4 fine sand) to ceiling, etc., as directed.	Sq.M	130			

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ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATES (in Rs.)		AMOUNT (in Rs.)	
				FIGURES	WORDS		
26.	K-04	Providing and applying white washing prepared from quick lime, necessary blue and glue of approved quality in required quantities including necessary preparation of surfaces to give an even shade, complete as directed :					
	a.	On new work (three or more coats)	Sq.M	700			
27.	K-05	Providing and applying one coat of cement primer of approved brand and manufacture on R.C.C surfaces, including necessary surface preparation etc. as directed.	Sq.M	700			
28.	K-06	Providing and applying water-proof cement paint such as SNOWCEM PLUS or its approved equivalent brand an manufacture of required shade and colour on new work ( three or more coats) such as brick walls, exposed surfaces of plain concrete/RCC, rain water pies, etc., to give an even shade including necessary preparation of surfaces, curing, etc., complete as directed.	Sq.M	250			
	L	<b>MISCELLENOUS :</b>					

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**PART-C : CIVIL & STRUCTURAL WORKS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATES (in Rs.)		AMOUNT (in Rs.)
				FIGURES	WORDS	
29.	L-01	<b>Providing and fixing Fencing Structure</b> Providing & fixing 1.5 M high fencing with M.S.angles posts of standard design placed every 2.5 M apart, embedded in cement concrete block 45x45x60 cm of mix 1:5:10 (1 cement:5 fine sand:10 graded stone aggregate 40 mm nominal size) corner end and every 10 th post to be strutted, provided with G.I.wire chain links of size 50 mm x 50mm (mesh) and not less than 10 gauge thickness fixed with G.I. staples including necessary earth work in excavation and backfilling complete in all respect.				
	a)	With G.I chain links	RM	40		
30.	L-02	Providing and laying s.w pipes in cement concrete 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size) .				
	a.	150 mm diameter S.W. pipe	RM	20		
31.	L-03	Providing and fixing rolling shutters of approved make made of 80 mm wide MS laths and interlocked together through their entire length and jointed together at the ends by end locks, mounted on specially designed pipe shaft with bracket plates, guide channels and arrangement for inside and outside locking with push-pull operation complete including cost of wire spring and hood cover for the shutters, (Measurement shall be done on the opening only).	Sq.m	15		

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**PART-C : CIVIL & STRUCTURAL WORKS**

ITEM NO.	DESCRIPTION	UNIT	QTY.	UNIT RATES (in Rs.)		AMOUNT (in Rs.)	
				FIGURES	WORDS		
32.	L-04	Providing & Laying of Pebbles (20mm to 50mm) round in shape of good quality, free from organic material sulphates or any deleterious material.	Cu.M	20			
<b>TOTAL OF PART-C</b>							<b>Rs.</b>

	<p align="center"><b>SCHEDULE OF RATES FOR PRE-PROJECT ELECTRICAL WORKS AT GORAKHPUR, U.P.</b></p>	5001/E/102/SOR	2	19.09.17	19.09.17	AP	SK	SK	Page 73 of 74	
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**PART-D: ELECTRICAL OPERATION AND MAINTENANCE OF CONSTRUCTION POWER SUBSTATION**

S.No.	DESCRIPTION	MAN MONTH	Unit Rate (in Rs.) / Month				Amount (in Rs.)
			Wages	PF	ESI	Total	
<b>1.</b>	<b>DEPLOYMENT OF ELECTRICIANS/ RELIEVER</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5=2+3+4</b>	<b>6 =1 x 5</b>
1.1	Deployment of Electricians/Reliever (skilled) as per requirement indicated in Section-4.0 of technical specification (Doc. No. 5001-TS-0801) for carrying out various activity associated to Operation and Maintenance of Construction Power Substation having 33KV SF6 insulated RMU, 33/3.43 KV 3 MVA & 3.3/0.433 KV 2 MVA transformers, 3.3KV NER, 3.3KV switchboard, 415V Power control Centre, MLDB, Welding Socket DB, High Mast, Feeder Pillar, Street Lighting, cable jointing/termination etc. as per direction of engineer in-charge.	96  (4 person x 24 months)					
<b>2.</b>	<b>DEPLOYMENT OF HELPERS</b>						
2.1	Deployment of Helper (semi-skilled) as per requirement indicated in Section-4.0 of technical specification (Doc. No. 5001-TS-0801) for carrying out various activity associated to Operation and Maintenance of Construction Power Substation having 33KV SF6 insulated RMU, 33/3.43 KV 3 MVA & 3.3/0.433 KV 2 MVA transformers, 3.3KV NER, 3.3KV switchboard, 415V Power control Centre, MLDB, Welding Socket DB, High Mast, Feeder Pillar, Street Lighting, cable jointing/termination etc. as per direction of engineer in-charge.	72  (3 person x 24 months)					
<b>3.</b>	<b>CONTRACTOR'S SERVICE CHARGES</b>	<b>Months</b>	<b>Unit Rate (in Rs.) / Month</b>				
3.1	Contractor's Service Charges per Month (including all miscellaneous charges envisaged by the contractor).	24 M					
<b>TOTAL OF PART-D</b>							<b>Rs.</b>

Note : 1 Man Month = 26 Man Days

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