

**UJVN LTD.**



**(A Govt. of Uttarakhand Enterprise)**

**TENDER DOCUMENT**

**FOR  
E&M MAINTENANCE WORK OF LAKHWAR MPP OFFICES  
BUILDINGS AND RESIDENCE QUARTERS ETC. AT  
DAKPATHAR**

**NITNo: 04/EE(E&M-II)/LP/2025-26**

***Invited By:***

Executive Engineer-II(E&M) Lakhwar Project,  
Lakhwar Bhawan, UJVN Ltd. Dakpathar


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## Information of Tender

1	Office inviting Bids	Executive Engineer (E&M-II LWR), Lakhwar MPP, Lakhwar Bhawan, Dakpathar, Dehradun.
2	Bid reference	04/EE(E&M-II)/LP/2025-26
3	Job Description	E&M Maintenance work of Lakhwar MPP offices buildings and Residence quarters at Dakpathar.
4	Tender Fee	Rs1180/- (Rs. 1000/- + 18% GST)
5	Earnest Money Deposit	₹ 50515.00
6	Estimated Cost	₹ 20,20,535.00 (GST extra)
7	Time for Completion	12 Months
8	Bid available on Website	Available on UJVN Limited web site <a href="http://www.ujvn.com">www.ujvn.com</a> 03/09/2025 from 16:00 Hrs.
9	Last Date/Time for submission of Bid Document	Date 25.09.2025 Time: up to 15:00 hrs
10	Date & time of opening of technical bids (Part-I)	26.09.2025 at 11:00 Hrs
11	Date & time of opening of financial bids (Part-II)	Technically qualified bidders Part - II (Price Bid will be open).
12	Bid Contains (Part- II)	The Part-II consist of Price Bid (Schedule of Price)
13	Bid Validity Period	90 days from the date of opening
14	Venue for opening of Tender	Venue: Executive Engineer-II (E&M), Lakhwar Project, Lakhwar Bhawan, Dakpathar, Dehradun.
15	Commencement of work /start date	As specified in Letter of Intent/Award of acceptance

### publication in newspapers

 <p><b>UJVN LTD.</b> H.O.: "UJJWAL", Maharani Bagh, G.M.S. Road, Dehradun-248006 Telephones: 0135-2763808, Fax: 0135-2763508 CIN No.U40101UR2001SGC025866, Website:www.ujvn.com</p>	
<b>Tender Notice</b>	
Office of the Executive Engineer (E&M-II), Lakhwar, Dakpathar, Dehradun invited online bid from interested parties. Brief summary of tender is given below:	
<b>Tender No 04/EE(E&amp;M-II)/LP/2025-26</b>	
Name of work/supply/services, etc.	E&M Maintenance works of Lakhwar MPP offices buildings and Residence quarters at Dakpathar.
Estimated cost	Rs 20,20,535.00 (taxes extra)
Date of availability of bid document on website	03/09/205 at 16:00 Hrs
Last date for submission of bids on website	25/09/205 up to 15:00 Hrs
For fuller & further details, kindly visit our website. The tender documents can be downloaded from the Nigam's website, "www.ujvn.com"	
<b>EE(E&amp;M-II) Lakhwar MPP</b>	
<b>"Avoid wasteful use of Electricity"</b>	

 <p><b>यूजेवीएन लिमिटेड</b> मुख्यालय "उज्ज्वल", महारानी बाग, जी०एम०एस० रोड, देहरादून-248006 दूरभाष: 0135-2763808, फैक्स- 0135-2763508 सी०आई०एन० सी० U40101UR2001SGC025866 वेबसाइट : www.ujvn.com</p>	
<b>निविदा सूचना</b>	
कार्यालय ( अधिशासी अभियन्ता (वि० एवं या०-द्वितीय), लखवाड़ एम०पी०पी० (300 मे०वा०) डाकपत्थर द्वारा इच्छुक निविदादाताओं से मुहरबंद निविदायें आमंत्रित करता है। निविदा का संक्षिप्त विवरण निम्नवत है:	
<b>निविदा सं० 04/अ०अभि० (वि० एवं या०-द्वितीय)/एल०पी/2025-26</b>	
कार्य / पूर्ति/सेवायें का नाम	लखवाड़ बहुउद्देशीय परियोजना, डाकपत्थर स्थित कार्यालय भवनों,आवासीय भवनों पर विद्युत एवं यांत्रिक सम्बन्धित अनुरक्षण कार्य।
अनुमानित लागत	20,20,535.00 (जी०एस०टी० अतिरिक्त)
वेबसाइट पर निविदा प्रपत्र की उपलब्धता की तिथि	: 03/09/205 16:00 बजे से
निविदा जमा करने की अन्तिम तिथि	: 25/09/205 15:00 बजे तक
अन्य जानकारी हेतु कृपया हमारी वेबसाइट देखें। निविदा प्रपत्र निगम की वेबसाइट " <a href="http://www.ujvn.com">www.ujvn.com</a> " से डाउनलोड किये जा सकते हैं।	
<b>अभि० अ०अभि० (वि० एवं या०-द्वितीय) लखवाड़ एम०पी०पी०</b>	
<b>"बिजली के दुरुपयोग से बचें"</b>	

Submitted By

Recommended By

Approved by

EE-II (E&M),  
Lakhwar MPP DKP

Dy.GM (E&M)  
Lakhwar MPP DKP

GM (E&M)  
LVP, DKP



DOWNLOADED

**SECTION-II:**  
**INSTRUCTIONS TO BIDDERS**

## **SECTION-1: INSTRUCTIONS TO BIDDERS (ITB)**

Sealed & Separate Bids are invited for & on behalf of the UJVN Limited ("the Employer") from the Bidders in two Envelope systems for the Works for "E&M Maintenance work of Lakhwar MPP Residence quarters and guest houses at Dakpathar".

### **1. Completion Time**

The entire Work under the Contract shall be period of 12 (Twelve) month from the date of start given for the Work by UJVNL.

### **2. Procurement of Bid Document**

The complete set of Bid Document can be downloaded from the Nigam's website [www.ujvnl.com](http://www.ujvnl.com) for the work of "E&M Maintenance work of Lakhwar MPP offices buildings and Residence quarters at Dakpathar".

### **3. Submission of Bids**

Sealed Bids superscripted of "E&M Maintenance work of Lakhwar MPP offices buildings and Residence quarters at Dakpathar shall be submitted in two separate sealed envelopes

#### **I. Part I:**

Techno-Commercial Bid along with Bid Security EMD and cost of Bid for downloaded bids and shall comprise of all documents required as described further. Bid cost & Bid Security in shape of FDR/CDR/TDR with "Application Downloading Form" & other downloaded bid documents, non-judicial stamp paper worth Rs. 100.00 for validity guarantee/agreement and documents required in Eligibility Criteria in a separate sealed envelope super scribed as Part-I against specification No:04/EE(E&M-II)/LP/2025-26.

#### **II Part : Price Bid**

Containing price schedule on the prescribed proforma in a sealed envelope super scribed as "Price bid" against specification No:04/EE(E&M-II)/LP/2025-26. The Bid document must reach in the following Offices by 25.09.2025 up to 15:00 hrs

- i Office of the Executive Engineer-II (E&M-LWR), Lakhwar MPP, Lakhwar Bhawan, UJVN Ltd. Dakpathar.
- ii. Office of the General Manager (E&M), Lakhwar-Vyasi UJVN Limited, Dakpathar, Dehradun.
- iii. Office of the Manager (A&S), Corporate Office, UJVN Limited, "UJJWAL" Maharani Bagh, GMS Road, Dehradun.

If the due date of receipt of Bids as aforesaid is declared holiday/strike/bandh/on any account, Bids would be received on the next working day up to stipulated time. Bids received late on account of any reason whatsoever and telegraphic/fax Bids & incomplete Bids will not be entertained.

#### **III Opening of Bid**

Techno-Commercial Bid will be opened by the Executive Engineer-II (E&M), Lakhwar MPP, Lakhwar Bhawan, UJVN Ltd. Dakpathar or his authorized representative **on 26.09.2025 at 11:00 hrs.** or on the next working day in case the opening day is a holiday in the presence of authorized representative(s) of the Bidder who choose to remain present. The financial bid of successful bids in techno commercial bid shall be opened on the same day publicly in the presence of authorized representative(s) of the Bidder who choose to remain present.

#### IV Bid Validity Period

Bid shall be valid for a period of 90 days from the date of opening of Techno-Commercial Bid. Duly signed non judicial stamp paper of Rs.100.00 should be submitted along with techno-commercial bid.

#### VI. Cost of Bid Document

The cost of Bid document is Rs. 1180.00 (including GST) which is non-refundable and the payment against the cost of Bid document shall be made in the form of Demand Draft in favour of “**General Manager (Civil), Lakhwar Project**” payable at PNB Dakpathar, Dehradun accompanied with the Bid’s document part-I. However, any short amount of bid fee will not be acceptable and bid shall be rejected.

##### a. Whom to Contact

For any further information on the Bid, the Bidders may contact the “Office of the Executive Engineer(E&M-II) Lakhwar Project, Lakhwar Bhawan-I, UJVN Ltd. Dakpathar”

Mobile No - 09456590253

Email; [manoj.pathak@ujvnl.com](mailto:manoj.pathak@ujvnl.com)

- The Employer shall have the right to reject all or any of the Bids and shall not be bound to accept the lowest or any other Bid or to give any reason for such decision.
- Bids for part of work shall not be accepted. Telegraphic offer shall not be accepted. The bid shall be received up to 15:00 hrs on dated **25.09.2025** and shall be opened on **26.09.2025 at 11:00 hrs**.in presence of the bidders who wish to remain present at the time of opening of the bid. Part –II of bid shall only be opened if firm fulfills all conditions of Part-I of bid.

##### iii. Eligibility Criteria:

- a. **General:** The contractor fulfilling following pre-qualification condition shall only be Eligible to participate against the above bid:
- b. The bidder should be registered with GST Department EPF, ESI Act & Document Should be enclosed for all.
- c. The Bidder must submit the copy of Income tax Return duly acknowledged by IT Department. for last three years. (Copies of certificate to be submitted as a proof).
- d. Registration with Income tax PAN Number (Copy of registration number to be attached). PAN copy must be submitted for the name of firm/Proprietor, for which name Bid documents have been downloaded.
- e. Validity Agreement duly executed on Rs.100/- non-judicial stamp paper.
- f. Balance Sheets and Statement of Profit & loss / Audited Financial Statements (Balance Sheets and Statement of Profit & loss) for last 3 years (5 years in case of high value contracts (More than 100 Lacs)).
- g. Valid Bank Account details for RTGS / NEFT (name as appearing in Bank Account, Bank Account Number, Name of Bank, Name of Branch and Branch IFSC code) Valid Technical Experience Certificates/documents. The work completion certificate not below the rank of Executive Engineer as a proof.

- h. Earnest Money Deposit of the requisite amount in prescribed mode.
- i. Tender Processing Fee of requisite amount in prescribed mode.
- j. Declaration Affidavit regarding eligibility and not being **blacklisted or debarred** on Rs10 non judicial stamp paper, from the business anywhere in India from any Central/State Government department or PSU/CPSU.
- k. Declaration Affidavit regarding all documents and statements are **correct & true** on Rs10 non judicial stamp paper.
- l. Declaration affidavit regarding **Litigation** of last 5 years on Rs10 non judicial stamp paper.

**iv. Particular Experience for works:**

The bidder should have experience of having successfully completed similar works in PSUs, Central Govt./State Govt. organizations during last 7 years State PSUs/ ending last day of month previous to one in which application are invited have any of the following: -

- (i) Three similar completed supplies/works each costing not less than the amount equal to 40% of the estimated cost.
- OR
- (ii) Two similar completed supplies/works each costing not less than the amount equal to 50% of the estimated cost.
- OR
- (iii) One similar completed supplies/works each costing not less than the amount equal to 80% of the estimated cost.

**Similar works means:**

**Having experience for Electrical wiring along with installation of electrical items in Commercial building/Office building/ Industrial building/ Residential complex in Gov. Dept./PSU/CPSU.**

**a. Financial Capacity:**

Average Annual Financial turnover during the last 3 years, ending 31<sup>st</sup> March of the previous financial year, should be at least 30% of the estimated cost. The firm shall submit audited (year 2024-25) Balance sheet and Profit & Loss account of last 3 years, which shall be established through latest ITR.

**Note:** Profit & Loss Statement, Balance Sheet, etc. must be Audited / Certified by a Chartered Accountant and should bear Membership Number of the CA signing it and the Firm Number of the CA Firm. Financial statements Audited / Certified by a Chartered Accountant w.e.f 01-07-2021 must bear UDIN Number of the CA signing it.

- b. Financial standing should be established through latest ITR and Annual report (balance sheet and profit & loss account) of last 3 years.
- c. Bidders are requested to submit the price schedules and its appendices duly filled in as required and should strictly follow the instructions and notes supplementary. Failure to do so may prevent the bid from being considered.
- d. In case the due date of submission/ opening of bid happens to be a holiday, the bids shall be received and opened on the next working day without extension of due date.

- e. The Bidder must submit Electrical license authorized to work in Uttarakhand state, in case license is under renewal process, documentary proof required.
- v. The Bidders is requested to submit any query by post/email within 2 days after publishing of Bid, later than query will not entertain.
- vi. The rates should be valid for 3(three) months from the date of opening of the bids. The bidders are required to furnish the validity guarantee / agreement on non-Judicial stamp paper worth Rs. 100.00. The bid without agreement of validity in Part-I of bid shall be rejected. Specimen of this agreement is being enclosed herewith.
- vii. The bidders are required to fill up their rates in words as well as in figures. If there is any ambiguity /difference in quoted rates in words and figures, the rates quoted in words shall prevail. If any calculation error in amount, the quoted rate will prevail for evaluation of tender part-II(Price bid)
- viii. All work / supply covered by the specifications shall be carried out in accordance with the General Conditions of Contract. In case any portion of the said contract is not clear to the contractor, clarifications must be obtained before submission of the bid.
- ix. Conditional bids shall not be entertained and will be rejected.  
  
The rate should be quoted **F.O.R. Dakpathar.**
- x. The successful bidder shall be required to furnish Performance Security @10% of value of Contract Amount in the form of Bank guarantee/FDR/CDR/TDR in favour of General Manager(Civil), UJVN limited Lakhwar MPP.
- xi. Telegraphic offers shall not be entertained. The undersigned reserve the right to reject any or all the bids without assigning any reasons.
- xii. The bids should be submitted in Performa prescribed and bids received without downloading the bid documents shall not be considered.
- xiii. Any over writing/cutting in bid should be duly signed and stamped.
- xiv. The bidder shall not withdraw his offer within the validity period. The bidder shall not make any alteration / modification after the opening of the bids within validity period.
- xv. All other terms and conditions of this bid specification shall be governed by the General Conditions of Contract / Special Conditions of the Contract.
- xvi. The successful bidder will have to enter into an agreement within 05 days of receiving the order and will have to deposit requisite amount of Performance Security as required as per Clause 16 of Instructions to Bidders (ITB).
- xvii. In case the bidder is prepared to offer any rebate, the same should be clearly mentioned in the bid.
- xviii. The undersigned may revise or amend the specification & other condition prior to the notified date for opening of the bids. Such revision and amendments, if any will be communicated to all bidders.
- xix. In case of failure of firm to execute the order with in the stipulated delivery period, the purchaser shall have every right to cancel the order and levy any penalty as per General Conditions of Contract.
- xx. The bid documents can only be downloaded from the website of UJVN Limited

[www.ujvn.com](http://www.ujvn.com). However it will be the responsibility of the prospective bidder to ensure the use of complete bid documents available on website.

- xxi. The duly filled and **signed Application Downloading Form** which has been used by vendor for downloading the bid documents from website should be accompanied the bid in original along with the bid document. This “Application Form” will be an integral part of bid document. If this application form is not submitted in original with the bid in Part-I, it will be summarily rejected.
- xxii. The cost of downloaded Bid documents Rs. 1180(including GST) shall be submitted by the bidder. The cost of bid documents shall be submitted by the bidder in the form of demand draft in favour of General Manager (Civil-I),Lakhwar Project, Dakpathar.
- xxiii. Note: In case the Demand Draft of Bid fee is not payable at Location Dakpathar PNB/OBC Dakpathar (Dist.: Dehradun) – additional amount of DD clearance should also be added in bid fee DD accordingly, which shall be Rs. 100/- additionally.

**Example:** a) Bid fee is Rs. 1180/- Payable at PNB Dakpathar branch.

**b) Bid Security**

Bidder shall have to submit EMD in the shape of CDR/FDR/TDR for Rs. ₹ 50,515.00 for Bid Security, failing which the bids will be declared non-responsive.

**C) Additional Security**

Additional Security; The successful bidder shall deposit to the Employer an additional Performance Security in the form of FDR/CDR/TDR duly pledged in favour of “General Manager (Civil),Lakhwar Project”. The amount of additional performance security shall be worked out as follows;

**For Item rate contract**

- i. ***No additional security Up to 5% below the estimated cost of the item***
- ii. ***An additional security of 10% of the estimated cost of items, for item rates from 5% to 15 % below the estimated rate.***
- iii. ***An additional security of 15% of the estimated cost of items, for item rates more than 15% below the estimated rate.***

***Additional Security for work part shall remain valid during the currency of the contract and shall be returned to the contractor after satisfactory completion of the work and after the payment of final bill.***

**Note:** If the percentage below is not a whole number, any percentage above 0.5% shall be rounded off to next higher whole number and any percentage below 0.5% shall be rounded off to immediate lower whole number. The work shall be awarded as per standing instructions / rules of UJVN Limited.

**Executive Engineer (E&M-II)  
Lakhwar MPP, Dakpathar**

## **SECTION-III**

### **SPECIAL CONDITIONS OF CONTRACT**

## Special Conditions of Contract

These special conditions shall be read and construed along with the general conditions of the contract Form–A/B as modified by the provisions hereof but if there be any conflict or inconsistency between the provisions hereof and these conditions in general conditions of Form–A/B, these special conditions shall prevail.

### 1. Scope of the work

- i - The Location of work is “Dakpathar Vikas Nagar
- ii - The scope of the work shall mainly include “internal/external recess (concealed) electric wiring, including SITC (Supply, Installation, Testing & Commissioning) of, electrical fixtures i.e. luminaries, TPN/SPN distribution boards with bus bar, MCB's, Isolators, modular switch & sockets, switch boards, plug points, power plug points, proper load distribution from main TPN distribution board, earthing, cable laying in ground including associated/necessary civil works etc. as per Technical Specifications and schedule/bill of quantity enclosed.
- iii - All sundry fittings, assemblies, accessories, hardware items, foundation bolts, termination lugs for electrical connections as required, and all other sundry items which are useful and necessary for proper assembly and efficient working of the various components of the work shall be deemed to have been included in the scope, whether such items are specifically mentioned in the tender documents or not.

#### Scope of the work for electrical wiring and installations of electrical items

- a) The scope of the work shall include “internal/external recess (concealed) electric wiring, including SITC (Supply, Installation, Testing & Commissioning) of electrical wiring, electrical fixtures, TPN/SPN distribution boards with bus bar, MCB's, Isolators, modular switch & sockets, switch boards, plug points, power plug points, proper load distribution from main TPN distribution board, earthing, cable laying in ground including associated/necessary civil works etc. as per Technical Specifications and schedule/bill of quantity enclosed.
- b) Any other work not mentioned in the scope but is necessarily required for completion of all works covered under the scope shall invariably be a part of the scope. The work of electrification shall be carried out as per direction and under the supervision of Assistant Engineer (E&M)/J. E. (E&M), Lakhwar Project, Dakpathar
- c) The work of electrification shall be required to be carried out in coordination with the other agencies involved for civil construction work of the mentioned building.
- d) All consumables, testing kits, measuring instruments, Tools, T&P, requisite skilled manpower etc. shall be arranged by contractor.
- e) The manpower deployed for the mentioned job should be skilled and should have the adequate knowledge for the job.
- f) The contractor is liable to observe all the rules and regulations of Factory Act and Workman Compensation Act etc.
- g) In case Contractor fails to complete the work, UJVNL has the right to get the work done through some other agency and cost to be recovered by the Contractors' Bill.
- h) Contractor shall clean the work place after completion of the job as per the instruction of Engineer-in-charge. Cutting of walls or parts of the building or making holes and chases in the masonry and such other works shall be the responsibility of the Contractor. Cementing required and making good damages inflicted on the building are to be rectified by Contractor at no extra by contractor to original finish.

Statutory Permissions: All statutory permissions, if required, for installation and commissioning of the equipment and associated work from statutory authorities.

All fittings and accessories which may not be specifically mentioned in this specification but those are usually necessary for the equipment shall be specified and shall be deemed to be included in the specification and shall be furnished by the bidder without extra charges.

The contractor shall arrange all road clearances / permit etc. as may be necessary for transportation. The Employer/Purchaser may assist in arranging Road Permit wherever possible.

Contractor/Manufacturer/Supplier shall submit the Test Certificates of all materials.

Manufacturer/Contractor/Supplier should submit operation, maintenance and spare part list and manuals for all equipment's.

**Installation:**

For installation work at site, the contractor will be fully responsible for arranging the required tools and tackles, welding sets, pipe bending machine, cable crimping tools, gauges, scaffoldings, ladders, temporary water and power connections. On completion of the installation but before energisation of the system, all installation will be physically checked and properly tested. These checks and tests will be conducted by the contractor under the supervision of Employer/Purchaser. The contractor will furnish the final status and test results. Any defect observed during such check and tests will be rectified by the contractor free of cost within contract completion period. All clamps brackets, bolts, nuts, screws, markers, ferrules, lugs and glands and other hardware necessary for erection work, will be included in the scope of work and will be arranged by the contractor.

- The installation shall be done at location approved by the Engineer-in-Charge.
- All cables connections shall be made using appropriate accessories like crimping lugs, flat and spring washers, bolts and nuts etc., as suitable for the type of termination. In no case, any mechanical pull from cable connection shall be experienced at the terminations.
- After all cable terminations no openings or unplugged holes shall be allowed, which may allow ingress of dust, insect etc.
- All incoming and outgoing feeders shall be properly marked indicating the load connected, cable sizes and outgoing connection etc.

**Post Completion Handing Over Documents:**

Following documents shall be supplied to the consignee along with equipment at the time of delivery:

- i) Book of instructions & drawings regarding installation, testing, operation and maintenance and servicing of the switchgear together with all the relevant data sheets, spare parts catalogue and workshop procedure for repairs, assemblies and adjustments.
- ii) Factory test certificates showing the results of the tests actually carried out on the LT switch-gear.
- iii) Finalized drawings showing dimensions and other fixtures of the switchboard.
- iv) Guarantee/ warranty cards of the supplied unit should be supplied with the unit.

**Vendor and Shop Drawings**

The contractor shall prepare and submit to Employer/Purchaser G.A. Drawing for the Protection system of all outlet boxes, special pull boxes, and other likewise material, equipment of approved vendor, manufacturer strictly as per the technical specifications and approved make as given in the bid document. It shall be the Manufacturer's responsibility to ensure that the Panel meets the Operational Philosophy as desired by Employer/Purchaser.

**Tests & Inspection:**

During fabrication, switchgear shall be subject to inspection by the Employer/Purchaser. Tests shall be carried out at approved make manufacturer's works/Factory only under his care. The Contractor should give at least 10 (ten) days' advance notice of the date when the tests are to be carried out. Acceptance tests shall be as under:

- a) A general visual check shall be carried out. This shall cover measurement of overall dimensions, locations, number and type of devices, terminal boxes, locations and connections of the terminals etc.

Manual and electrical operation of MCCB/MCB etc. shall be checked under the worst conditions of auxiliary supply voltage. Dry insulation test with power frequency voltage shall be conducted for the main and auxiliary circuits. Insulation resistance of the main and auxiliary circuits. Operation check shall be carried out for every control function as per the schematic diagrams by manually simulating fault conditions and operation of control switches etc. For the equipment bought from other approved sub suppliers certified test reports of tests carried out at the Manufacturer's works shall be submitted.

The successful bidder shall furnish to the purchaser Routine test certificates for prior approval before dispatch of any equipment from the works. The test reports shall be submitted completed with identification data including serial number of equipment's.

**Inspection and Testing at the Manufacturer's works:** The Contractor has to arrange for the detailed testing and verification of all the parameters at the approved make manufacturer's works/Factory only before the dispatch of the system. No Authorization for subletting of manufacturing will be permissible. The manufacturer has to make all required arrangements for the same and give the inspection call at least 10(ten) days in advance to the Employer/Purchaser.

The contractor will provide for all necessary materials, tools equipment's, measuring instruments and working consumables etc needed for execution of the works. Safe custody of all such materials will be contractor's sole responsibility. No extra charges will be paid for the same.

**2. Prices**

The rates quoted should be firm and not subject to variation on any account. No increase in the prices shall be admissible under any circumstances. **GST shall be paid extra.**

**3. Levy of Penalty/LD**

In case contractor fails to complete the works within stipulated time mentioned in the order, the penalty/LD @1/2% per week subject to maximum 10% of the order value shall be imposed on the contractor.

**4. Payment**

100% running payment with GST for the supply & work covered under the scope or as per LOI/PO issued shall be made after submission of running payment invoices and the bidder has furnished performance security and signed the contract agreement pursuant to ITB clause towards faithful performance of the work/supply carried out by him.

***Aforesaid Payments shall be processed for release only upon checking mentioned works/supply at site in satisfactory condition, subjected to raising of invoices & furnishing of performance security pursuant to ITB clause towards faithful performance of the work/supply carried out by contractor.***

**5. Taxes:** Income Tax & other Govt. levies etc. if any shall be deducted as per rules. GST shall be paid extra.

**6. Quality of materials**

The supply items shall be manufactured and constructed in the best and most substantial and most workmanlike manner and with materials of the best or of approved qualities for their respective uses.

**7. Notice to Contractor**

Any notice to be given to the contractor may as the purchaser thinks to fit, be posted to his address or delivered to his duly authorized representative and such proof of posting as acknowledgement shall be deemed to have acknowledged and the contractor will have to comply the same as per rules.

**8. Arbitration**

In case of any dispute during execution of work/supply, the decision of Chairman of UJVN Ltd. or any other person nominated by him on his behalf, in writing shall be final, binding and conclusive. All disputes arising out of touching or relating subject matter of the agreement shall be subjected to the jurisdiction of local courts of Dehradun and High court of Judicature at Nainital only.

**9. Delivery Period:**

The work covered under the contract shall be completed within 12 (Twelve) months from the date of start. The supply of material shall be completed within three month before starting installation of work concern Junior engineer must take stock on their books. Any delay is the responsibility of contractor.

Supply & Installation shall be carried out under the supervision of Assistant Engineer (E&M)/J. E. (E&M), Lakhwar Project, Dakpathar.

10. **Date of start:** Date of start shall be reckoned from 7th day of issue of LOI or as per the date specified in the LOI.
11. **Damage to the UJVN Ltd. Equipment/Property:** The contractor shall be responsible for any damage to the UJVN Ltd. equipment/ property by the negligence of the staff engaged by him and in that case the cost will be recovered from the Contractor during work.
12. **Termination of Contract**  
The contract can be terminated at any time in case it is found that the supply/work is not up to the satisfaction of Engineer-in-charge. Under such circumstances the complete work will be got done through any other agency and all such expenditure will be debited to the Contractor's account.
13. **Transit Insurance:** Transit insurance, if required, shall be arranged by Contractor at his own cost.
14. **Escalation of Rates**  
No escalation of rates over the finally accepted rates for execution of the work shall be allowed during the Contract.
15. **Completeness of Contract:** Those dimension, tolerance and finishing which may not have been specifically mentioned in the specification but which are necessary for successful fitting of supply shall be deemed to be included in this contract and supply shall be completed without any extra charge by the Contractor.
16. Any delay in completion of work beyond the schedule date, beside the penalty levied will be treated as unsatisfactory performance of the firm and may be taken into account for deciding subsequent contract under UJVN.
17. Slippage of any activity will be viewed as unsatisfactory performance of the Contractor and will be accounted for as loss of capitalization for the value as mentioned in the penalty clauses.
18. The Contractor will observe all rules and regulation of factory act, labour act, compensation act, safety rules and other relevant act/rules which are currently applicable.
19. **Subletting of Contract**  
Contractor shall not, assign or sublet contract.
20. Work/supply shall be executed in such a manner so that completion of work shall be done in optimum possible time.
21. **Safety Codes and Labour Regulations**
  - I. In respect of all labour employed directly or indirectly on the work for the performance of the contractor's part of work, the contractor at his own expense, will arrange for the safety provisions as per the statutory provisions, B.I.S. recommendations & other relevant rules applicable at that time.
  - II. The Contractor shall be fully responsible for complying with all the relevant statutory obligations as applicable from time to time including :
    - a. Contract Labour (Regulation and Abolition) Act
    - b. Minimum Wages Act
    - c. Payment of Wages Act
    - d. Bonus Act
    - e. Fatal Accident Act
    - f. Gratuity Act
    - g. Any other act, as applicable from time to time
  - III. Consequences arising out of the non-compliance with statutory requirements shall be the entire responsibility of the contractor and be borne by the contractor.
22. **Co-ordination with other agencies**

The contractor shall co-ordinate with all other agencies involved in the work so that the work of other agencies is not hampered due to delay in his work.

**23. Damages for loss/destruction/theft & pilferage**

It shall be the duty of the contractor to ensure that no property, assets, instruments, machineries of the Employer/Purchaser are damaged, destroyed, pilfered or taken away by any person. In case, any such damage, destruction, loss, theft or pilferage arises due to negligence/lapse on the part of the persons deployed by the contractor, the contractor shall be fully accountable, responsible and liable for making good the loss.

**24. Deviations Alteration and Addition to the work.**

The contractor shall not in any way alter any of the works without previous written consent of the Engineer-in-charge but the Engineer-in-charge may from time to time and at any time during the progress of the work by writing direct any deviation or alterations to be made from in or to the work or any part thereof or may direct the contractor to curtail or to omit any of the work or execute any new or substituted work or to commence and execute the work or any part thereof in such order and manner as he shall fit. Any such direction of Engineer-in-charge and any deviation, alterations addition curtailments and commissions made in pursuance thereof shall not vitiate this bid or be made the ground for any claim for compensation for alleged loss in respect of curtailed or omitted works or (except as hereinafter provided) for extra payment for additional works (occasioned due to deviations, alterations and additions) and any works so directed to be curtailed or omitted shall be curtailed or omitted and deviations, alterations or additions as detected to be made shall be to the satisfaction of the Engineer-in-Charge in the same as if such curtailment omission, deviations alterations and additions had been originally provided for in the specifications shall be estimated by the Engineer-in-Charge according to the schedule of quantity and prices wherever applicable otherwise treated as an extra item.

Above quantities are tentative and may vary on either side subject to variation in total cost of work up to (+/-) 20 % as per actual work done on same contract price.

**Executive Engineer (E&M-II)**  
**Lakhwar Project, Dakpathar**

**Section - IV**

**TECHNICAL SPECIFICATIONS  
&  
BILL OF QUANTITY**

## **TECHNICAL SPECIFICATIONS**

### **Technical Specifications for E&M Maintenance work of Lakhwar Residence quaters and guest houses at Dakpathar**

**A** - The supply and installation of electrical equipment specified herein are required for indoor and outdoor installation. The successful tenderer shall furnish all materials and accessories and services specified herein to complete this work. The work shall have to be completed and operative in detail. Any item of work or material which may not have been specifically mentioned but incidental to or necessary for complete installation shall be provided by the bidder without any additional charge to the Employer. All material shall be conforming to relevant standard as per BIS and shall carry ISI mark. Product of approved make shall only be used. Work shall be carried out as per the Method of Construction specified by BIS. If there is no reference for particular Method of Construction in IS, such work shall be carried out as per the approved Method of Construction specified in PWD/CPWD specifications. Material and Work not qualifying to any provision mentioned above shall be to the satisfaction of the Engineer in Charge.

#### **B - General guidance for supply & installation and standards to be followed :**

The electrical equipment/installations / design shall comply with the requirements of the following :

- a) The Indian Electricity Rules, 1956 updated & amended till recently
- b) The Indian Electricity Act, 1910
- c) SP 30: 1984 National Electrical Code
- d) The Indian Electricity (Supply)
- e) Bureau of Energy Efficiency (BEE) Norms
- f) IS 732: 1989 Code of Practice for Electrical Wiring Installations.
- g) IS 9537 (Part 1): 1980 Conduits for Electrical Installations: General requirements
- h) IS 9537 (Part 2): 1981 Rigid Steel Conduits
- i) IS 9537 (Part 3): 1983 Rigid Plain Conduits of insulating material
- j) IS 3419: 1989 Specifications for fittings for rigid non metallic conduits
- k) IS 694: PVC insulated cables for working voltages up to and including 1100V
- l) IS 1554 (Part 1): 1988 PVC insulated (heavy-duty) electric cables for working voltages up to and including 1100V
- m) IS 3961 (Part 5): 1968 Recommended current ratings for cables: PVC insulated light duty cables.
- n) IS 4288: 1988 PVC insulated (heavy duty) electric cables with solid aluminium conductors for voltages up to and including 1100V
- o) IS 14772: 2000 Specifications for Accessories for household and similar fixed Electrical Installations
- p) IS 3043: 1987 Code of practice for Earthing
- q) SP 7 (Group 4): 2005 National Building Code
- r) IS 14927(Part 1): 2001 Cable Trunking and Ducting systems for electrical installations.

**The equipment and materials to be furnished under this specification shall be designed, manufactured and tested in accordance with the latest revision of the Indian Standards (IS), (BS) and international electo-technical commission (IEC) publications unless otherwise stated.**

**The wiring will be concealed type in FRPVC conduits.** The wiring may be exposed type in surface mounted at some places, if required or as per the direction of the Employer/Purchaser.

The installation shall comply with the Indian standard code of practice for Electric wiring, Indian Electricity rules, I.E Act, N.E.C and regulation of Electric supply Authority. The Contractor shall follow all safety and other regulations in force.

#### **C - COMPLETION OF WORK**

Each item of the electrical work shall be considered as complete in all respects only after energizing, testing and final commissioning of the complete installation as directed by the Engineer-in-Charge.

#### **D - PREAMBLE TO THE SCHEDULE OF WORK**

The successful tenderer shall carefully go through the Clauses of Invitation to Tender, Specification, and Schedule of Work and shall include in his rates any sum he may consider necessary to cover the fulfillment of the various clauses contained therein. Unit prices stated in the schedule of work against the item of work shall be inclusive of all installation, accessories and consumables necessary to complete the said work within the

contemplation of the contract. Beyond the unit prices no extra amount will be paid for incidental contingent work and materials.

The quantities mentioned in the schedule of work are probable quantities and it must be clearly understood that the contract is not a lump sum contract, that the probable quantities, the value of the entire tender are only indicative and Employer does not in any way assure the tenderer or guarantee that the actual quantity of work would correspond to the probable quantities in the tender.

No change in unit rate will be admissible on any variation of quantity.

#### **E - WIRING SYSTEM**

The electric load of all lights, power outlets, etc. shall be balanced across the three phases.

The 15/16 Amps sub-circuit for power shall be connected to a maximum one 15/16 Amp load. A power circuit shall always be originating from a distribution board or MCB DB and the same shall run in a separate conduit or as per requirement.

Insulated or covered earthing conductors where used, shall have green insulation braiding or covering as appropriate. Under no circumstances shall the colour green be used for other than earthing conductor. In addition where it is required, cables of different colours be used. For identification purposes the following system shall be employed:

Red or any colour (other than black or green)	For phase or switch wire
Black	For Neutral
Green	For earth

Unless otherwise mentioned in the schedule of quantities, single way porcelain/ bakelite terminal connectors with nickel plated brass inserts and screws to suit the conductor size shall be used for intermediate wiring/ joints in junction boxes and in switch boards or by any other method approved by the Consultant/ Engineer-in-Charge.

#### **F - CONDUIT WIRING**

All PVC/steel conduit shall be ISI marked and finished with galvanised or stove enamelled surface. All conduit accessories shall be conforming to IS: 7537 (Part-III) / IS: 2667-1988 and be threaded type. Conduit less than 20mm in diameter shall not be used. All conduits shall be 1.4 to 1.8 mm thickness below 32 mm dia. and 1.6 to 2.2 mm thickness for 32 mm dia. and above.

The conduit for each circuit shall be erected complete with necessary bushes before drawing in of any wire. Galvanized M.S. Spacer of 3 mm thick minimum shall be used between the conduit saddle and fixing surface. The saddle shall be fixed at an interval of not more than 500 mm apart for vertical run and 400 mm apart for horizontal run.

Making of chase: The chase in the wall shall be filled up neatly made and be of ample dimensions to permit the conduit to be fixed in the manner desired. In case of buildings under construction, chases shall be provided in the wall, ceiling etc. at the time of their construction and shall be filled up neatly after erection of conduit and brought to the original finish of the wall. Especially for ceiling, conduit shall be laid before casting.

Fixing of conduit in chase: The conduit in chase in the wall shall be fixed by means of staples or by means of saddles not more than 40 cm apart. Fixing of standard bends or elbows shall be avoided as far as practicable and all curves maintained by bending the conduit pipe itself with a long radius which will permit easy drawing of PVC insulated wires.

All threaded joints of conduits shall be treated with some approved preservative compound to secure protection against rust.

#### **G - POINT WIRING**

(1) A point shall consist of the branch wiring from the switch box together with a switch and point control box as required, as far and including the wiring accessories like ceiling rose, junction box, switch, box for socket outlet and terminations. A point shall also include, in addition, the earth continuity conductor from the switch box to the earth pin/stud of the outlet/switch box. For point wiring the measurement will be on unit basis by counting. Each circuit shall have separate neutral as well as earth wire, which will be subject to verification at the D.B

(2) Trunkings (Cable Management System)

Trunkings shall be screw fitted to wall at 40 cm interval using pan head screws in zig-zag manner. Where required suitable back pcs. to be provided for leveling. While placing wires inside the trunking they shall be tied in bunches, circuit wise (phase, neutral & earth) with Nylon cable ties at one meter interval. Conduits shall be connected to trunking using female bush adapter after making circular drill cut holes on the side of the trunking. After wiring is complete the Trunkings ends shall be closed with original end caps. Trunkings shall be provided

temporary protection from paint, dust etc as required. No pipes are allowed through the end caps. Levelling of trunking to be checked with water level.

(3) Distribution Boards & MCB Boxes, starters etc

There should not be any access for lizards, cockroaches & other vermin's inside the D.B. D.B's, MCB boxes and Starters, surface mounted shall have 10 mm thick nylon spacers at their back for providing air gap.

#### **H - Point wiring (Surface type)**

Providing all required approved specified material including hardware and erecting wiring on surface of wall, ceiling from switch board to outlet for light / fan / bell / independent plug point, in rigid steel / PVC conduit or PVC trunking as specified; fixing one board with a 1 way switch for one way point or two boards with a 2 way switch on each board, in case of 2 way point; for controlling power supply and one board / block with accessory for outlet of light / fan / plug and terminating wires within as per approved Method of Construction; removing all debris and testing the installation for safety and beneficial use.

##### **H(i) - PVC conduit:**

PVC pipe of minimum 20mm dia and above depending No. of wires to be drawn; ISI mark, HMS grade (2mm thick), accessories for PVC pipes of the same make that of pipe; such as Spacers & Saddles, Couplers, Bends, inspection or non inspection type Elbows, Tees, Junction boxes of required ways and resin / adhesive to make all joints rigid. Black pipe shall not be used for surface type wiring.

##### **H(ii) - PVC Trunking:**

PVC Trunking (casing capping) ISI mark, 1.2 mm thick, minimum 20 mm width and above depending on No. of wires to be drawn with double locking arrangement, 1.8 mm thick push-fit jointsboxes of required ways of the same make.

##### **H (iii) - Wires: Phase and Neutral**

PVC insulated wires of specified size, 1.1 kV, & minimum FR grade insulation, copper conductor, ISI marked, of required colour coding

##### **H (iv) - Earth Wire:**

PVC insulated minimum FR grade copper wires having insulation of 1.1 kV grade, of green / green-yellow colour, ISI marked

##### **H (v) - Method of Construction:**

Erection shall be done as per the final approved layout, in perfect level and plumb. Conduits shall be duly screwed and firmly fixed on spacers with saddles. Fixing of spacers shall be equidistant and at ends, bends, elbows, junction boxes, couplings, boards. Screws of minimum 35x8 mm and suitable plugs shall be used for fixing spacers and 12x5 mm round headed for fixing saddles on spacers. Distance between 2 spacers shall not be more than 600mm. Separate pipe shall be used for each phase in 1-ph distribution and for power and light distribution. Adequate use of conduit accessories shall be made at required locations. Flexible conduits shall be used at expansion joints. Bushing shall be provided at open ends.

##### **H (vi) - Erection of conduits:**

##### **PVC pipes for surface type wiring:**

In addition to General conditions above, all joints shall be made rigid with resin / adhesive. Wherever offsets are necessary, same shall be done with bending spring. Size of conduit shall be correct depending on number of wires to be drawn.

**Or**

##### **Erection of PVC Trunking for surface type wiring:**

Erection shall be done as per the final approved layout. The Trunking shall be in perfect level and plumb. Screws of minimum 35x8 mm and suitable plugs shall be used for fixing. In case of unleveled surface number and size of screws shall be changed to higher size as per requirement and in case of stonewalls wooden gutties shall be grouted in wall for fixing of screws of Trunking. Distance between 2 screws shall not be more than 600 mm. Size of Trunking shall be correct depending on number of wires to be drawn. Separate Trunking shall be used for each phase in 1-ph distribution. Double locking shall be checked while fixing capping. Adequate use of accessories shall be made at joints and required locations.

#### **H (vii) - Drawing of wires: General**

Wires shall be drawn with adequate care. Correct colour coding shall be used for phase, neutral and earth. Wires shall not have intermediate joint in between terminals of the accessories. Earth-wire and Return wire (neutral) may be looped within circuit. For lighting load distribution wires of two different phases shall not be drawn in single pipe. Wires shall be terminated in the terminals of accessories only. Insulated Earth wire of green or green-yellow colour of as per specified shall be erected wherever necessary.

#### **Drawing of wires: through PVC conduits for surface type wiring**

Insulated Earth wire of green or green-yellow colour mm shall be drawn through pipe. Number of wires shall not exceed with respect to size of pipe.

Or

#### **Erecting wires in Trunking:**

Wires shall be erected within Trunking with adequate care. Number of wires shall not exceed with respect to size of Trunking. After erection of wires double locking shall be checked while fixing capping.

#### **I - Point wiring (Concealed type)**

Providing all required approved specified material including hardware and erecting rigid steel / PVC conduits, junction boxes, provided fan boxes, along with required accessories in RCC slabs before casting and in walls, flooring by making chases, and refilling the same after erection of conduits, fixing concealed type boxes for switch boards in walls, drawing wires through conduits, from switch board to outlet for light / fan / bell / independent plug point fixing modular type switch for controlling power supply and an accessory for outlet of light / fan / bell / plug at other end, with mounting plate, and terminating wires within at both ends, closing all junction boxes with plates; removing all debris and testing the installation for safety and beneficial use.

##### **I (i) - PVC conduit:**

PVC pipe of minimum 20mm dia and above depending No. of wires to be drawn; ISI mark, HMS grade (2mm thick), accessories for PVC pipes of the same make that of pipe; such as Spacers & Saddles, Couplers, Bends, deep / normal Junction boxes of required ways and resin / adhesive to make all joints rigid. Black pipe shall not be used for surface type wiring.

##### **I (ii) - Sheet metal Junction boxes / Draw-in boxes:**

Junction box shall be multi sided with removable top plate. There shall be knockout holes in required numbers and dia. for entry of conduit pipes and arrangement to fix surface cover plate on it.

##### **I (iii) - Wires: phase and neutral wires**

PVC insulated wires of specified size, 1.1 kV, & minimum FR grade insulation, copper conductor, ISI marked, of required colour coding

##### **I (iv) - Earth Continuity Wire:**

PVC insulated minimum FR grade copper wires having insulation of 1.1 kV grade, of green colour, ISI marked

##### **I (v) - Lugs: Pin type Copper lugs.**

##### **I (vi) - Other material for Surface finishing: Sand, Cement, water etc.**

##### **I (vii) - Method of Construction:**

#### **Point wiring (Concealed):**

Work shall be done in co-ordination with civil work and to suite final approved layout. Size of conduit shall be correct depending on number of wires to be drawn. Separate pipe shall be used for each phase in 1-ph distribution and for power and light distribution and distance between pipes shall not be less than 300 mm. Adequate use of conduit accessories shall be made at required locations. Flexible conduits shall be used at expansion joints. Erection shall be done as per the layout finalized, with minimum sharp bends, with junction boxes at angular junctions and for straight runs at every 4.25m, in such manner so as to facilitate drawing of wires.

#### **Concealing of Conduits: In walls**

Chases shall be made in walls of adequate width, with cutter and chiseling through it. Necessary finishing of the surface shall be done. Conduits of adequate size shall be erected with use of appropriate accessories and 'U' nails.

**Drawing of wires:**

Use of Steel fish wire shall be made for drawing of wires. Wires shall be drawn with adequate care. Correct colour coding shall be used for phase, neutral and earth. Wires shall not have intermediate joint in between terminals of the accessories. Earth-wire and Return wire (neutral) may be looped within circuit only. For lighting load distribution, wires of two different phases shall not be drawn in single pipe. Wires shall be terminated in the terminals of accessories only. Adequate extra length shall be left at termination points. In case of 2-way point wiring additional wires of phase conductor shall be provided between the 2-way switches.

**J - Conduits / Trunking (Casing Capping) (Surface type)**

**PVC Conduits: Surface**

PVC pipe minimum 20mm dia and above depending on No. of wires to be drawn ISI mark, HMS grade (2mm thick), accessories for PVC pipes of the same make that of pipe; such as Spacers & Saddles, Couplers, Bends, inspection or non inspection type Elbows, Tees, Junction boxes of required ways and resin / adhesive to make all joints rigid. Black pipe shall not be used for surface type wiring. Sheet Metal (SM) screws of sizes specified in Method of Construction, washers, rawl / PVC / fill type plugs, wooden gutties, etc.

**Method of Construction:**

Erection shall be done as per the final approved layout, in perfect level and plumb. Conduits shall be firmly fixed on spacers with saddles. Fixing of spacers shall be equidistant and at ends, bends, elbows, junction boxes, couplings, boards. Screws and suitable plugs shall be used for fixing spacers and round headed screws for fixing saddles on spacers. In case of stonewalls wooden gutties shall be grouted in wall for fixing of spacers. Distance between 2 spacers shall not be more than 600mm. Size of conduit shall be correct depending on number of wires to be drawn. Adequate use of conduit accessories shall be made at required locations. Entries in wall shall be at level of surface and with colour coding conduit (For visual identification). Flexible conduits shall be used at expansion joints.

**Especially for PVC Conduits of surface type wiring:**

In addition to general instructions above, all joints shall be made rigid with resin / adhesive. Wherever offsets are necessary, it shall be done with bending spring.

**PVC Trunking (Casing capping)**

Providing specified PVC Trunking (Casing capping) and erecting on surface of wall / ceiling, etc. including entries made with PVC conduit through walls / slabs / flooring as per requirement with all necessary hardware, accessories such as inner / outer Elbows, Tees, Junction boxes, etc. and duly finishing, removing debris from site.

**Material:**

**PVC Trunking (casing capping):**

PVC Trunking (casing capping) ISI mark, 1.2 mm thick, minimum 20 mm width and above depending on No. of wires to be drawn; with double locking arrangement, 1.8mm thick push-fit joints/ accessories for PVC trunking such as couplers, elbows, internal / external angles, junction boxes of required ways of the same make. Sheet Metal (SM) screws, washers, rawl / PVC / fill type plugs, gutties, etc.

**Method of Construction:**

Erection shall be done as per the final approved layout. The Trunking shall be in perfect level and plumb. Screws and suitable plugs shall be used for fixing. Distance between 2 screws shall not be more than 600 mm. Size of Trunking shall be correct depending on number of wires to be drawn but not less than 20mm. Separate Trunking shall be used for each phase in single phase distribution and for power and light distribution and distance of 300 mm shall be maintained between the Trunking. Double locking shall be checked while fixing capping. Adequate use of accessories shall be made at joints and at required locations.

**K - Conduits (Concealed type)**

### **Concealing PVC Conduits in RCC work**

Providing specified PVC conduit and laying / erecting in RCC work, such as slab, beam, column before casting along with of all required material including hardware, binding wire, fish wire; accessories such as deep / long neck PVC junction boxes, PVC / MS junction / draw-in boxes, check-nuts, flexible PVC pipe, drawing fish-wires and making all piping rigid, removing debris from site and supervising the work during casting to confirm rigidity, continuity and avoid damages.

#### **Material:**

##### **PVC Conduit:**

PVC pipe of minimum 20mm dia and above depending on No. of wires to be drawn; ISI mark, HMS grade (2mm thick), accessories for PVC pipes of the same make that of pipe; Couplers, long Bends, deep Junction boxes of required ways and resin / adhesive to make all joints rigid.

##### **Junction boxes / Draw-in boxes:**

Junction box shall be multisided with removable top plate and of suitable size to accommodate No. of entries; PVC or fabricated from 16g CRCA sheet steel with earth terminal duly treated with antirust treatment and painted with two coats of red oxide paint. There shall be knockout holes in required numbers and dia. for entry of conduit pipes and arrangement to fix cover plates on it. 'U' nails, plumbing and general use nails of required sizes, washers, check-nuts, steel binding wire, steel fish wire etc.

#### **Method of Construction:**

Work shall be done in co-ordination with civil work and to suite final approved layout. Size of conduit shall be correct depending on number of wires to be drawn. Separate pipe shall be used for each phase in single phase distribution and for power and light distribution and also for wiring. The distance between pipes shall not be less than 300 mm. Adequate use of conduit accessories shall be made at required locations. Entries in wall shall be at level of corresponding conduit. Flexible conduits shall be used at expansion joints. Erection shall be done as per the layout finalized, with minimum sharp bends, with junction boxes at angular junctions and for straight runs at every 4.25m, in such manner so as to facilitate drawing of wires. All PVC conduit bending shall be done with Bending Spring. All joints shall be made rigid with resin.

#### **Concealing of PVC conduits:**

##### **Concealing PVC Conduits in walls / flooring**

Providing specified PVC conduit and erecting / laying in wall, flooring by making chases / grooves / entries along with of all required material including hardware such as 'U' nails, binding wire, fish wire; accessories such as PVC / MS junction boxes / inspection boxes, check-nuts, flexible PVC pipe, glands, drawing fish-wires and making all piping rigid, refinishing the surface with cement mortar, removing debris from site.

#### **Material:**

##### **PVC Conduit:**

PVC pipe minimum 20mm dia and above depending on No. of wires to be drawn, ISI mark, HMS grade (2mm thick), accessories for PVC pipes of the same make that of pipe; Couplers, long Bends, Junction boxes of required ways, type and resin / adhesive to make all joints rigid.

##### **Junction boxes / Draw-in boxes:**

Junction box shall be multisided with removable top plate and of suitable size to accommodate No. of entries. There shall be knockout holes in required numbers and dia. for entry of conduit pipes and arrangement to fix cover plate on it. 'U' nails, plumbing and general use nails of required sizes, washers, check-nuts, steel binding wire 20g, steel fish wire, etc.

**Other material for Surface finishing:** Cement, sand, putty, and water.

#### **Method of Construction:**

##### **Concealing of PVC conduits: (General)**

Work shall be done in co-ordination with civil work to suite final approved layout. Size of conduit shall be correct depending on number of wires to be drawn. Separate pipe shall be used for each phase in 1-ph distribution and for power and light distribution and also for wiring. Adequate use of conduit accessories shall be made at required locations. Flexible conduits shall be used at expansion joints. Erection shall be done as per the layout finalized, with minimum sharp bends, with junction boxes at angular junctions.

**Concealing of PVC Conduits In walls / flooring:**

Chases shall be made in walls of adequate width, with cutter and chiseling through it. Necessary finishing of the wall surface shall be done. Work in flooring shall not disturb RCC work, Conduits of adequate size shall be erected with use of appropriate accessories, and 'U' nails. All joints shall be made rigid with resin. Draw-in / inspection boxes shall be fixed with check-nut, flush with surrounding surface and earthed.

**L - Mains in surface PVC conduit**

Providing specified PVC Conduits, Wires and erecting the conduits as per approved Method of Construction; on surface of wall / ceiling, etc. including entries through walls / slabs / flooring as per requirement, and with all necessary hardware, accessories such as Spacers, Saddles, Bends, Tees, Junction boxes, Check-nuts / glands, etc.; making conduits erection work rigid; and drawing the specified wires through these conduits and duly connecting / terminating with lugs, complete finishing, removing debris from site; testing for safety and beneficial use.

**Material:**

**PVC Conduit:**

PVC pipe of minimum 20mm dia and above depending on No. of wires to be drawn; ISI mark, HMS grade (2mm thick), accessories for PVC pipes of the same make that of pipe; such as Spacers & Saddles, Couplers, Bends, inspection or non inspection type Elbows, Tees, Junction boxes of required ways and resin / adhesive to make all joints rigid. Black pipe shall not be used for surface type wiring.

**Hardware:**

Sheet Metal (SM) screws of sizes specified in Method of Construction, washers, rawl / PVC / fill type plugs, gutties, etc.

**Wires: Mains / Sub-mains / Circuit mains (comprising phase and neutral wires)**

PVC insulated wire of specified size, minimum FR grade insulation, copper conductor, having insulation of 1.1 kV grade, ISI marked, of appropriate colour coding.

**Earth Continuity Wire:**

PVC insulated wire minimum FR grade insulation copper conductor of electrolytic grade, having insulation of 1.1 kV grade, of green or green yellow colour, ISI marked, of specified size.

**Lugs:** Copper lugs of appropriate type and size.

**Other material:** Rubber grommet, bush, flexible PVC conduit, gland etc.

**Method of Construction:**

**Erection PVC Conduits for Surface type wiring:**

**General:**

Erection shall be done as per the final approved layout, in perfect level and plumb. Conduits shall be firmly fixed on spacers with saddles. Fixing of spacers shall be equidistant and at ends, bends, elbows, junction boxes, couplings, boards. Screws of minimum 35x8 mm and suitable plugs shall be used for fixing spacers and 12x5 mm, round headed screws for fixing saddles on spacers. In case of stonewalls wooden gutties shall be grouted in wall for fixing of spacers. Distance between 2 spacers shall not be more than 600 mm. Size of conduit shall be correct depending on number of wires to be drawn. Separate pipe shall be used for each phase in 1-ph distribution and for power and light distribution. Adequate use of conduit accessories shall be made at required locations. Entries in wall shall be at level of surface conduit with colour coding. Flexible conduits shall be used at expansion joints.

**Especially for PVC Conduits of surface type wiring:**

In addition to general instructions above, all joints shall be made rigid with resin / adhesive. Wherever offsets are necessary, it shall be done with bending spring. Size of conduit shall be as per number of wires to be drawn through the conduit.

**Drawing of wires: General**

Wires shall be drawn with adequate care. Correct colour coding shall be used for phase, neutral and earth. Wires shall not have intermediate joint in between terminals of the accessories. Earth-wire and Return wire (neutral) may be looped only within circuit. For lighting load or single-phase distribution wires of two different phases shall not be drawn in single pipe. Lead wires of sufficient extra length shall be provided and shall be terminated in the terminals of accessories only, with appropriate type and size of lugs.

**Drawing of wires: through PVC conduits for surface type wiring**

Insulated Earth wire of green or green-yellow colour as per specified shall be drawn through conduit. Number of wires shall not exceed with respect to size of pipe. At the termination end flexible PVC conduit shall be used with gland as per required.

**Surface type Mains in PVC Trunking (casing capping)**

Providing specified PVC Trunking, Wires and erecting the Trunking as per approved Method of Construction; on surface of wall / ceiling, etc. including entries made with PVC conduit through walls / slabs / flooring as per requirement with all necessary hardware, accessories such as inner / outer Elbows, Tees, Junction boxes, etc; including erection of specified wires in PVC trunking, with coded ferrules and duly connecting with lugs, and finishing, removing debris from site; testing for safety and beneficial use.

**Material:**

**PVC Trunking:**

PVC Trunking (casing capping) ISI mark, 1.2 mm thick, minimum 20 mm width and above depending on No. of wires to be drawn; with double locking arrangement, 1.8mm thick push-fit joints/accessories for PVC trunking such as couplers, elbows, internal / external angles, junction boxes of required ways, Sheet Metal (SM) screws of sizes specified in Method of Construction, washers, raw / PVC / fill type plugs, wooden gutties, etc.

**Wires: Mains / Sub-mains / Circuit mains (comprising phase and neutral wires)**

PVC insulated wire of specified size, minimum FR grade insulation, copper conductor having insulation of 1.1 kV grade, ISI marked, of required colour coding.

**Earth Continuity Wire:** PVC insulated wire minimum FR grade insulation copper conductor having insulation of 1.1 kV grade, of green colour, ISI marked, of specified size.

**Lugs:** Copper lugs of appropriate type and size.

**Other material:** Flexible PVC conduit, gland coded ferrules, etc.

**Method of Construction:**

**Erection of PVC Trunking for surface type wiring**

Erection shall be done as per the final approved layout. The Trunking shall be in perfect level and plumb. Screws of minimum 35x8 mm and suitable plugs shall be used for fixing. In case of unlevelled surface number and size of screws shall be changed to higher size as per requirement and in case of stonewalls wooden gutties shall be grouted in wall for fixing of screws of Trunking. Distance between 2 screws shall not be more than 600 mm. Size of Trunking shall be correct depending on number of wires to be drawn but not less than 20mm. Separate Trunking shall be used for each phase in 1-ph distribution and distance of 300 mm shall be maintained between the Trunking. Double locking shall be checked while fixing capping. Adequate use of accessories shall be made at joints and required locations.

**Erecting wires in Trunking:**

Wires shall be erected within Trunking with adequate care. Correct colour coding shall be used for phase, neutral and earth. Wires shall not have intermediate joint in between terminals of the accessories. Earth-wire and Return wire (neutral) may be looped only within circuit. For lighting load or single-phase distribution wires of two different phases shall not be erected in single Trunking. Wires shall be terminated in the terminals of accessories only, with appropriate type and size of lugs. Insulated Earth wire of green or green-yellow colour of specified shall be erected through Trunking. Number of wires shall not exceed with respect to size of Trunking. After erection of wires double locking shall be checked while fixing capping. At the termination end flexible PVC conduit shall be used with gland as per requirement.

**N - Mains (Concealed type)**

**Concealed Mains in PVC Conduits in walls / flooring:**

Providing specified PVC conduit, Wires and laying / erecting the conduits in wall, flooring by making chases / grooves / entries as per approved Method of Construction along with of all required material including hardware such as 'U' nails, binding wire, fish wire; accessories such as PVC / MS junction boxes / inspection boxes, check-nuts, flexible PVC pipe, drawing fish-wires and making all piping rigid, refinishing the surface with

cement mortar, removing debris from site and as and when directed drawing of specified wires through these conduits with fish help of wire, tagging by coded ferrules and duly connecting / terminating with lugs, complete testing the installation for safety and beneficial use.

**Material:**

**PVC Conduit:**

PVC pipe minimum 20mm dia and above depending No. of wires to be drawn, ISI mark, HMS grade (2mm thick), accessories for PVC pipes of the same make that of pipe; Couplers, long Bends, Junction boxes of required ways and resin / adhesive to make all joints rigid.

**Junction boxes / Draw-in boxes:**

Junction box shall be 5 sided with removable top plate and of suitable size to accommodate No. of entries. There shall be knockout holes in required numbers and dia. for entry of conduit pipes and arrangement to fix cover plate on it.

**Hardware:**

'U' nails, plumbing and general use nails of required sizes, washers, check-nuts, steel binding wire 20g, steel fish wire, etc.

**Other material for Surface finishing:** Cement, sand, putty and water.

**Wires: Mains / Sub-mains / Circuit mains (comprising phase and neutral wires):**

PVC insulated wire of specified size, minimum FR grade insulation, copper conductor having insulation of 1.1 kV grade, ISI marked, of required colour coding

**Earth Continuity Wire:** PVC insulated wire minimum FR grade insulation copper conductor having insulation of 1.1 kV grade, of green / green-yellow colour, ISI marked, of specified size

**Lugs:** Copper lugs of appropriate size & type

**Other material for wire drawing:** Rubber grommet, bush, harnessing material, flexible conduit etc.

**Method of Construction:**

**Concealing of PVC conduits:**

**General:**

Work shall be done in co-ordination with civil work and to suite final approved layout. Size of conduit shall be correct depending on number of wires to be drawn. Separate pipe shall be used for each phase in 1-ph distribution and for power and light distribution. The distance between pipes shall not be less than 300 mm. Adequate use of conduit accessories shall be made at required locations. Entries in wall shall be at level of corresponding conduit with colour coding. Flexible conduits shall be used at expansion joints. Erection shall be done as per the layout finalized, with minimum sharp bends, with junction boxes at angular junctions and for straight runs at every 4.25m, in such manner so as to facilitate drawing of wires. All bending of conduits shall be done with Bending Spring. All joints shall be made rigid with resin.

**Concealing of PVC Conduits In walls / flooring:**

Chases shall be made in walls of adequate width, with cutter and chiseling through it. Necessary finishing of the wall surface shall be done. Work in flooring shall not disturb RCC work, Conduits of adequate size shall be erected with use of appropriate accessories, and 'U' nails. All joints shall be made rigid with resin. Draw-in / inspection boxes shall be fixed with check-nut, flush with surrounding surface and earthed.

**Drawing of wires:**

**General:**

Wires shall be drawn with adequate care. Correct colour coding shall be used for phase, neutral and earth. Wires shall not have intermediate joint in between terminals of the accessories. Earth-wire and Return wire (neutral) may be looped only within circuit. For lighting load or single-phase distribution wires of two different phases shall not be drawn in single pipe. Lead wires of sufficient extra length shall be provided and shall be terminated in the terminals of accessories only, with correct type of and correct size of lugs.

**Drawing of wires:**

**Through PVC conduits:**

Insulated Earth wire of green or green-yellow colour as per specified shall be drawn through pipe. Number of wires shall not exceed with respect to size of pipe. At the termination end flexible PVC conduit shall be used with gland as per necessity.

#### **EARTHING :**

**General :** Earthing shall confirm to the following specifications.

- For other details not covered in these specifications, relevant Indian Standards shall be referred to I.S. : 3043, 1965 (Code of Practice for Earthing).
- Earthing shall generally be carried out in accordance with the requirements of Indian Electricity Rules, 1956 as amended from time to time and the relevant Regulations of the Electricity Supply Authority concerned. The following clauses of the Indian Electricity Rules, 1956 are particularly applicable. 32, 51, 61, 61A, 62, 67, 69, 88(2) and 90.
- All earth connections shall be visible for inspection. All medium voltage equipment's shall be earthed by two separate and distinct connections with earth through an earth electrode. Each electrode shall be provided at consumer premises and substations according to the requirement.
- All materials, fittings etc. used in earthing shall confirm to the Indian Standards Specifications wherever these exist. In the case of materials for which I.S.S. do not exist, the same will be approved by the competent authority.
- Use of plate electrodes is recommended.
- Care shall be taken that the excavations for earth electrodes may not affect the column footings or foundations of the building; in such cases electrodes may be fixed further away from the building. The location of the earth electrode will be such where the soil has reasonable chance of remaining moist, as far as possible. Entrances, pavements and roadways, are to be definitely avoided for location of the earth electrode.

**Plate earth electrodes :** For Plate electrodes minimum dimension of the electrode shall be as under :

- a) Copper plate electrode - 600 mm x 600 mm x 3 mm thick.

The electrode shall be buried in ground with its face vertical and top not less than 3 meters below ground level.

**Watering arrangement :** In plate earth electrodes, a watering pipe of 20 mm dia of G.I. pipe shall be provided and attached to the electrode. A funnel with mesh shall be provided on the top of this pipe for watering the earth. In the case of pipe electrode a 40 mm x 20 mm reducer shall be used for fixing the funnel. The watering funnel attachment shall be housed in masonry enclosure not less than 300 mm deep. A 300 mm x 300 mm cast iron cover frame with hinged cover having locking arrangement shall be suitable embedded in the masonry enclosure.

**Artificial treatment of soil:** The earthing work shall be executed in accordance with PWD specifications. The electrode shall be surrounded by charcoal/coke and salt in alternate layers not less than 150 mm thick.

**Earthing lead :** (a) Main earthing lead – The main earthing lead shall be of Copper strip in Copper plate earth electrode. The earthing lead shall be not less than one-half of cross-sectional area of the largest conductor to be protected. The minimum size of main earthing lead shall not be less than 8 SWG copper wire, or 25 mm x 3 mm copper Strip. Loop earthing shall be provided for all mountings.

**Protection of earthing lead:** The earthing of main board and other metal-clad switches and distribution fuse boards with not less than 14 SWG copper wire lead from electrode onwards shall be suitably protected from mechanical injury by a 15 mm dia. pipe in case of wire and by 40 mm dia G.I. pipe in case of strip. Portion of the protection pipe within ground shall be buried at least 300 cm.

**Completion report:** After completion, test results on the prescribed proforma and cable route duly marked on the building site plan shall be submitted. The portion of the building etc. damaged during erection of installation shall be repaired properly.

#### **Technical Specifications for LED Lights**

##### **a - LED Downlight (Surface mounted Circular/Square shape) 20 Watt**

Input Power - 22 Watt

Life – >20000 hrs

CRI > 80

Mounting - Surface Mounting

Input voltage - AC 90-300 V  
Power Factor  $\geq 0.95$   
Colour Temp. °K - 6500K  
Lumen Output (lm) - 1650 or more

**c – LED Panel Lights**

Fixture Size – 2 x 2 feet  
Watt – 34-36 W  
Life – 50000 hours  
Power factor - 0.95 or more  
Colour temperature – not less than 5700 K

**d – LED Bulk Head, 10 Watt**

System wattage – 10 Watt  
Life – 50000 hrs  
CRI > 80  
Nominal Voltage (V) 240  
Power Factor  $\geq 0.90$   
Colour Temp. °K - 6500K  
Lumen Output (lm) - 600  
Ingress Protection – IP66  
Housing – High pressure die cast aluminium  
Cover – Polycarbonate  
Mounting - Surface Mounting

**Technical Specifications for Fans**

**Ceiling Fans**

Sweep – 1400mm  
Power input – not more than 80 Watt  
Air delivery – 250 CMM or more

**Exhaust Fan**

Heavy duty exhaust fan  
Sweep – 300mm  
Power input – not more than 90 watt  
Speed – 1400 rpm or more  
Air delivery – 1950 CMH or more  
Pre-lubricated double ball bearing for maintenance free running

**Fan Regulator**

- i) 5 step Electronic type Fan Regulator - The regulator shall be capable of reducing the speed of at least 50% of the full speed at the rated voltage. Fans shall be capable of running on all the running positions of the regulator at the rated voltage & shall conform to IS: 11037/1984 (Reaffirmed 2005).
- ii) The regulator may be of single/double module and have an OFF position preferably next to the lowest speed contact, and shall be provided with not less than five running positions except in case of continuously variable speed regulators.
- iii) The regulator handle or knob shall either be of insulating material, or if metal, shall be adequately

**Technical Specifications for Junction box**

IP Protection – IP65  
Material - PS

**List of Approved Make of Materials**

- 1 - Wires and cables (Multi strand FRLS) - Finolex, BCH, L&T, Polycab, Standard (Havells)
- 2 - Switches, Socket - Siemens, Philips, Legrand, L&T
- 3 - M.C.C.B, M.C.B & Isolator - BCH, Siemens, legrand, Schneider Electric, L&T, ABB

- 4 - Distribution Board – L&T, Legrand, BCH, Havells, ABB
- 5 – Batten, Junction Box – Finolex, Polycab, Havells/Equivalent
- 6 – GI Box – L&T, Legrand, Havells
- 7 – Modular plate - L&T, Siemens, Philips, Legrand Anchor
- 8 - Conduits - Polycab, AKG
- 9 – TPN MCB industrial socket outlet – L&T, Siemens, legrand, BCH/polycab
- 10 - Ceiling rose – L&T, Havells, Legrand, ROMA (Anchor)
- 11 - Fan Regulator - L&T, Siemens, Philips, Legrand, Polycab
- 12 – Ceiling Fan – USHA, STANDARD (Havells), CG
- 13 - Light Fixtures- OSHRAM, Philips, Syska, Havells Wipro
- 14 - CT - KAYCEE/L&T/MEECO/ Precise/Indcoil/G&M
- 15 - Power Cable Thimbles - DOWELLS/ASIAN
- 16 - Selector Switch - KAYCEE/SELZER
- 17 - LED Indicating lights - SIEMENS/SCHNEIDER ELECTRIC/BCH/L&T/Teknic
- 18 - Push Button - SIEMENS/SCHNEIDER ELECTRIC/BCH/L&T/Ligerand
- 19 - Digital Energy Meter - L&T/RISHABH/CONZERV/SEQUIRE
- 20 - Selector Switch- KAYCEE/SELZER
- 21 - XLPE CABLES UPTO 1.1 KV GRADE – RR Kabel, Havells, STANDARD (Havells), Finolex
- 22 – LED Projector & Kit– Casio, SONY, EPSON, Panasonic
- 23 – Amplifier, speaker & Mike – Ahuja, Bose
- 24 – Call bell – L&T, Havells, HPL, Anchor (Roma), Ligerand
- 25 – Solid electrolytic annealed bare copper conductor – D-link, Standard (Havells), RR Kabel
- 26 - Solid copper conductor UTP 4 pair CAT 6 LAN Cable – D-link, Standard (Havells), Digisol
- 27 - UTP CAT 6 DATA socket 1 module - Siemens, Philips, Legrand, L&T

**Note -**

- 1 – If any make is not in accordance with the tender specification bidder must submit technical specification of such material for approval otherwise it will not be accepted even if the make is indicated in the List of Approved Make of Materials
- 2 – The Employer reserve the right to select any of the make indicated in the List of Approved Make of Materials. The Contractor shall submit TS, make & model of the equipment/material along with manufacturer's broacher before execution of SITC of equipment/material.
- 3 - Any other items, if not specified above, should be either of the latest Indian standards or as per sample approved by Employer.
- 4 - In the absence of specifications for any work or materials, relevant Indian Standard Specifications shall be applicable. If such codes for a particular subject have not been framed, the decision of the Employer / Consultant will be final and binding.

Executive Engineer (E&M-II)  
Lakhwar Project, Dakpathar

**SECTION-V**

**BILL OF QUANTITY**

**SCHEDULE OF PRICES & QUANTITY (Part-II)**

**SCHEDULE OF PRICES & QUANTITY FOR E&M MAINTENANCE WORK OF LAKHWAR MPP OFFICES BUILDINGS AND RESIDENCE QUATERS AT DAKPATHAR AGAINST TENDER SPECIFICATION NO. 04/EE (E&M-II )/LP/2025-26.**

S.NO.	Description of work	Qty	Unit	Rate	Amount
1	<b>Supply / Fixing of Point wiring with Modular switch:</b> Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed steel conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable etc. as required.	10	Point		
2	<b>Supply/Fixing of Point wiring with Piano switch :</b> Wiring for light point/fan point/exhaust fan point/call bell point with 1.5 sqmm. FR PVC insulated copper conductor single core cable in surface/recessed PVC conduit, with piano type switch, phenolic, laminated sheet, suitable size MS Box and earthing the point with 1.5 sq.mm FR PVC insulated copper conductor single core cable etc as required.	300	Point		
3	2 x 1.5 sq. mm + 1 x 1.5 sq. mm earth wire	700	Meter		
4	2 x 2.5 sq. mm + 1 x 2.5 sq. mm earth wire	1200	Meter		
5	2 x 4 sq. mm + 1 x 4 sq. mm earth wire	700	Meter		
6	2 x 6 sq. mm + 1 x 6 sq. mm earth wire	500	Meter		
7	<b>Supply / Fixing of 5/6 A plug point modular type accessories:</b> Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	10	Nos		
8	<b>Supply/Fixing of power plug point modular type accessories:</b> Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	10	Nos		
9	<b>Supply / Fixing of 5/6 A plug point piano type accessories:</b> Supplying and fixing metal box of 150mm x 75mm x 60mm deep (nominal size) on surface or in recess with suitable size of phenolic laminated sheet cover in front including providing and fixing 3 pin 5/6 anos socket outlet and 5/6 amps piano type switch, connection, painting etc. as required.	200	Nos		

10	<b>Supply / Fixing of power plug point piano type accessories:</b> Supplying and fixing metal box of 180mm x 100mm x 60mm deep (nominal size) on surface or in recess with suitable size of phenolic laminated sheet cover in front including providing and fixing 6 pin 5/6- & 15/16-amps socket outlet and 15/16 amps piano type switch, connection, painting etc. as required.	200	Nos		
11	Supplying and fixing 3 pin, 5 A Ceiling Rose on the existing junction box/ wooden block including connection etc as required.	150	Nos		
12	Supplying and fixing brass batten/ angle holder including connection etc.as required.	200	Nos		
13	Supplying and fixing two module stepped type electronic Fan Regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	80	Nos		
14	Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.	50	Nos		
15	Supplying and fixing of Single Pole 5 A to 32 A rating, 240/415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.	125	Nos		
16	Supplying and fixing of 40 A, Double pole, 240 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.	25	Nos		
17	Supplying and fixing of 63 A, double pole, 240 V, isolator in the existing MCB DB complete with connections, testing and commissioning etc. as required.	30	Nos		
18	Supplying and fixing of 8 way , Double door way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator.	20	Nos		
19	Supplying and fixing of 12 way , Double door way, single pole and neutral, sheet steel, MCB distribution board,TPN type, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator	12	Nos		
20	Supplying and Fixing of 20 mm of Medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.	250	Meter		

21	Supplying and Fixing of 25 mm of Medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.	300	Meter		
22	Plate Earthing for electrical Works as per IS:3043 with Hot dipped G.I. Earth plate of size 600mm x 600mm x 6.0mm by embodying 3 to 4mtr. below the ground level with 20mm dia. G.I. 'B' class watering Pipe, including all accessories like nut, bolts, reducer, nipple, wire meshed funnel, and Heavy duty weather proof poly-propylene earth pit chamber with lockable Jam free lid suitable for safe working load 5000 Kg or more of size Top Dia. 225 to 260 mm, Bottom Dia 300 to 350 mm. and Height 250 to 300 mm. and embodying the pipe complete with alternate layers salt and coke/charcoal, testing of earth resistance for value of 5 ohms or less as required.	05	Set		
23	Supply & Laying following size earth wire in horizontal or vertical running round/surface/recess including riveting, soldering, saddles, making connection with GI/Cut symble etc. as required. (i)- 6SWG G.I.(Hot Dipped) Wire)	200	Meter		
24	Supply & Laying following size 'B' class, Medium class G.I.Pipe conforming to IS : 1239 P - 1 ( 2004 ) with accessories like bend, socket etc. for laying earth conductor/ strip /cable in ground/ surface/ recess as required (i)-50mmdia.G.I.Pipe Earthing.	50	Meter		
25	General Servicing of split Air conditioners of 1.5 Ton & 2 Ton	28	Nos		
26	Gas Filling in split Air conditioners of 1.5 Ton & 2 Ton	5	Nos		
27	Compressor Replacement of 1.5 Ton AC of different make i.e. Voltas, Hitachi	3	Nos		
28	Compressor Replacement of 2.0 Ton AC of different make i.e. Voltas, Hitachi	3	Nos		
29	General Servicing of split Air curtain for mass Dakpathar	1	No		
30	Motor rewinding with insulation of ceiling fan of 1200/1400 mm /wall fans/exhaust fans by the new copper wire Make-Atlas/H.T/Shakti 33, 34,35, 36,30 same gauge and turn as burnt coil. 2 coat Insulation varnish (Dr.Bech) on the new winding of ceiling fan & drying with oven. Complete work in all respect including all Labour T&P etc. required as per requirement.	25	Nos		

31	Supply & replacement of ball bearing of ceiling fans/wall fans/exhaust fans of various sizes as per requirement.	25	Nos		
32	Repairing of Single Phase Water Pump up to 2HP Motor repairing work in as required of Lakhwar Bhwan-I & II Dakpathar.	5	Nos		
Basic Amount Total in Rs.					
GST @ %					
Grand Total					

Basic Amount in Figure \_\_\_\_\_

**METHOD OF RATE BIDDING IN PRICE SCHEDULE:**

We hereby confirm and agree to the terms and conditions of the contract and if we succeed, the execution of supplies would be made in compliance. Further:

1. Quote the basic rate with GST of each items/Job in BOQ for tender evaluation. However, the quoted basic rates should be inclusive of Ex-works price/rate including packing, forwarding Transit Insurance Charges up to the destination and Freight Charges up to destination Site
2. Kindly read the SCC and technical specification of this tender carefully before submitting the BOQ. All the work/supply shall be done in accordance with technical specifications.
3. The rates is inclusive of loading, unloading, transportation with FOR at Dakpathar.
3. Water & electricity, if required, shall be made available at site by UJVN Limited for execution of work, free of cost.
4. Security deposit @10% of the value of the work executed shall be withheld which will be released (without interest) after completion of the defect liability period, which is one year from the date of completion of the work.
5. The work shall be completed within 12 Months from the date of award of work (including Saturday & Sunday).
6. Bidders are advised to visit the site prior submitting the bid for better plan & estimation.

**Name & Signature of the authorized Tenderer with stamp Contact details of authorized person of Tenderer who have signed the tender.**

1.Name.....

2.Desinnation.....

3.Mobile No.....

**SECTION - VI**  
**FORMS, SCHEDULES & SECURITIES**

DOWNLOADED

**FORM OF AGREEMENT**

**Annexure-A**

(On Non-Judicial Stamp Paper or Rs. 100.00)

**This agreement shall be signed after acceptance of tender offer**

**Agreement No. /EEII (E&M-)/LP//2023-24 Dated. . . 25**

**CONTRACT AGREEMENT**

This Agreement made on this **day.....of** , **between** the **Executive Engineer(E&M-II)**, Lakhwar Project, Lakhwar Bhawan-I, Dakpathar, UJVNL, Dehradun, a division of UJVN Ltd. Dehradun (hereinafter called "The Nigam") on one part and **M/S (Name & address of the contractor)**, (hereinafter called "The contractor") on the other part.

**WHERE AS** the Nigam invited offer for the E&M Maintenance work of Lakhwar Residence quaters and guest houses at Dakpathar vide Executive Engineer(E&M-II), Lakhwar Project, Lakhwar Bhawan-I, Dakpathar, UJVNL, Dehradun office tender notice no. 04/EE(E&M-II)/LP/2025-26 and requires execution of works specifically mentioned in schedule of quantities and bids, according to the provisions of contract (hereinafter called" The said Work").

AND WHEREAS the Nigam is desirous of executing the work for E&M Maintenance work of Lakhwar Residence quaters and guest houses at Dakpathar an early date for the benefits of the Nigam and whereas "The Nigam", has accepted the offer for the above said work as mentioned hereinafter:

AND WHEREAS the contractor has offered to execute all "the works" as per technical specification and conditions of contract mentioned hereinafter: NOW, THEREFORE, It is agreed between the parties here to as follows:

**ARTICLE-I**

**SCOPE OF WORKS:**

The contractor shall perform everything required to be performed and shall provide and furnish all material, labour (skilled/ unskilled), T & P etc. all required to perform and complete, in workmen like manner, all the work covered by the contract documents, in strict accordance with the specifications and conditions of this contract.

ARTICLE-II

**PAYMENTS:** The Nigam will have sufficient funds in Indian currency for the execution of the work and will pay the contractor in Indian currency for the performance of this contract and in accordance with the provisions embodied in the documents, made a part of this contract. And in consideration of the due provisions, execution, and completion of the said work and maintenance thereof, as aforesaid, the Nigam will pay to the contractor, the said sum of (Tender offer in rupees in figure & in words) only inclusive of all taxes or such other sums as may become payable to the contractor under the provisions of this contract. The payment shall be made against the work executed against the recorded measurements. The quantities may vary on either side as per the actual execution of the work.

ARTICLE-III

**TIME OF COMPLETION:** The work to be performed under this contract shall be commenced by the contractor immediately after the receipt of notice to proceed with the work and shall diligently execute the work for completion to the satisfaction of Officer-in-charge within the time schedule as provided in the conditions of the contract. The duration for completion of the said work is one year.

ARTICLE-IV

**COMPONENT PARTS OF THIS CONTRACT:** This contract consists of following component part all of which are as fully part of this contract as if herein set out verbatim or if not attached as if hereto attached.

- 2 Invitation of offer including annexure if any.
- 3 General Condition of contract
- 4 Special Conditions of Contract.
- 5 Schedule of quantities and bids.

IN WITNESS Whereof the parties hereto have hereinto set their respective hands and seal, the day, month and year first above written.

For and on behalf of the Contractor

For and on behalf of

the Nigam. Witness:

1.

1.

2.

2.

### APPLICATION FORM FOR TENDERER

(On a non-judicial stamp paper of ` 100/-)

**Annexure-**

**B**

#### AGREEMENT

Tender invited by .....

Tender For .....

Tender Notice No and Date .....

Name of the Tenderer .....

In consideration of UJVN Ltd having treated the tenderer to be an eligible person whose tender may be considered. The tenderer hereby agrees to the condition that the proposal in response to the above invitation shall not be withdrawn within three months from the date of opening of the tender and also to the condition that if thereafter the tenderer withdraws his proposal within the said period the Earnest Money deposited by him may be forfeited to the UJVN Ltd on the discretion of Engineer-in-charge.

Signed this ..... Day of .....

**SIGNATURE OF THE TENDERER**

Full Name..... **WITNESS**

1 .....

2 .....

**Annexure-D**

**BANK GUARANTEE FOR EARNEST MONEY DEPOSIT**

**General Manager (Civil)**  
**Lakhwar project, UJVNL,**  
**Dakpathar, Dehradun**  
Sir,

Whereas Messer's .....a company incorporated under the Indian Companies Act having its registered office at ..... a firm registered under the Indian Partnership Act and having its business office at...../Shri.....S/O.....Resident of .....Caring on business under the firm's name and style of M/s.....at.....Shri.....R/O.....Shri.....S/O.....R/O.....and Shri.....S/O.....R/O.....Partners carrying on business under the firm's name and style of Messer's .....at which is register partnership form (hereinafter called the "Tenderer") has /have in response to your tender Notice against specifications No.....for ..... offered to supply and / or execute the works as contained in the tenderer's letter No.....dated..... AND WHEREAS the Tenderer is required to furnish to you a Bank Guarantee for the sum of ` ..... as Earnest Money against the tenderer's offer as aforesaid. AND WHEREAS we ..... (Name of the Bank) have it request of the tenderer, agreed to give you this guarantee as hereinafter contained. NOW THEROFORE, in consideration of the promise we, the undersigned, hereby convenient that aforesaid tender of the tenderer shall remain open for acceptance by you during the period of validity as mentioned in the tender or any extension thereof as you and the tenderer may subsequently agree and if the tenderer shall , for any reason back out, whether expressly or impliedly, form his said tender during the period of its validity or any extension thereof as aforesaid we herby guarantee to you the payment of the sum of `..... On demands notwithstanding the existence of any dispute between the UJVN Ltd. and the tenderer in this regard and we hereby further agree as follows:-

- a) That you may without affection this guarantee grant time or other indulgence to or negative further with the tenderer in regard to the conditions contained in the said tender and thereby modify these conditions or add these to any further conditions as may be mutually agreed upon between you and the tenderer.
- b) That the guarantee be rein before contained shall not be affected by any change in the constitution of the tenderer.
- c) That the guarantee commences from the date thereof and shall remain force till the tender, if his tender is accepted by you, furnished the security as required under the said specifications and executes a formal agreement as therein provided or till four Months after the period of validity or the extended period of validity, as the case may be, of the tender whichever is earlier.
- d) That the expressions, "the Tenderer and the Bank" and the UJVN Ltd. herein used seal, unless such and interpretation is repugnant to the subject or context include their respective successes and assigns. e) That the account settled between you and the tenderer shall be conclusive evidence against us of the amount due hereunder and shall not be questioned by us.

Yours faithfully  
Signature of tenderer  
And seal if any

**PERFORMA FOR PERFORMANCE BANK GUARANTEE**

THIS DEED OF GUARANTEE MADE ON THE..... day of .....2022.....

By the..... (Hereinafter called 'the Guarantor') of the one PART IN FAVOUR OF the UJVN Ltd. (hereinafter called the Purchaser of the other part

WHEREAS in accordance with the contract agreement dated the.....day of ..... 201.....(hereinafter called 'the said Contract') entered in to between the purchaser and Messer's ..... a company within the meaning of the companies act and having its registered office at ..... (Hereinafter called 'the Contractor') the Contractor agrees to supply, erect, test & commission (strike off which is not applicable) to the Purchaser the..... as provided in the said Contract.

AND WHEREAS the payment terms under the Contract provide that in order to take 100% payment of the Contract value the contractor shall furnish to the purchaser a Bank Guarantee in the sum of 10% value of each consignment dispatched valid for .....

AND WHEREAS instead of furnishing separate guarantees as aforesaid the Contractor wishes to furnish one guarantee as sum of 10% value of the Contract valid for ..... and reckoned from the date.....

Now This Deed Witnesses as Follows

In consideration of the promises the Guarantor hereby undertakes that the Contractor shall duly supply, erect, test and commission (strike off which is not applicable) the aforesaid material of the correct quality and strictly in accordance with the said contract failing which the guarantor shall pay to the Purchaser on demand such amount or amounts as the Guarantor may be called upon to pay to the maximum aggregate of Rs. .... being 10% of the Contract value.

The Guarantor shall pay to the Purchaser on demand the sum under clause 1 above without demur and without requiring the Purchaser to invoke any legal remedy that may be available to it to compel the guarantor to pay the same or to compel such performance by the Contractor. Provided that where the Guarantor considers the demand of the Purchaser unjustified, it shall nevertheless pay the same though under protest to the Purchaser and shall not withhold payment on that account.

This guarantee shall come into force the date hereof and shall remain valid for 12 (Twelve)calendar months from the date of the Commissioning.... of the last consignment of goods dispatched which date dispatch according to the Contract is the ..... day of ..... if however, the period of the Contract is for any reason extended thereby extending the said date and upon such extension, if the Contractor fails to furnish a fresh or renewed bank guarantee for the extended period, the Guarantor shall pay to the Purchaser the said sum of Rs..... or such lesser sum as the Purchaser may demand.

The guarantee herein contained shall not be affected by any change in constitution of the Guarantor or of the Contractor. Any account settled between the Contractor and the Purchaser shall be conclusive evidence against the Guarantor of the amount due and shall not be questioned by the Guarantor. The neglect or forbearance of the Purchaser in enforcement of payment of any moneys the payment whereof is intended to be hereby secured or the giving of time by the Purchaser for the payment thereof shall in no way relieve the Guarantor of its liability under this deed. The Purchaser and the Contractor will be at liberty to carry out any modifications in the said Contract during the time of the said contract and any extension thereof, notice of which modifications to the guarantor is hereby waived. The expressions 'The Purchaser' and 'The Guarantor' and 'The Contractor' shall unless there be any thing repugnant to the subject or context includes their respective successors and assigns. Notwithstanding anything contained above, the liability of the Guarantor hereunder is restricted to the said sum of Rs..... and this guarantee shall expire on the ..... day of ..... 201 .....unless a claim under the guarantee is filled with the Guarantor within six months of such date, all claims shall lapse and the Guarantor shall be discharged from the guarantee.

IN WITNESS WHEREOF

For and on behalf of the Guarantor has signed this deed on the day and year first above written.

Witness:

Signed by (For and on behalf of Guarantor

**THIS WITNESS AS FOLLOWS NOW**

- 1- In consideration of the promise the Bank hereby undertakes to pay to the UJVN Ltd. on demand a sum not exceeding Rs..... Without demur and without requiring the UJVN Ltd. to invoke legal remedy that may be available to it compel the Bank to pay the same or to compel such performance by the Contractor.
- 2- This guarantee shall come into force from the date hereof and shall remain valid till the maintenance period as defined any reason extended and if the Contractor fails to furnish anything in clause hereof pay to extended period, the bank shall, notwithstanding anything in clause hereof, pay to the UJVN Ltd. the said sum of Rs..... or such lesser sum as the Nigam may demand to serve as security under the Contract
- 3- The UJVN Ltd. and the Contractor will be at liberty to carry out any modification to the said Contract during the terms of the said Contract and any extensions thereof notice of which modification to the Bank is hereby waived.
- 4- The guarantee herein contained shall not be affected by any change in the constitution of the Bank or of the Contractor.
- 5- The liability of the Bank under this guarantee is restricted to Rs. .... The guarantee shall, subject to the provisions of clause 2 above, remain in force till the ..... day of .....2025..... Unless a claim or demand under this guarantee is filled against the Bank within six months from that date, all the rights of the UJVN Ltd. under this guarantee shall be forfeited and the Bank shall be released and discharged from all liability hereunder

**IN WITNESS WHEREOF** ..... for and on behalf of the has signed this deed on the date first above written.

Witness:

- 1.....  
2.....

Signed by

the Bank

For and on behalf of



**Annexure-F**  
**AGREEMENT FOR VALIDITY**  
(On a non-judicial stamp paper of Rs 100/- )

Tender invited by .....  
Tender For .....  
Tender Notice No and Date .....  
Name of the Tenderer .....

In consideration of U J V N Ltd having treated the bidder to be an eligible person whose bid may be considered. The bidder hereby agrees to the terms & conditions of the bid. The bidder hereby agrees to the condition that the proposal in response to the above invitation shall not be withdrawn within **3(Three) months** from the date of opening of the bid or any extension to it made by UJVN Ltd. and also to the condition that if thereafter the bidder withdraws his proposal within the said period the Earnest Money deposited by him may be forfeited to the U J V N Ltd on the discretion of Engineer.

Signed this ..... Day of .....  
TENDERER SIGNATURE OF THE

Full Name.....

WITNESS

1 .....

2 .....

**FORM OF DECLARATION (On the letter head of Bidder)**

M/s \_\_\_\_\_ (*name of Bidders*) having its registered office at \_\_\_\_\_ (hereinafter referred to as "The Bidders") having carefully studied all the documents, specifications, drawings etc. pertaining to the Work for Supply & Construction of E&M Maintenance work of Lakhwar MPP Residence quarters and guest houses at Dakpathar. the local and site conditions and having undertaken to execute the said works.

DO HEREBY DECLARE THAT:

We are familiar with all the requirements of the Contract.

1. We have not been influenced by any statement or promise of any person of the Employer but only the Contract Documents.
2. We are financially solvent.
3. We are experienced and competent to perform the contract to the satisfaction of The Employer.
4. We are familiar with all the general and special laws, acts, ordinances, rules and regulations of the Municipalities, District, State and Central Government of India that may affect the work, its performance or personnel employed therein.
5. We hereby authorize the Employer to seek reference from the bankers of Bidders for its financial position.
6. We undertake to abide by all labour welfare legislations.
7. The statement submitted by us is true and correct.
8. None of the Proprietors/ Partners/ Directors are having any relatives employed or working with UJVN Limited at any of its offices.

In case at any stage, it is found that the information given by me is false/incorrect, Employer/Purchaser shall have the absolute right to take any action as deemed fit/without any prior intimation to me".

Date \_\_\_\_\_

Seal & Signature of Bidder \_\_\_\_\_

Address \_\_\_\_\_

Email ID \_\_\_\_\_

Contact Number \_\_\_\_\_



**AFFIDAVIT/UNDERTAKING**

( On a non-judicial stamp paper of Rs 10/-)

I/we, M/s .....

Do hereby undertake and affirm as under:.....Deponent

- 1. That I am the proprietor of firm  
M/s.....Address.....  
.....
- 2. That I am well conversant with affairs of firm.
- 3. That I/we Do here by certify that the statement/ document submitted are correct,  
Genuine & True.
- 4. That Contents of para 1 to 4 are true to my best knowledge and believe.

Place

Date

Deponent

**AFFIDAVIT/UNDERTAKING**  
**( On non judicial stamp Paper of Rs 10)**

***I/we, the undersigned do hereby certify that all statement made in required attachments to tender no-04/EE(E&M-II)/LP/2025-26 for E&M Maintenance work of Lakhwar MPP Residence quarters and guest houses at Dakpathar., are true and correct.***

*The undersigned also hereby certified that our firm M/s*

*..... has not been*

*Blacklisted/debarred/banned by Ministry under Govt. of India/Govt. of any state in India/Any of the Central Govt./State PSU's under Central/State Govt./Municipal Corporation Department at any stage of bidding in any tender/procurement process/in execution of supply and works.*

**Signature**

**Firm Seal**

**Date.....**

**AFFIDAVIT/UNDERTAKING**  
**( On non judicial stamp Paper of Rs 10)**

I, .....S/o  
.....Address..... Do hereby  
undertake and affirm as under:.....Deponent

1. That I am the proprietor of firm M/s.....  
Address.....  
.....
2. That I am well conversant with affairs of firm.
3. That there is No Litigation is pending against us in last five year by any Ministry under  
Govt.of India/Govt. of any state in India/Any of the Central Govt./State PSU's under  
Central/State Govt./Municipal Corporation Department.
4. That there is no Financial & Criminal case pending in any court of Law against us.
5. That Contents of para 1 to 4 are true to my best knowledge and believe.

Place

Date

Deponent

**SECTION-VII**

**FORM 'A'**

**GENERAL CONDITIONS OF CONTRACT**

**FOR**

**SUPPLY OF PLANT AND MACHINERY FOR WORK**

**IN THE**

**UJVN LIMITED**

## **SECTION-VI: GENERAL CONDITIONS OF CONTRACT (GCC) UJVN Limited**

### **General conditions of contract (GCC) for Supply of plants & the execution of works in the UJVN limited**

#### **1. Definition of Terms**

In construing these General Conditions and annexed Specification, the following words shall have the meaning herein assigned to them unless there is anything in the subject or context inconsistent with such construction.

The "Purchaser" shall mean the UJVN Limited and shall include his successors and assigns.

The "Contractor" shall mean the bidder whose bid shall be accepted by the Purchaser and shall include such Bidder's heirs, legal representatives, successors and assigns.

The "Sub-Contractor" shall mean the person named in the contract for any part of the work for any person to whom any part of the Contract has been sublet with the consent in writing of the Engineer and the heirs, legal representatives, successors and assigns of such person.

The "Engineer" shall mean the officer placing the order for the work with the Contractor and such other officer as may be duly authorized and appointed in writing by the Purchaser to act as Engineer for the purposes of the contract and in case where no such officer has been so appointed, the Purchaser or his duly authorized representative.

"Plant" , "Equipment" , "Material" , "Work" , or "Works" shall mean respectively the plant and materials to be provided and work or works to be done by the Contractor under the contract.

The "Contract" shall mean and include the General Conditions, Specifications, Schedules, Drawings, Form of Bid, Covering letter, Schedule of Prices or the final General Conditions, Specification and Drawings and the Agreement to be entered into under clause 3 of these General Conditions.

The "Specification" shall mean the Specification annexed to these General Conditions and the Schedules thereto (if any).

The "Site" shall mean the site of the proposed work as detailed in the Specification or any other place where work is to be executed under the Contract.

"Tests on Completion" shall mean such tests as are prescribed by the specification to be made by the Contractor before the plant is taken over by the purchaser.

"Commercial Use" shall mean that use of the work, which the contract contemplates or of which it is commercially capable.

"Month" shall mean calendar month.

"Writing" shall include any manuscript, typewritten or printed statement, under or over signature or seal, as the case may be.

Words importing persons shall include Firms, Companies, Corporations, and other bodies whether incorporated or not.

Words importing the singular only shall also include the plural and vice versa where the context requires.

#### **2. Contractor to inform him self fully**

The Contractor shall be deemed to have carefully examined the General Conditions, specifications, Schedules and Drawings. If he shall have any doubt as to the meaning of any portion of these General Conditions, or of the Specification he shall, before signing the Contract, set forth the particulars thereof and submit them to the Engineer in writing, in order that such doubt may be removed.

#### **3. Contract**

A formal agreement shall, if required by the Purchaser, be entered into between the Purchaser and the Contractor for the proper fulfillment of the Contract. Further, if required by the Purchaser,

the Contractor shall deposit with the purchaser as security for the due and faithful performance of the Contract such sum not being less than one per cent of the total value of the Contract as may be fixed by the Purchaser either in cash or any other form approved by the Purchaser.

The charges in respect of vetting and execution of the contract document shall be borne by the contractor. The contractor shall be furnished with an executed stamped counterpart of the agreement. The import license fee will, in each case, have to be paid by the contractor. Import license may have to be taken in the purchaser's name.

After the bid has been accepted by the Purchaser all order or instructions to the contractor shall, except as herein otherwise provided, be given by the Engineer on behalf of Purchaser.

#### **4. Contract Drawing**

The contractor shall submit in duplicate, to the Engineer for his approval, drawings of the General Arrangement of the works to be carried out and of such detailed drawings, other than shop drawings, as may be reasonably necessary.

Within fourteen days of the receipt of such drawings the Engineer shall signify his approval or otherwise of the same, and in the vent of disapproving the drawings, the Contractor shall submit further drawings for approval.

Within a reasonable period of the notification by the Engineer to the Contractor of his approval of such drawings, three sets, in ink or tracing cloth or Ferro gallic prints mounted on cloth, of the drawings as approved shall be supplied to him by the Contractor and be signed by him and the Contractor respectively and be thereafter deemed to be the "Contract drawings".

These drawings when so signed shall become the property of the Purchaser and be deposited with the Engineer, and shall not be departed from in any way whatsoever except by the written permission of the Engineer, as hereinafter provided. During the execution of the works, one of the sets of drawings shall be available for reference on the site.

In the event of the Contractor desiring to possess a signed set of drawings, he shall supply four sets instead of three sets and in this case the Engineer shall sign the fourth set and return the same to the Contractor.

The contractor, if required by the Engineer, shall supply in addition copies of any drawing other than shop drawings which may reasonably be required for the purpose of the Contract and may make a reasonable charge for such copies.

The Engineer or his duly authorized representatives whose name shall have previously been communicated in writing to the Contractor, shall have the right at all reasonable times to inspect, at the factory of the Contractor, drawings of any portion of the work.

#### **5. Mistakes in Drawings**

The contractor shall be responsible for and shall pay for any alterations of the work due to any discrepancies, errors or omissions in the drawings and other particulars supplied by him, whether such drawings or particulars have been approved by the Engineer or not, provided that if such discrepancies, errors or omissions are due to inaccurate information or particulars furnished to the Contractor by the Engineer any alterations in the work necessitated by reasons of such inaccurate information of particulars shall be paid for by the Purchaser.

If any dimensions figured upon a drawing or a plan differ from those obtained by scaling the drawing or plan the dimensions as figured upon the drawing or plan shall be taken as correct.

#### **6 Subletting of Contract**

The Contractor shall not, without consent in writing of the Engineer or Purchaser, which shall not be unreasonably withheld, assign or sublet his Contract, or any substantial part thereof other than for raw materials, for minor details, or for any part of the work of which the makers are named in the Contract provided that any such consent shall not relieve the Contractor from any obligation, duty or responsibility under the Contract.

#### **7. Patent Rights**

In the event of any claim or demand being made or action being brought against the Purchaser for infringement or alleged infringement of Letters patent, in respect of any machine, plant, work or thing used or supplied by the contractor under this Contract or in respect of any method of using or working by the Purchaser of such machine, plant, work or thing, the Contractor will indemnify the Purchaser against such claim or demand and all costs and expenses arising from or incurred by reasons of such claim of demand PROVIDED THAT the purchaser shall notify the Contractor immediately any claim is made and that the Contractor shall be at liberty, if he so desires, with the assistance of the Purchaser, if required but at the Contractor's own expense, to conduct all negotiations for the settlement of the same or any litigation that may arise there from and provided that no such machine, plant, work or thing shall be used by the Purchaser for any purpose or in any manner other than that for which they have been supplied by the Contractor and specified under this Contract.

#### **8 Quality of materials**

The plant shall be manufactured and constructed in the best and most substantial and most workmanlike manner and with materials of the best or of approved qualities for their respective uses.

**9. Packing**

The contractor shall be responsible for securely, protecting and packing the plant so as to avoid damage under normal Conditions of transport.

**10. Delivery**

The cost of delivering the whole of the material F.O.R. on the site as the specification may define and the cost of packing and , unless otherwise agreed , import duties and customs shall be borne by the Contractor. Fencing and lighting for works other than transmission lines

Except as hereinafter provided the purchaser shall, unless otherwise specified, be responsible for the proper fencing, guarding, lighting and watching of all works other than transmission lines comprised in the Contract and for as the proper provision of temporary roadways, footways, guards and fences as far as the same may be rendered necessary by reason of the work for the accommodation and protection of foot passengers or other traffic and of the owners and occupiers of adjacent property of the public. For transmission lines

The Contractor shall at all times provide sufficient fencing, notice boards, lights and watchmen to protect and warn the public and guard the work of transmission lines and in case the Contractor fails to make such provision or the provision made by him is considered by the Purchaser to be inadequate, the Purchaser may make such provisions or further provisions as he may consider necessary and charge the cost thereof to the Contractor. For all works

If during the period of erection of a plant the Contractor or his workmen or servants shall injure or destroy any part of a building or other structure continuous to the work in progress or if any damage shall be caused from any cause what so ever to other works whether in progress or completed forming part of the works for which the plant is being installed or if any imperfections become apparent in these works the causes of which imperfections are attributable to the Contractor or his workmen or servants, Contractor shall make good such damages and imperfections and if he fails to do so with in a reasonable time , the purchaser may cause the same to be made good and may deduct the cost thereof from any sum that may then or at any time thereafter become due to the Contractor or from his security deposit or the proceeds of sale thereof or of a sufficient portion thereof or may recover it otherwise.

**11. Power to vary or omit work**

No alterations, amendments, omissions, additions, suspensions or variations of the work (hereinafter referred to as "Variations") under the Contract as shown by the contract drawings or the Specifications shall be made by the Contractor except as directed in writing by the Engineer, but the Engineer shall have full power, subject to the provision hereinafter contained, from time to time during the execution of the Contract by notice in writing to instruct the Contractor to make such variations without prejudice to the Contract, and the Contractor shall carry out such instructions , and be bound by the same conditions, as far as applicable, as though the said variations occurred in the specification. If any suggested variations would, in the opinion of the Contractor, if carried out, prevent him from fulfilling any of the obligations or guarantees under the Contract, he shall notify the Engineer thereof in writing, and the Engineer shall decide forthwith whether or not the same shall be carried out, and if the Engineer confirms his instructions, the Contractor's obligations and guarantees shall be modified to such an extent as may be justified. The difference of cost if any, occasioned by any such variations, shall be added to, or deducted from, the contract price as the case may require. The amount of such difference, if any, shall be ascertained and determined in accordance with the rates specified in the Schedule of Prices, so far as the same may be applicable and where the rates are not contained in the said Schedules, or are not applicable, they shall be settled by the Engineer and Contractor jointly, as far as possible, before such variations are carried out: Provided that the Purchaser shall not become liable for the payment of any charge in respect of any such variations, unless the instruction for the performance of the same shall have been given in writing by the Engineer. In the event of the Engineer requiring any variations, such reasonable and proper notice shall be given to the Contractor as will enable him to make his arrangements accordingly, and in case where goods or materials have already been prepared or any designs, drawings, or patterns have been made or work done that require to be altered, the Engineer shall allow such Compensation in respect thereof as he shall consider reasonable. Provided that no such variations shall, except with the consent in writing of the Contractor, be such as will involve an increase or decrease of the total price payable under the contract by more than 10% thereof.

In every case in which the Contractor shall receive instructions from the Engineer for carrying out any work which either then or later will, in the opinion of the Contractor, involve a claim for additional payment, the Contractor shall as soon as reasonably possible after the receipt of such instructions, inform the Engineer of such claim for additional payment.

**12. Negligence**

If the Contractor shall neglect to execute the work with due diligence and expedition, or shall refuse or neglect to comply with any reasonable orders given to him in writing by the Engineer in connection with the work, or shall contravene any provision of the Contract, the Purchaser may give seven day's notice in writing to the Contractor, to make good the failure, neglect, or contravention complained of, and if the Contractor shall fail to comply with the notice within a reasonable time from the date of service thereof, in the case of a failure, neglect, or contravention capable of being made good within that time, then in such case the Purchaser shall be at liberty to employ other workmen, and forthwith perform such work as the Contractor may have neglected to do, or if the Purchaser shall think fit, it shall be lawful for him to take the work wholly, or in part, out of Contractor's hands and give it to another person on contract at a reasonable price or provide any other materials, tools, tackle or labour for the purpose of completing the work, or any part thereof, and in that event the Purchaser shall without being responsible to the Contractor for fair wear and tear of the same, have the free use of all the materials, tools, tackle or other things which may be on the site, for use at any time in connection with the work to the exclusion of any right of the Contractor over the same, and the Purchaser shall be entitled to retain and apply any balance which may be otherwise due on the Contract by him to the Contractor or such part thereof as may be necessary to the payment of the cost of executing such work as aforesaid.

If the cost of executing the work as aforesaid shall exceed the balance due to the Contractor, and Contractor fails to make good the deficiency, the Purchaser may recover it from the Contractor in any lawful manner or the Purchaser may sell the said materials, tools, tackle or other things belonging to the Contractor, and the proceeds such sale shall be applied towards the payment of such deficiency and the cost of and incidental to such sale and any balance remaining after crediting the same shall be paid to the Contractor on the certificate of the Engineer, provided that when all expenses

, costs and charges incurred in the completion of the work are paid by the Contractor, all such materials, tools, tackle or other things remaining unsold shall be removed by the Contractor.

**13. Deaths Bankruptcy etc.**

If the Contractor shall die or commit any act of Bankruptcy, or being a corporation commence to be wound up except for reconstruction purposes or carry on its business under a Receiver, the executors, successors, or other representative in law of the estate of the Contractor or any such Receiver, liquidator, or any person in whom the contract may become vested, shall forthwith give notice thereof in writing to the Purchaser and shall for one month, during which he shall take all reasonable steps to prevent a stoppage of the works, have the option of carrying out the contract, subject to his or their providing such guarantee as may be required by the Purchaser, but not exceeding the value of the work, for the time being remaining unexecuted. In the event of stoppage of the works, period of the option under this clause shall be fourteen days only, provided that, should the above option not be exercised, the contract may be determined by the purchaser by notice in writing to the contractor, and the purchaser may exercise the same power which he could exercise and will have the same rights which he would have under the last preceding clause if the work had been taken out of the contractor's hands under that clause.

**14. Inspection and testing**

The Engineer, and his duly authorized representatives, shall have at all reasonable times access to the Contractor's premises, and shall have, the powers at all reasonable times, to inspect and examine the materials and workmanship of the plant during its manufacture there, and if part of the plant is being manufactured on other premises, the Contractor shall obtain for the Engineer and for his duly authorized representative permission to inspect it as if the plant was manufactured on the Contractor's own premises.

The Engineer shall, on giving seven day's notices in writing to the Contractor setting out any ground of objections which he may have in respect of the work, be at liberty to reject all or any plant or workmanship connected with such work, which, in his opinion, are not in accordance with the Contract, or are, in his opinion, defective for any reason whatsoever: Provided that, if

such notice be not sent to the Contractor within reasonable time after the grounds upon which such notice is based have come to the knowledge of the Engineer, he shall not be entitled to reject the said plant or workmanship on such grounds. Unless specifically provided otherwise all tests shall be made at Contractor's works before shipment.

The Contractor shall, if required, give the Engineer notice of any material being ready for testing, and the Engineer, or his said representative, if so desired, shall, on giving twenty four hours previous notice in writing to the Contractor, attend at the Contractor's premises within seven days of the date on which the material is notified as being ready; failing which visit the contractor may proceed with the tests, which shall be deemed to have been made in the Engineer's presence, and he shall forthwith forward to the Engineer duly certified copies of the tests induplicate.

#### Test at Contractor's premises

In all cases where the Contract provides for tests, whether at the premises of the Contractor or of any sub- contractor, the Contractor, except where otherwise specified, shall provide, free of charge such labour, materials, electricity, fuel, water, stores, apparatus and instruments as may reasonably be demanded to carry out efficiently such tests of the plant in accordance with the Contract and shall give facilities to the Engineer or to his authorized representative to accomplish such testing.

If special tests, other than those specified in the Contract are required they shall be paid for by the Purchaser as "Variation" under clause 12.

When the tests have been satisfactorily completed at the Contractor's works the Engineer shall issue a certificate to that effect. Test onsite

In all cases where the Contract provides for tests on the site, the Purchaser, except otherwise specified, shall provide, free of charge, such labour, materials, electricity, fuel, water, stores, apparatus and instruments as may be required from time to time and as may reasonably be demanded, efficiently to carry out such tests of the plant or workmanship in accordance with the Contract. In the case of contractor requiring electricity for tests on site such electricity shall be supplied to the Contractor in the most convenient from available.

#### 15. Delivery of Plant

The plant or material shall not be forwarded until shipping /dispatch instruction shall have been given to the Contractor. Notification of delivery or dispatch in regard to each and every consignment shall be made to the Purchaser immediately after dispatch or delivery. The supplier shall further supply to the Consignee a priced invoice and packing account of all stores delivered or dispatched by him. All packages, containers, bundles and loose materials forming part of each and every consignment shall be described in full in the packing account and full details of the contents of packages and quantity of materials shall be given to enable the Consignee to check the stores on arrival at destination.

#### 16. Access to site and work onsite

Suitable access to, and possession of the site shall be afforded to the Contractor by the Purchaser in reasonable time, and the Purchaser shall have any foundations to be provided by him ready when required by the Contractor. Where a crane is available ,

Its safe lifting capacity shall be stated in the Specification , and it shall be available for free use of the Contractor until plant is taken over.

Only applicable to complete erection Contracts

The work , so far as it is carried out on the Purchaser's premises , shall be carried out at such time as the Purchaser may approve , and so as not to interfere unnecessarily with the conduct of the purchaser's business

, but the Purchaser shall give the Contractor all reasonable facilities for carrying out the work. No person other than the Contractor, subcontractors and workmen and the Contractor's duly authorized agents shall , except with the special permission in writing , of the Engineer or his representative , be allowed to do any work on the site in connection with the erection of the work , but access to the works shall at all times be accorded to the Engineer and his representatives and other authorized officials of the Purchaser.

The Contractor shall permit the execution of work by other contractors or tradesmen whose names shall have been previously communicated in writing to the Contractor by the Engineer, and afford them every facility for the execution of their several works simultaneously with his own.

The Purchaser shall provide all the unskilled labour and facilities necessary for the execution of work included in the Contract unless otherwise specified.

**17. Engineer's Supervision**

All the works shall be carried out under the direction and to the reasonable satisfaction of the Engineer. If supervision of erection or complete erection is included in the contract, the Contractor shall be responsible for the correctness of the positions, levels and dimensions of the works according to the drawings notwithstanding that he may have been assisted by the Engineer in setting out the same.

**18. Engineer's decision**

In respect of all matters, which are left to the decision of the Engineer, including the granting or withholding of certificates, the Engineer shall, if required so to do by the Contractor, give in writing a decision thereon, and his reasons for such decision. If the decision is not accepted by the Contractor, the matter shall at the request of the Contractor, be referred to arbitration under the provision for arbitration hereinafter contained but subject to this right of reference to arbitration such decision shall be final and binding on the Contractor.

**19. Contractor's representative and workmen**

If the supervision of erection or complete erection is also included in the Contract, the Contractor shall employ at least one competent representative, whose name or names shall have previously been communicated in writing to the Engineer by the Contractor to superintend the erection of the plant and the carrying out of the works. The said representative, or if more than one shall be employed, then one of such representatives shall be present on the site during working hours, and any written orders or instructions which the Engineer or his duly authorized representative whose name shall have been previously communicated in writing to the Contractor may give to the said representative of the Contractor shall be deemed to have been given to the Contractor.

The Engineer shall be at liberty to object to any representative or person employed by the Contractor in the execution of or otherwise about the works who shall in his opinion misconduct himself or be incompetent or negligent, and the Contractor shall remove the person so objected to upon receipt from the Engineer of notice in writing requiring him so to do, and shall provide in his place a competent representative at the Contractor's expense.

The purchaser shall provide suitable living accommodation on the site for the use of the Contractor's representative unless the Contractor exempts him from his liability.

**20. Liability for accidents and damage**

The Contractor shall be responsible for the loss, damage or depreciation of the plant until the same is taken over under clause 35 or is deemed under that clause to have been taken over, provided ALWAYS that the Contractor shall not be responsible for any such loss, damage and depreciation occurring during such period that plant is operated by the Purchaser's staff prior to being taken over in accordance with clause 35.

Until the plant is taken over or is deemed to have been taken over as aforesaid, the Contractor shall also be liable for and shall indemnify the Purchaser in respect of all injury to person or damage to property resulting from the negligence of the Contractor or his workmen or sub-contractors or from defective design or work, but not from any other cause: Provided that the Contractor shall not be liable for any loss of profit or loss of Contract or any other claim made against the Purchaser not already provided for in the Contract, nor for any injury or damage caused by or arising from the acts of the Purchaser or of any other person, or due to circumstances over which the Contractor has no control, nor shall his total liability for loss, damage or injury under this clause exceed the total value of the Contract.

Only applicable to complete erection contract The Contractor will indemnify and save harmless the Purchaser against all actions, suits, claims costs, or expenses arising in connection with injuries other than such as may be attributable to the Purchaser or his employees suffered prior to the date when the plant shall have been taken over under clause 35 hereof, by persons employed by the Contractor or his sub-Contractor on the works, whether at Common Law or under the Workmen's Compensation Act 1923, or any other Statue in force at the date of Contract relating to the question of the liability of employees for injuries suffered by employees, and will, if called up to do so, take out the necessary policy or policies of insurance to cover such indemnity.

In the event of any claim being made ,or action brought against the Purchaser involving the Contractor and arising out of the matters referred to and in respect of which the Contractor is liable under this clause , the Contractor shall be immediately notified thereof and he shall , with the assistance , if he so require , of the Purchaser , but at the sole expense of the Contractor , conduct all negotiations for the settlement of the same or any litigation that may arise there from. In such case, the Purchaser shall , at the request and expense of the Contractor , afford all reasonable and available assistance for any such purpose.

**21. Insurance**

The Contractor shall insure the plant and shall keep it insured against loss by theft, destruction or damage by fire, flood, undue exposure to the weather , or through riot , civil commotion , war or rebellion , for the full value of the plant from the time of delivery F.O.R. works until the plant is taken over under clause 35. This insurance shall cover loss by theft on site in the case of Contracts where the Contractor is responsible for complete erection, but not in other cases.

**22. Replacement of defective plant or materials**

If during the progress of the work the Engineer shall decide and notify in writing to the Contractor that the Contractor has executed any unsound or imperfect work or has supplied any plant inferior in quality to that specified, the contractor, on receiving details of such defects or deficiency shall, at his own expense, within such time as may be reasonably necessary for making it good , proceed to alter, reconstruct or remove such work , or supply fresh materials up to the standard of the specification, and in case the Contractor shall fail so to do, the purchaser may, on giving the Contractor seven day's notice in writing of his intention so to do, proceed to remove the work complained of , and at the cost of the Contractor , perform all such works or supply all such materials , provided that nothing in this clause shall be deemed to deprive the purchaser of or affect any rights under the Contract which he may otherwise have in respect of such defects or deficiencies.

**23. Deduction from contract price**

All costs, damages or expenses which the purchaser may have paid, for which under the Contract the Contractor is liable, may be deducted by the Purchaser from any money due or which may become due by him to the Contractor under this contract, or may be recovered by suit or otherwise from the contractor.

Any some of money due and payable to the Contractor (including security deposit returnable to him under this contract )may be appropriated by the Purchaser and set off against any claim of the Purchaser for the payment of a sum of money arising out of or under any other contract made by the contractor with the Purchaser.

**24. Terms of payment**

- (i) Subject to any deduction which the Purchaser maybe authorized to make under the contract, or subject to any additions or deductions provided for under clause 12, the contractor shall, be entitled to payments as follows
- a. Eighty per-cent of the F.O.R. contract value of the plant in rupees on receipt by the Purchaser of the Contractor's invoice giving the number and date of the railway receipt covering the dispatch of the plant from the Indian port and of the advice note giving case number and contents, together with a certificate by the Contractor to the effect that the plant detailed in the said advice note has actually been dispatched under the said railway receipt and that the Contract value of the said plant so dispatched is not less than the amount entered in the invoice.
  - b. Ten percent of F.O.R. Contract value of the plant on satisfactory completion of test and taking over the plant.
  - c. Ten percent of the F.O.R. Contract value of the plant at the end of twelve months from the date of taking over.
  - d. For the erection of the plant , in proportion on the progress of the work on the receipt by the Purchaser of monthly invoices submitted by the Contractor supported by the certificates of the Engineer. If at the time at which either of the installments due under Sub-clause (b) and (c) of clause (i) hereof becomes payable there are minor defects in the plant which are not of such importance as to effect the full commercial use of the plant, then the purchaser shall be entitled to retain such part of the installments then due as represents the cost of making good such minor defects, and any sum so retained shall, subject to the provisions of clause 36, become due upon such minor defects being made good.

If the Purchaser desires that the plant or any portion should not be dispatched by the contractor when it is due for dispatch, the Contractor shall store such plant or portion at his works and be

responsible for all risks. For such storage the Purchaser shall pay to the contractor at a rate to be mutually agreed upon between the parties but not exceeding Rs.15 (fifteen rupees) per ton per week payable quarterly plus interest @ 1 percent per annum above the current rate of the State Bank of India, on 80 per cent of the contract value of the plant or portion thereof so stored, for the period from the date on which the said plant or portion becomes due and is ready for shipment up to the date on which it is actually shipped .

25(A). In the event of the supplier/Contractor/company not being able to supply the materials or to carry out the works in accordance with the terms of this contract, the Nigam/Purchaser/Owner shall have the right to recover any sums advanced in accordance with the clause 25 from the supplier /Contractor/company and from his/its assets.

**26. Provisional sums**

In any case where the contract price includes a provisional sum to be provided by the contractor for meeting the expenses of extra work or for work to be done or materials to be supplied by a sub-contractor, such sum shall be expended or used, either wholly or in part, or be not used at the discretion of the Engineer and entirely as he may decide and direct. If no part or only a part thereof be used, then the whole or the part not used, as the case may be, shall be deducted from the contract price. If the sum used is more than such provisional sum the contractor shall pay the excess. In the case of material, supplied or work done by a sub- Contractor, the total of the net sum paid to the sub-contractor on account of such material or works and a sum equal to 10 percent of net sum allowed as contractor's profit shall be deemed to be the sum used. None of the work or articles to which such sum of money refers shall be done or purchased without the written order of the Engineer. The Contractor shall allow the sub-contractor every facility for the supply of materials or execution of their several works simultaneously with his own, and shall, within fourteen days after the engineer has requested him in writing so to do, pay the dues of such Sub-Contractors on account of such materials or works : PROVIDED ALWAYS that the contractor shall have no responsibility with regard to such works or articles unless he shall have previously approved the sub-contractor and/or the material or plant to be supplied.

**27. Certificates of Engineer**

Every application to the Engineer for a certificate must be accompanied by a detailed invoice (in duplicate) setting forth in the order of the Schedule of prices, particulars of the plant supplied and the certificates as to such plant as is in the reasonable opinion of the Engineer, in accordance with the Contract shall be issued within fourteen days of the application for the same. as is reasonably necessary on communication with the site.

The Engineer may, by any certificate, make any correction or modification in any previous certificate which shall have been issued by him and payments shall be regulated and adjusted accordingly.

**28. Due date of payment**

Payment shall be due and payable by the Purchaser in accordance with the provisions of clause 25 hereof at the end of the month following that in which invoices for the amounts due together with necessary documents are received by the Purchaser, provided that the Purchaser shall not be bound to make any payment under sub-clause (a) of clause 25 unless the amount of such payment represents at least 8 percent of the total contract value of the plant.

5-Certified not to effect rights of the Purchaser or contractor No certificate of the Engineer on account, nor any sum paid on account by the Purchaser, nor any extension of time granted under clause 31 shall affect or prejudice the rights of the Purchaser against the Contractor, either under this Agreement or under the law, or relieve the Contractor of his obligations for the due performance of the contract, or be interpreted as approval of the work or of the material supplied. No certificate of the Engineer shall create liability on the purchaser to pay for any alternation, amendments, variations or additions not ordered in writing by the Engineer, or absolve the Contractor of his liability for the payment of damages whether due, ascertained, or certified or not or of any sum against the payment of which he is bound to indemnify the Purchaser nor shall any such certificate nor the acceptance by him of any sum paid on account or otherwise affect or prejudice the rights of the Contractor against the Purchaser, under this agreement or under the law.

**30. Suspension of works**

The purchaser shall pay to the Contractor all reasonable expenses, incurred by the contractor by reason of suspension of the work or delay in shipment by order in writing of the Purchaser or the

Engineer unless such suspension or delay shall be due to some default on the part of the Contractor or Sub-Contractor.

**31. Extension of time for completion**

The time given to the Contractor for dispatch, delivery, erection or completion, as the case may be, shall be reckoned from the date of receipt by the Contractor of the order, together with all necessary information and drawings, to enable the work to be put in hand. In all cases in which progress shall be delayed by strikes, lockouts, fire accidents, defective materials, delays in approval of drawings or any cause whatsoever beyond the reasonable control of the Contractor, and whether such delays or impediment shall occur before or after the time or extended time, for dispatch, erection or completion, a reasonable extension of time shall be granted.

**32. Price reduction clause**

If the Contractor shall fail in the due performance of his Contract within the time fixed by the Contract or any extension thereof, the Contractor agrees to accept a reduction of the Contract price by half percent per week reckoned on the contract value of such portion only of the plant as cannot, in consequence of the delay, be used commercially and efficiently during each week between the appointed or extended time, as the case may be, and the actual time of acceptance under clause 35, and such reduction shall be in full satisfaction of the Contractor's liability for delay but shall not in any case exceed 10 per cent of the contract value of such portion of the plant.

**33. Test on completion**

Whenever possible all tests shall be carried out before shipment. Should, however, it be necessary for the final test as to performance and guarantees to be held over until plant is erected at site, they shall be carried out in the presence of the Contractor's representative within one month of completion of erection. If the result of these tests shall not come within the margin specified, the tests shall, if required, be repeated within one month from the date the plant is ready for re-test, and the Contractor shall re-pay to the Purchaser all reasonable expenses to which he may be put by such tests.

**34. Rejection of defective plant**

If the completed plant, or any portion thereof, before it is taken over under clause 35 be found to be defective, or fails to fulfill the requirements of the Contract, the Engineer shall give the Contractor notice setting forth particulars of such defects of failure, and the Contractor shall forthwith make the defective plant good, or alter the same to make it comply with the requirements of contract. If the Contractor fails to do so within a reasonable time the Purchaser may reject and replace, at the cost of the contractor, the whole or any portion of the plant, as the case may be, which is defective, or fails to fulfill the requirements of the Contract. Such replacement shall be carried out by the purchaser within a reasonable time and a reasonable price, and where reasonably possible to the same specification and under competitive conditions. In case of such replacement by the Purchaser the Contractor shall be liable to pay to the Purchaser the extra cost, if any, of such replacement delivered and /or erected as provided for in the original Contract, such extra cost being the ascertained difference between the price paid by the purchaser, under the provisions above mentioned, for such replacement and the Contract price for the plant so replaced and also to repay any sum paid by the Purchaser to the contractor in respect of such defective Plant. If the Purchaser does not so replace the rejected plant within a reasonable time, the contractor shall be liable only to repay to the Purchaser all moneys paid by the Purchaser to him in respect of such plant.

In the event of such rejection, the Purchaser shall be entitled to the use of the plant in a reasonable and proper manner for a time reasonably sufficient to enable him to obtain other replacement plant. During the period the rejected plant is used commercially the Contractor shall be entitled to a reasonable sum as payment for such use.

**35. Taking over**

Where the specification calls for performance tests before shipment and these have been successfully carried out, the plant shall be accepted and taken over when it has been satisfactorily put into operation on site, or within one month of its being ready to be put into operation whichever shall be the earlier and the Engineer shall forth issue a Taking over Certificate. In the event of final or any outstanding tests being held over until the plant is erected, such Taking over Certificate shall be issued subject to the results of such final or outstanding

tests which shall be carried out in accordance with clause 33.

When the Specification calls for tests on site the plant shall be taken over and the Taking-over Certificate issued immediately after such tests have been satisfactorily carried out.

If for any reason other than the default of the Contractor such last-mentioned tests on site shall not be carried out within one month of notice by the Contractor to the Purchaser of the plant being ready for test the plant shall be deemed to have been taken over as on the last day of such period and payments due to the Contractor on taking over shall be made, but nevertheless the Contractor shall, if called upon so to do by the Purchaser, but at Purchaser's expense, make the said tests during the maintenance period and accept as aforesaid under the same obligation as specification Clause 33.

The Engineer shall not delay the issue of any Taking over Certificate contemplated by this clause on account of minor deficiencies of material or defects in the plant which don't materially affect the commercial use thereof, provided that the Contractor shall undertake to make good the same in due course.

### **36. Maintenance**

For a period of 12 (twelve) calendar months commencing from the date on which the plant is taken over is deemed to have been taken over under clause 35 (called "the maintenance period"), the Contractor shall remain liable to replace any defective parts that may develop in plant of his own manufacture or those of his sub-contractors approved under clause 6, under conditions provided for by the Contract under proper use and arising solely from faulty design, materials or workmanship: PROVIDED ALWAYS that such defective parts as are not repairable at the site and are not essential in the meantime to the maintenance in commercial use of the plant, are promptly returned to the Contractor's works at the expense of the Contractor unless otherwise arranged.

If it becomes necessary for the Contractor to replace or renew any defective parts of the plant under this clause, the provisions of the first paragraph of this clause shall apply to the parts of the plant so replaced or renewed until the expiration of six months from the date of such replacement or renewal or until the end of the above mentioned period of the twelve months whichever may be the later. If any defects be not remedied within a reasonable time, the Purchaser may proceed to do the work at the Contractor's risk and expense, but without prejudice to any other rights which the purchaser may have against the Contractor in respect of such defects.

The repaired or new parts will be delivered in accordance with clause 10. The Contractor shall bear reasonable cost of minor repairs carried out on his behalf at site.

At the end of the maintenance period the Contractor's liability shall cease. In respect of goods not covered by the first paragraph of this clause, the Purchaser shall be entitled to the benefit of any guarantee given to the Contractor by the original supplier or manufacturer of such goods.

### **37. Regulations of Local Authorities**

The Purchaser shall, throughout the continuance of the Contract and in respect of all matters arising in the performance thereof, serve all notices and obtain all consents, way-leaves, approval and permission required in connection with the regulations and by-laws of any local or other authority which shall be applicable to the works.

All works shall be executed in accordance with the Indian Electricity Rules, 1956 and any statutory modifications thereof, wherever are applicable, unless otherwise agreed to in writing by the Engineer

### **38. Settlement of Disputes**

"Adjudicator" means the person appointed by agreement between the Purchaser and the Contractor to make a decision on or to settle any dispute or difference between the Purchaser and the Contractor referred to him or her by the parties pursuant to GCC Sub-Clause 38.1 (Adjudicator) hereof. In the event of failure on the part of parties to agree to the appointment of Adjudicator, Adjudicator shall be appointed at the request of either party by the appointing authority.

#### **Adjudicator**

If any dispute of any kind whatsoever shall arise between the Purchaser and the Contractor in connection with or arising out of the Contract, including without

prejudice to the generality of the foregoing, any question regarding its existence, validity or termination, or the execution of the Facilities - whether during the progress of the Facilities or after their completion and whether before or after the termination, abandonment or breach of the Contract - the parties shall seek to resolve any such dispute or difference by mutual consultation. If the parties fail to resolve such a dispute or difference by mutual consultation, then the dispute shall be referred in writing by either party to the Adjudicator, with a copy to the other party.

The Adjudicator shall give its decision in writing to both parties within twenty eight (28) days of a dispute being referred to it. If the Adjudicator has done so, and no notice of intention to commence arbitration has been given by either the Purchaser or the Contractor within fifty six (56) days of such reference, the decision shall become final and binding upon the Purchaser and the Contractor. Any decision that has become final and binding shall be implemented by the parties forthwith.

The Adjudicator shall be paid a daily fee for the hearings at the rate decided and agreed upon between the parties and the Adjudicator plus reasonable expenditures incurred in the execution of its duties as Adjudicator, and these costs shall be divided equally between the Purchaser and the Contractor.

Should the Adjudicator resign or die, or should the Purchaser and the Contractor agree that the Adjudicator is not fulfilling its functions in accordance with the provisions of the Contract, a new Adjudicator shall be jointly appointed by the Purchaser and the Contractor. Failing agreement between the two within twenty eight (28) days, the new Adjudicator shall be appointed at the request of either party by the Appointing Authority.

#### **Arbitration**

If either the Purchaser or the Contractor is dissatisfied with the Adjudicator's decision, or if the Adjudicator fails to give a decision within twenty eight (28) days of a dispute being referred to it, then either the Purchaser or the Contractor may, within fifty-six (56) days of such reference, give notice to the other party, with a copy for information to the Adjudicator, of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given.

Any dispute in respect of which a notice of intention to commence arbitration has been given, in accordance with GCC Sub-Clause 6.2.1, shall be finally settled by arbitration. Arbitration may be commenced prior to or after completion of the Facilities. In the event of

commencement of Arbitration, the parties shall be precluded to introduce in evidence the views expressed or suggestions or admissions made by the parties before adjudicator, proposals made by Adjudicator or the fact that the other party had indicated its willingness to accept a proposal for settlement made by Adjudicator.

Any dispute submitted by a party to arbitration shall be heard by an arbitration panel composed of three arbitrators, in accordance with the provisions set forth below.

The Purchaser and the Contractor shall each appoint one arbitrator, and these two arbitrators shall jointly appoint a third arbitrator, who shall chair the arbitration panel. If the two arbitrators do not succeed in appointing a third arbitrator within twenty eight (28) days after the latter of the two arbitrators has been appointed, the third arbitrator shall, at the request of either party, be appointed by the Appointing Authority.

If one party fails to appoint its arbitrator within forty-two (42) days after the other party has named its arbitrator, the party which has named an arbitrator may request the Appointing Authority to appoint the second arbitrator.

If for any reason an arbitrator is unable to perform its function, the mandate of the Arbitration shall terminate in accordance with provisions of applicable laws, a

substitute shall be appointed in the same manner as the original arbitrator. Arbitration proceedings shall be conducted as laid down below:

- The dispute when referred to arbitration shall be resolved under the provisions of Indian Arbitration and Conciliation Act 1996.
- Rules governing the proceedings before the arbitrators shall be UNCITRAL Arbitration and Conciliation Rules for foreign Contractors.

- The venue of arbitration proceedings shall be Dehradun, India.
- The language shall be English.

The decision of a majority of the arbitrators shall be final and binding and shall be enforceable in any court of competent jurisdiction as a decree of the court.

The Court of Jurisdiction shall be High Court, Nainital, Uttarakhand, India. The arbitrator(s) shall give reasoned award.

Notwithstanding any reference to the Adjudicator or arbitration herein,

- (a) the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree the Purchaser shall pay the Contractor any moneys due to the Contractor.

### **39. Construction of contract**

The Contract shall in all respects be construed and operate as a Contract as defined in the Indian Contract Act, 1872, and all payments there under shall be made in rupees unless otherwise specified.

## **SECTION-VIII SAFETY MANUAL**

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## **CHAPTER I**

### **1.1 GENERAL:**

The Engineers at site shall at all times exercise reasonable and proper safety precautions for the safety of the people at all works under their control, in accordance with instructions contained in this Manual. They shall also ensure strict compliance of the same by their subordinates. Also, they shall see that the contractors executing works under their control adopt stipulated safety measures and adequately protect their workers.

In addition to instructions contained in this manual the safety regulations contained in the below mentioned ISI codes shall also apply wherever the provisions in the ISI codes are exhaustive in nature:

#### **I.S. SAFETY CODES:**

- 1. IS 3764 1992 Excavation work
- 2. IS 4756 1978 Tunnelling Work (first revision)
- 3. IS 7293 1974 Working with Construction Machinery
- 4. IS 7969 1975 Handling & Storage of building materials
- 5. IS 4081 1991 Blasting and related drilling operations.
- 6. IS 3696 1987 Scaffolds &ladders (Pt. I) Scaffolds)
- 7. IS 3696 1999Scaffolds & ladders (Pt. II(Pt. II) ladders)
- 8. IS 4138 1977Working in compressed air (Ist revision)
- 9. IS 818 1968Safety and health protection in electric gas in welding and cutting operations.
- 10. IS 4912 1978 Safety requirements for floor and wall openings Railway and toe Boards.
- 11. IS 5121 1969 Piling & other Deep foundations
- 12. IS 4130 1991 Demolition of Buildings (Ist revision)
- 13. IS 5916 1970 Construction involving use of hot bituminous materials.
- 14. IS 3016 1982 Fire protection in welding and cutting operations.

### **1.2 ENFORCEMENT OF SAFETY REGULATIONS:**

- 1.2.1 General Managers/Chief Engineers, Superintending Engineers, Executive Engineers, Supervisors and all other officials in charge of execution of work at the

various organizational levels in the project shall ensure strict enforcement of safety regulations in the execution of works.

1.2.2 To assist the executive and supervisory staff of the project in spelling out the safety programmers and regulations prescribed in the Manual, a separate safety unit should be included in the project staff. This unit should consist of a Safety Engineer of the rank of Executive Engineer or Senior Assistant Engineer and a number of safety inspectors to assist him. The number of safety inspectors will depend on the magnitude and distribution of work. The safety engineer will be directly responsible to the General Manager or other Engineer-in-Charge of the project in keeping him informed of the compliance or otherwise of all safety regulations and standards by the various executives, supervisory staff and contracting firms and assist him in maintaining safe standards of working.

The detailed duties of the safety staff shall be as under:

- a) To look into all procedures and practices and examine temporary structures, the failure of any of which may result in an accident.
  - b) To go around the works regularly and advise the contractors and the department as to the measures to be taken to ensure safety of the works whether under the contractors or under the department.
  - c) To see that the rules and regulations laid down in the safety manual are observed. Non-compliance with these regulations if any, should be brought to the notice of the Safety Engineer.
  - d) To develop and execute programs for the training of supervisory personnel in the application and observance of safety practices.
  - e) To receive and analyses reports of all accidents and fires and initiate corrective actions warranted by the situations.
- To conduct safety education and propaganda.
- f) To recommend revisions or additions to the safety manual on safety measures in the light of project experience.
  - g) To prepare safety posters, signs, displays, leaflets, bulletins, etc., and display them on neat attractive bulletin boards. Cartoons may also be displayed.
  - h)
  - i) Suggestions from the workers may also be obtained by means of suggestion boxes which may be kept at various places.
  - j) Make certain that all Central Government, State Government or local laws and ordinance are complied with
  - k) A Project Safety Committee shall be constituted under the Chairmanship of General Manager of the Project, and shall have members from amongst the Senior Officers, Safety Engineer and representative of the contractor. The number of the members may vary and shall be decided by the General Manager according to the magnitude of the work and jobs involved. This Committee would meet from time to time, generally supervise the Safety arrangements, advise and give suggestions to the Safety Engineer, and consider the reports of the safety engineer.

l) CONTRACTORS' SPECIAL RESPONSIBILITIES:

- m) The contractors shall at all times exercise reasonable and proper precautions for the safety of the people on the works and shall comply with the provisions of current

safety laws, building and construction codes of the State Governments as may be applicable. All machinery and equipment and other sources of physical hazards shall be guarded in accordance with the requirements of this manual and regulations or laws of the State Governments of the Government of India.

- n) In order to supervise the work from point of view of safety, the contractor shall provide a full time Safety Engineer who shall report and be responsible to the Safety Engineer of the Nigam, an executive or his designated representative and shall be responsible for coordinating the safety programs.
- o) The contractor shall provide all necessary fencing and lights to protect the public from accidents and shall be bound to bear all the expenses of defense of every suit, action & other proceedings at Law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and costs which may be awarded in any such suit, action & proceedings to any such persons or which may with the consent of the contractor be paid to compromise any claim by any person.
- p) **IMPORTANT SAFETY RULES:**
- q) Each employee shall be provided initial indoctrination regarding safety by the contractor so as to enable him to conduct his work in a safe manner.
- r) No employee shall be given a new assignment of work unfamiliar to him without proper introduction as to the hazard's incident thereto, both to himself and his fellow employees.
- s) Under no circumstances shall an employee hurry or take unnecessary chances when working under hazardous conditions.
- t) Employees must not leave naked fires unattended. Smoking shall not be permitted around fire prone areas and adequate firefighting equipment shall be provided at crucial locations.
- u) Employees under the influence of any intoxicating beverage, even to the slightest degree should not be permitted to remain at work.
- v) There shall be a suitable arrangement at every worksite for rendering prompt and sufficient first aid to the injured under the guidance of a medical officer.
- i) The staircases and passageways, shall be adequately lighted.
- ii) The employees when working around moving machinery, must not be permitted to wear loose garments. Safety shoes are recommended when working in shops or places where materials or tools are likely to fall. Only experienced workers shall be permitted to go behind guard rails or to clean around energized or moving equipment.
- iii) The employees must use the standard protection equipment intended for each job. Each piece of equipment shall be inspected and after it is used.

### **1.3 ACCIDENT REPORTS:**

1.3.1 Monthly reports on prescribed proforma of all accidents shall be promptly submitted to the Safety Engineer of the Nigam, with a copy to the Engineer-in-Charge giving such data as may be prescribed by the contracting officer.

1.3.2 On the occurrence of any accident a report should be made to the Safety Engineer of the Nigam with a copy to the Engineer-in-Charge within 12 hours of the occurrence of the accident. In case of fatal accidents or those which are so serious that

they are likely to result in the death of any workman, a report should be made immediately to the Engineer-in-Charge of the work.

1.3.3 The following sample forms (specimens attached at the end of this Chapter) may be used for reporting accidents and keeping relevant statistics:

**INJURY REPORT-PRELIMINARY**

(To be submitted immediately after the accident)

(N.B.)-Answers to all the items should be precise and definite.

No. ....  
Date.....

1. Name of the person injured
2. Sex, Adult/Minor
3. Department/Project/Division
4. Designation
5. Regular/Work Charged/ Muster-Roll /Contractor's employee
6. Date & hour of accident
7. Cause of accident
8. Fatal, serious or minor

Signature with designation of  
Reporting Officer

To

Medical Officer  
Nature of injury  
Period of estimated disablement.

Signature of Medical Officer.

Distribution:  
Engineer-in-Charge  
Safety Engineer

**C. INJURY REPORT-DETAILED**

Project.....Date of Report.....

Section-I Name.....Age.....Occupation  
Who was injured? Employer...How long employed....  
Salary or wage....Dates of previous injuries  
Remarks.....

Section-II Date of injury.....Time  
Time & Place \_\_\_\_\_ Exact place where injury occurred.....

Section-III Describe injury.....  
Name & Severity of injury.....  
Did injury result in death or  
Probable permanent disability.....  
Yes/No.

Return to work .....  
Date of death .....

Section-IV (Description of Accident which caused the injury)  
Describe the accident in full.....

Section-V Type of Accident (Check one)

Fall of person- Same level  
Falls of persons-One level to another  
Flips (Causing strains not falls)Struck by flying, rolling, sliding object  
Stepping in or on object Strains or sprains-lifting  
Struck by or cut by hand tools  
Other injuries from handling objects.  
Burning or scalding  
Electric shock or flash Explosions  
Caught in or between  
Striking against object  
Struck by or run over by vehicle  
Buried or partially buried by collapse of sides or fall of material  
Drowning or suffocation  
Poisoning, Infection  
Other Describe.....

Section VI (Supervisor/Foreman's Statement)

I have personally investigated this accident, and concur in the analysis of causes given below:

Recommendation for prevention.....  
Remarks.....

Signature of Foreman or other Immediate Superior.

Causes of the Accident

(To be completed by the Safety Engineer)

For one cross (x) in the appropriate box in Section 7, Mechanical causes; and one cross (x) in Section 8, Personal causes, Select the cause in each Section which could have been most readily removed and the removal of which would have helped most to prevent the accident. In addition to marking the appropriate box, describe briefly but exactly the causes selected. Secondary or contributing causes may be indicated by drawing a circle in the appropriate box.

Section VII Improper guarding.....

(Unguarded, inadequately guarded, guard removed etc.)

Defective substances or equipment.....

(Broke, poorly designed, slippery, defective brakes etc.)

Hazardous arrangement.....(Unsafely piled material, poor labour, poor house-keeping, loose rock etc.)

Improper illumination.....

Improper ventilation.....

(poor, dusty, gassy, high humidity, excessively hot etc.)

Improper dress or appeal.....

(Goggles, gloves, shoes, hard hat respirator etc.)

No mechanical cause Insufficient data to classify



Section VIII (Personal Causes)

Injured person    other person  
Physical or mental defect.....  
(Poor eye sight, arm amputated, deaf, epilepsy, etc)  
Lack of knowledge or skill.....  
(Unable to read, poor training, etc.)  
Wrong attitude.....  
(Deliberate, chance-taking, disregard for instructions, etc.)  
No Personal causes    Insufficient data to classify

Section IX (Supervisory Fault)

Was Inadequate or faulty supervision or foremen ship a cause or contributing cause of  
this accident? .....  
(Yes or No)

Explain .....

Section X (Corrective Action)

What has been done to prevent the occurrence of similar accidents in the  
future?.....

This Report submitted by.....

(Safety Engineer)

Approved.....  
(Construction Engineer or Superintendent)

\_\_\_\_\_

## **CHAPTER 2 MISCELLANEOUS**

### **2.1 STORAGE OF MATERIALS:**

- 2.1.1 All materials in bags, containers or bundles stored in tiers shall be stacked, blocked, interlocked, and limited in height so that it is stable and otherwise secured against sliding or collapse.
- 2.1.2 Inflammable liquids and grease shall be stored in a 'NO SMOKING' area and properly separated from other stored materials.
- 2.1.3 Used lumber shall have all nails withdrawn before it is stacked for storage.
- 2.1.4 In withdrawing sand, gravel, and crushed stone from frozen stockpiles, no overhanging shall exist at any time.
- 2.1.5 Materials dumped against walls or partitions shall not be stored to a height that will endanger the stability or exceed the resting strength of such walls and partitions.
- 2.1.6 Persons working in hoppers or on high piles of loose material shall be equipped with life lines and safety belts.

### **2.2 ATMOSPHERE IN CONFINED PLACES:**

- 2.2.1 In every working place where persons are required to work in a confined place, adequate ventilation by the circulation of fresh air shall be provided and no person shall be allowed to enter any place where there is reason to apprehend that the atmosphere is poisonous or asphyxiating unless the person wears a suitable breathing apparatus and is equipped with life line held by a person stationed for the purpose in safe place.
- 2.2.2 When workers are employed in sewers and manholes which are in use, it shall be ensured that the manhole covers are opened and ventilated at least for an hour before the workers are allowed to get into the manholes and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or boards to prevent accidents to the public.
- 2.2.3 There shall also be provided in a suitable position and readily available sufficient and appropriate rescue apparatus including:
  - i) Suitable breathing apparatus;
  - ii) Suitable reviving apparatus; and
  - iii) Suitable safety belts of sound material with ropes of adequate length and strength.

All such equipment and apparatus shall be in charge of a competent person conversant with their use and he shall be available at all time while any person is working in the confined place. All such equipment shall be properly maintained, tested and examined at intervals of not more than one month.

### **2.3 PREVENTION FROM DROWNING:**

- 2.3.1 Where adjacent to the site of any operation there is water, into which a person employed, in the course of his employment, is liable to fall with risk of drowning, suitable rescue equipment shall be provided and maintained in an efficient state and steps shall be taken for the prompt rescue of any such person in danger of drowning.
- 2.3.2 The rescue equipment shall include life saving skiffs properly maintained with life vests and life buoys of approved type with 16 meters of 10mm rope attached.
- 2.3.3 Life preservers, vests or belts shall be worn by all persons while working:

- (a) On floating pipeline, pontoons, rafts, float stages etc;
- (b) On open deck-floating plant not equipped with bulwarks, guardrails or other life lines;
- (c) On structures extending over or adjacent to water except where proper guardrail or safety belts and life lines are provided;
- (d) Working alone at night where there are potential drowning hazards regardless of other safeguards provided and;
- (e) In skiffs, small boats or launches except when inside of enclosed cabin or cockpit.

2.3.4 Life preservers or working vests shall have a buoyancy of at least 7.5 kgs. When new and shall be removed from service when buoyancy decreases below 5.75 kgs.

2.3.5 Walkways and structures extending over or immediately adjacent to water shall be provided with ring buoys of 7.5 kgs buoyancy at intervals of not more than 60 metres.

## 2.4 FIRE PREVENTION AND PROTECTION:

### **FIRE PREVENTION:**

2.4.1 All construction areas and storage yards should be kept clean and well arranged.

2.4.2 A clear space of 15 meters around the outer boundary of sawmill and lumber storage area may be provided. All lumber should be stored in sections with firebreaks with a distance of 15 meters between consecutive sections.

2.4.3 All combustible waste material, wood scaling, soiled rags etc. shall be removed daily and burden in suitable burning areas. The saw mill and lumber yard shall be kept free from accumulation of combustible debris.

2.4.4 Fires, welding, flame cutting shall in general not permitted in combustible areas. Fires and open flame devices shall not be left unattended.

2.4.5 Smoking shall be prohibited in all flammable material storages viz. carpentry, paint shops garages, services stations etc. "No smoking" signs should be posted on all such areas.

2.4.6 Accumulations of flammable liquids on floors, walks etc. should be prohibited. All spills of flammable liquids shall be cleaned up immediately.

2.4.7 Smoke pipes from Diesel Engines passing through roof of combustible material e.g. in compressor stations at dam site and quarry shall be insulated by asbestos. All joints of smoke pipe should be riveted, welded or otherwise securely fastened together and supported to prevent accidental displacement or separation. The joints should not be leaky.

2.4.8 Flammable liquids, lubricants etc. should be handled and transported in safety containers and drums which can be kept tightly capped.

2.4.9 Petrol or other flammable liquids with a flash point below 100°F shall not be used for cleaning purposes.

2.4.10 Oxygen cylinders shall not be stored with combustible materials.

2.4.11 All electric installations should be properly earthed. Repairs should not be made on electrical circuits until the circuit has de-energized.

### **FIRE FIGHTING ARRANGEMENTS;**

2.4.12 Fire extinguishers and fire buckets, painted red, shall be provided at all fire hazardous locations viz. Batching and Mixing Plant, which Houses, Workshops. Store

yards, Saw-Mill, Switch Gear Room, Compressor Stations, Office establishments etc. The extinguishers shall be inspected serviced and maintained in accordance with manufacturer's instructions. The inspections shall be evidenced by notations on tag attached to the extinguisher.

2.4.13 Where building and establishments are located in or near cities or towns, definite arrangements shall be made to ensure protection by the established municipal fire department. In more isolated locations, it will be necessary to provide for and install complete fire fighting facilities including provision for fire tenders commensurate with the number, size and importance of buildings, equipment's, or supplies to be protected.

2.4.14 Full reliance should never be placed on portable hand extinguishers as all of these have a very limited capacity. Water, in ample amounts and under adequate pressure, should always be available for fire fighting.

2.4.15 Where a group of buildings are located beyond the range of protection from a public water supply, the installation of water system for private fire protection may be warranted. The following design factors should be considered in the planning of a private water supply. The standard fire stream is recognized as 1155 litres per minute. Multiple streams of 1155 litres must be provided for protection of important groups of buildings. While the daily domestic consumption is basis used in the design of a domestic type of water system, additional capacities should be provided for use during fire emergencies. For example, two standard fire streams (2310 litres per minute) discharged for 1/2 hour amount to 69,300 litres of water. Therefore, additional water storage for fire use must be provided. A loop system of hydrants from two directions with a reduction of friction losses and a resultant higher water pressure for fire-fighting purposes. No underground pipes that are a part of the system should be smaller than 15 cms in diameter and valves should be provided for shutting of the domestic connection outside of all building served. Hydrants should not be over 120m apart and so located that not less than two hose streams concentrate on any building. Hydrants in cold climate should be designed and installed to prevent freezing. Two 60mm outlets with standard 5 hose thread should be used for all private hydrants. It is good practice to provide hose houses at hydrants in a private water supply system. The houses should be equipped with a minimum of 60 metres of 60mm hose and accessories, including axes, spanner, wrench and other tools.

2.4.16 Excavation facilities and fire exit may be provided at all locations featuring the hazards.

2.4.17 Siren or other suitable fire alarm arrangement shall be made on all projects. Warning signs may be posted at all locations featuring fire hazards.

2.4.18 All staff shall be conversant with the use of all types of fire extinguishing apparatuses.

2.4.19 Demonstrations and training in fire fighting shall be conducted at sufficient intervals to ensure that sufficient personnel are familiar with and are cable of operating fire fighting equipment.

## 2.5 FIRST AID AND MEDICAL CARE:

2.5.1 At every work site suitable arrangement for rendering prompt and efficient first aid to injured persons shall be maintained under the guidance of the Medical Officer in charge of the project.

2.5.2 First aid appliances including an adequate supply of sterilised dressings and sterilised cotton wool shall be maintained in a readily accessible place. The appliances shall be kept in good order and they shall be placed under the charge of a responsible person who shall be readily available during working hours. The minimum requirements of the first aid kit shall be as under:

10 cms compressed bandage	- 12 Nos.
5 cms compressed bandage	- 12 nos.
2.5 cms adhesive plaster	- 1 reel
1 metre triangular bandage	- 3 Nos.
Spirit Ammonia Aromatic	- 1 bottle (4 ounces)
Tannic acid jelly	- 1 tube
Tincture iodine	- 1 bottle (2 ounces)
Tourniquet	- 1 No.
Forceps	- 1 No.

When purchasing first aid kits, dust proof containers should be specified.

2.5.3 Where work sites are remote from regular hospitals an indoor ward in charge of a Medical Officer with such nursing staff as may be necessary shall be provided with one bed for every 250 workers.

2.5.4 Adequate identification and directional markers shall be provided to readily denote location of all first aid stations and hospitals.

2.5.5 An ambulance shall be provided to transport seriously injured persons to the hospital.

2.5.6 Small crews working at a distance from the project headquarters or from the main body of workmen shall be equipped with standard first-aid kits and at least one man in each crew shall have had first aid training.

2.5.7 Adequate lighting, heat, water and ventilation shall be provided in the first aid station and/or hospital.

2.5.8 The Medical Officer in charge of the project should be responsible for issuing special instruction indicating certain 'do's and 'don'ts' on subjects like sunstroke, heat exhaustion, sanitation, out-break of epidemics etc.

## **2.6 PERSONAL PROTECTIVE EQUIPMENT:**

2.6.1 The following safety equipment shall be provided to workers as required and their use enforced:

Rubber boots; hard toe safety boots; hard hats; safety belts; goggles for stone or metal grinders, stone chippers, gas welding aprons; respirator shields; manila ropes and slings for life lines; gloves; flashlights; battery lamps, magazine shoes; safety nets; boatswains chairs; helmets, life and ring buoys.

2.6.2 Items of personal wear shall be maintained in serviceable condition and shall, before being reissued to other employees or returned to stores be cleaned, sterilised, inspected and repaired, if necessary.

2.6.3 Loose and frayed clothing, hand rings loose watch chains etc. shall not be worn around moving machinery or other sources of entanglement.

2.6.4 The use of personal safety equipment as occasioned by the type of work being performed has been indicated in relevant places of this Manual.

## **2.7 MISCELLANEOUS**

### **SECURITY OF LOADS**

2.7.1 Every receptacle used for raising or lowering stone, bricks, tiles, slates, or other objects shall be so enclosed, constructed or designed as to prevent the accidental fall of such objects.

2.7.2 All gears, tools, goods or loose material shall be properly loaded into the bucket or receptacle in which they are being raised or lowered and if necessary, properly secured or effective precautions shall be taken by enclosure or otherwise to prevent their fall.

### **PROJECTING NAILS:**

2.7.3 No timber or material with projecting nails shall be used in any work in which they are a source of danger to such persons.

### **DANGER FROM COLLAPSE OF STRUCTURE:**

2.7.4 When any work is carried on which is likely to affect the security or stability of a building or structure or any part thereof and endanger any persons employed, all practicable precautions shall be taken by shoring or otherwise to prevent collapse of the building or structure or fall of any part thereof and thus remove the cause of danger to such structures and the persons employed.

### **HANDLING OF CORROSIVE MATERIALS:**

2.7.5 For persons engaged in handling of corrosive materials adequate equipment shall be provided.

2.7.6 Where in connection with any grinding, cleaning, spraying or manipulation of any material there is given off any dust or fume of such character and to such extent as is likely to be injurious to the health of persons employed, all practical measures shall be taken by securing adequate ventilation or by the provisions and use of suitable respirators or otherwise to prevent inhalation of such dust and fume.

### **LEAD COMPOUNDS AND OTHER POISONOUS SUBSTANCES;**

2.7.7 Men below the age of 18 years and women shall not be employed on the work of painting with products containing lead in any form. Wherever men above age of eighteen years reemployed on the work of lead painting, the following precautions shall be taken:

- (a) No paint containing lead or lead products shall be used except in the form of paste or readymade paint.
- (b) Suitable face masks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint dry rubbed and scrapped.
- (c) Overalls shall be supplied to the workmen and adequate facilities shall be provided to enable the working painters to wash during the cessation of work.
- (d) While lead, sulphate of lead, or product containing these pigments shall not in painting operation, except in the form of pastes or paints ready for use.
- (e) Cases of lead poisoning, and suspected lead poisoning shall be immediately notified, and shall be subsequently verified by a member appointed by the competent authority of project.
- (f) Instructions with regard to special hygienic precautions to be taken in the painting trade shall be distributed to working painters.

2.7.8 Lead compounds shall not be used in the form of a spray in the interior painting of the structures.

**2.7.9 Road work:**

Workers employed on mixing asphalt materials shall be provided with protective footwear and protective goggles.

Stonebreakers shall be provided with protective goggles and protective clothing and seated at sufficient safe distance from each other.

**Executive Engineer (E&M-II)**  
**UJVN Limited Lakhwar MPP**

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