

2018

PROPOSED RENOVATION OF HOTEL CLARKS - LUCKNOW

TENDER DOCUMENTS FOR ELECTRICAL SYSTEM

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1. GENERAL CONDITIONS OF CONTRACT

DEFINITIONS AND INTERPRETATIONS:

Definitions

In the Contract following words and expressions shall have meanings hereby assigned to them, except where the context otherwise requires (in alphabetical order)

1.1 APPROVED/APPROVAL

"Approved" means approved in writing by the Project Manager or Owner's authorized representative including subsequent written confirmation of previous verbal approval.

1.2 APPROVED EQUAL

"Approved Equal" shall mean an alternative product/ service approved by Project Manager or Owner's authorized representative as equivalent to that specified in the Contract Documents.

1.3 ENGINEERING CONSULTANT:

"Engineering Consultant" means M/s San Engineers & Consultants, Jaipur or in the event of it ceasing to be the Consultant for the purpose of this Contract, for whatever reasons, such other or additional person, firm or Company as the Owner may nominate for the purpose.

1.4 CONTRACT:

The "Contract Documents" consist of the Notice Inviting Tenders, the Agreement between **CLARKS - LUCKNOW** and the Contractor, the General Conditions of Contract, Specifications, the Drawings, Schedule of Quantities, Schedule of Fiscal Aspects and relevant correspondence including all modifications thereof incorporated in the documents before their execution. **CLARKS-LUCKNOW** means on whose behalf tenders are invited and include its successors permitted assigns and Legal authorized representatives.

1.5 CONTRACTOR:

"Contractor" means the person, firm or company whether incorporated / registered or not, employed as Contractor by **client** for undertaking the Works and shall include the Contractor's legal and authorized representatives, successors and permitted assigns.

1.6 CONTRACTOR'S REPRESENTATIVE:

The Contractor's Representative shall mean the person or party duly appointed by the Contractor, to act for and on its behalf on a day-to-day basis during the construction of the Work and the Project. Any action to be taken by the Contractor may be taken on the Contractor's behalf by the Contractor's

Representative. The Contractor's Representative shall be considered a "key person" for purposes of Section 12 of the General Conditions of Contract.

1.7 CONSTRUCTION PLANT:

"Constructional Plant" means all plant, tools, tackles, appliances or equipment, implements, scaffolding of whatever nature required for the execution of the Works but does not include materials, equipment or other things intended to form part of the Works.

1.8 "CONTRACT SUM" means

Shall mean the sums referred to in the Contract Documents for the Contractor's performance of the Work.

The Contract Price is inclusive of all taxes, transportation, insurance premiums, contributions towards employees benefits and all other statutory taxes and levies if any applicable to the contractors/workers etc., and the Owner shall not be responsible in any way whatsoever to pay for the same.

The Contract Price shall also include the Contractor's establishment, infrastructure, overheads and all other charges, and shall be inclusive of every cost and expense required by the Contract to be borne by the Contractor and necessary for the proper execution and successful completion of the Work under the Contract, in conformity with the Contract Documents and the best engineering and construction practices and to the satisfaction of the Engineering Consultants, Project Manager, Owner's Representative and the Owner.

The Contract is neither a fixed lump sum contract nor a piece work contract, but is an item rate contract to carry out the Works according to the actual measured quantities at the rates contained in the schedule of rates and probable quantities as provided in the Priced Bill of Quantities with Detailed Specifications. The Contract Price shall not exceed Rs. _____ (Rupees _____) as indicated in the Letter of Intent/Work Order, amounts in excess of this number, not approved in advance by the Owner's Representative shall be at the Contractor's expense. The Contractor has to closely monitor the quantities and cost and obtain an Approval from the Owner/Project Manager well in advance for any change outside the scope of the Work which would cause the cost of the Work to exceed the Contract Price as indicated in the Letter of Intent. Prices will be firm until the end of the contract. No escalation in price shall be allowed for any reason whatsoever during the entire period of the completion of Project.

1.9 DRAWINGS:

"Drawings" means the drawings referred to in the specifications and any modifications of such drawings or such other drawings as may be from time to time be furnished or approved in writing by Project Manager. The contractor shall not, without the prior written consent of **client**., use or publish for any purpose whatsoever, any information, prepared for or in connection with the services envisaged herein. The said drawings are "COPYRIGHT PROTECTED."

1.10 DEFECT LIABILITY PERIOD:

"Defect liability period" is defined as the period from the completion/ handing over of the building whichever earlier when the contractor is supposed to remove all defects pointed out and arising during this period. The defect liability period shall be **Twelve months** from the date of virtual & satisfactory completion.

Any defect arising during this period shall be brought to the notice of contractor, consultant and the architect. The concerned parties shall act within 24 hours or earlier depending on the seriousness of the defect. It will be responsibility of the contractor to make all possible efforts to rectify the defect or replace the defective material within one week of being brought to the notice of the contractor. Extension to this time frame may be given to the Contractor by the Project Manager at their sole discretion. The Architect/ Engineering Consultant shall define this reasonable period depending on the nature of the defect.

1.11 OWNERS' REPRESENTATIVE:

"Owners' Representative" will be **PROJECT MANAGER of Clarks - Lucknow** On its behalf.

1.12 FORCE MAJEURE:

Force Majeure are risks due to riots (otherwise than among Contractor's employees) and civil commotion (in so far as both these are uninsurable), war (whether declared or not), invasion, act of foreign enemies, hostilities, civil war, rebellion, insurrection, military or usurped power, an act of Government, an act of God, such as lightening, unprecedented floods, tornado, and damage from aircraft.

1.13 MONTH:

"Month" means English Calendar month. "Day" shall mean a calendar day of 24 hours each.

1.14 MEASUREMENT BOOKS:

The "measurement books" shall be defined as the books maintained during the currency of the project to record all measurements qualifying for payment. The contractor shall maintain measurement books of all work done by them. The contractor shall get the measurement books verified by the Client Representative/PM/quantity surveyor periodically. It shall be responsibility of the contractor to get all the Works verified as per the measurement books before they get concealed. If the contractor fails to get the measurements of underlying items verified in time then he shall remove the overlying or concealing items and get the underlying or concealed items verified and make the work good at no extra cost to the Client.

All measurement books shall be hard bound with pages numbered. The Client/PM and the contractor shall verify the condition of the measurement book before implementation. No tearing of pages or overwriting shall be permitted in the measurement books. Only neat cutting of mistakes with joint signatures of contractor's representative and the PM/quantity surveyor shall be permitted.

1.15 NOMINATED SUB-CONTRACTOR:

"Nominated Sub-Contractor" refers to those specialists, tradesmen and others, nominated by Project Manager for executing special Works or supplying special equipment or materials, for which provisional sums are included in the Contracts. Such agencies shall be deemed to have been employed by the Contractor.

1.16 PROJECT MANAGER:

"Project Manager" means client or its authorized representatives. The Project Manager shall be authorized to represent and act on behalf of the Owner on day to day basis during all packages of construction of the Project. All communications, approvals and decisions to be taken in connection with the Architect's /Engineering Consultant's services shall be channelled through the Project Manager.

1.17 'RECORDS AND AUDITS' -

The contractor shall keep books and records to **client's** satisfaction, in such a manner, as to enable **client** to carry out effective financial control.

1.18 SUB-CONTRACTOR:

"Sub-Contractor" means the person, firm or company to whom any part of the Contract has been sublet by the Contractor with the written consent of the Project Manager and includes the Sub-Contractor's legal and authorized representatives, successors and permitted assigns.

1.19 SPECIFICATION:

"Specification" means the specifications annexed to or issued with the tender and any modifications thereof or additions thereto as may from time to time be furnished or approved in writing by the Project Manager.

1.20 SITE:

"Site" means the lands and other places on, under, in or through which the Works are to be executed or carried out and any other lands or places provided by client or used for the purpose of the Contract.

1.21 TEMPORARY WORKS:

"Temporary Works" means all temporary Works of any kind required for the execution of the Works by the Contractor.

1.22 TENDER:

“Tender” shall mean the Contractor’s offer to construct the Work in strict accordance with the Contract Documents as set forth on the Tender Form.

1.23 TENDER DOCUMENTS:

“Tender Documents” shall mean the Contractor’s Tender Form. The Performa of Bank Guarantee for Performance Bond, the Performa of Bank Guarantee against Mobilization Advance, and Notice Inviting Tender, Tender Form and Construction Contract Draft, General Conditions Of Contract, Special Conditions Of Contract, Electrical System Technical Specifications, Technical Parameters, Bill Of Quantities and Drawings Of Electrical System.

1.24 TERMS “AND”, “OR”, “AND/OR”:

The terms “and”, “or”, “and/or” used in context with the description or enumeration of two or more items or components of work of documentation or anything similar shall mean as is relevant and applicable to the text.

1.25 WORK:

“Work” shall mean and include all materials and labour necessary to construct the Electrical components of the Project in full compliance with the requirements of the Contract Document.

1.26 “WRITTEN NOTICE”:

Written Notice shall be deemed to have been duly served if delivered in person to the authorized representative of the firm / company for whom it is intended or if delivered at and a written delivery receipt obtained or sent by registered mail to the last business address known to them, who gives the notice.

1.27 WORKING DAY:

“Working Day” shall mean any day except the National Holidays as notified by the Central Government.

1.28 VENDORS:

“Vendors” shall mean and include all suppliers, material men, contractors, sub-contractors, nominated sub-contractors and trade contractors engaged at any stage of the Project.

2 SINGULAR AND PLURAL

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

3 HEADINGS AND MARGINAL NOTES

The headings and marginal notes in these conditions are for the purpose of facilitating reference and shall not be deemed to be part thereof or taken into consideration in the interpretation or construction thereof or of the Contract.

4 LANGUAGE

All documentation and correspondence in respect of this Contract shall be in the English language.

5 SCOPE AND INTENT

The general character and the scope of work is illustrated and defined by the signed Contract Documents herewith attached:

The Contractor shall carry out and complete the said work in every respect in accordance with the Contract, and with the directions of and to the satisfaction of Project Manager/ **client**

INCREASES / DECREASES TO SCOPE OF WORK:

The Owner reserves the right to increase or decrease the scope of the Work on any or all items or to change the nature of the Work involved in any or all items or to completely delete any items of the Work under the Contract. The Contractor shall not be entitled to claim for loss of anticipated profits, for mobilization of additional resources, or for any other such reason on account of these change orders.

ITEMS OF WORK FOR COMPLETION:

The Contractor is bound to carry out any items of work necessary for the completion of the Work even though such items of work may not be expressly described in the Contract Documents.

The Client/Project Manager may, from time to time, issue further supplementary drawings and/or written instructions, details and directions and explanations, which are collectively referred to as Project Manager's Instructions. The Contractor shall forthwith comply with and duly execute Works comprised in such Project Manager's instructions provided always that verbal instruction, directions and explanations given to the Contractor or their work's representative by Project Manager shall, if involving a variation, be confirmed in writing.

SITE MANAGER

The Project Manager or their authorized Site Manager would be responsible for the day-to-day supervision of the Contract and shall represent the Project Manager at the Site under the instructions of the Project Manager. The Contractor shall provide all necessary facilities for the performance of their duties.

6 DUTIES OF SITE MANAGER

6.1 The Site Manager shall carry out such duties in issuing decisions, certificates and orders as are specified in the Contract and such additional functions as are delegated to them by the Project Manager from time to time. The Site Manager shall coordinate, watch and supervise the Works and examine and approve materials to be used or workmanship employed in connection with the Works.

6.2 Provided always that Failure of the Site Manager or their representative to disapprove any work or materials shall not prejudice the power of the Project Manager to disapprove such work or materials except as otherwise provided in these documents, if the Contractor shall be dissatisfied by reason of any decision of the Site Manager, he shall be entitled to refer the matter to the Project Manager / **client** in writing, within 15 days of the receipt of such decision, who shall thereupon confirm, reverse or vary such decision.

Subject as otherwise provided in this Contract, all notices to be given on behalf of the Project Manager, and **client** and all other actions to be taken on their behalf may be given or taken by the Site Manager.

7 SITE

Before tendering, the Contractor shall visit the Site and satisfy themselves about the Site conditions. He shall examine the Site and take note of existing roads and other means of communication and the character of the soil and of the excavations, the correct dimensions of the work and facilities for obtaining the special articles called for in the contract documents and shall obtain their own information on all matters affecting the continuation and progress of the Works. No extra claim made in consequence of any misunderstanding or incorrect information for any of these points or on the grounds of insufficient description shall be allowed. Should the Contractor, after visiting the Site, find any discrepancies, omissions, ambiguities or conflicts in or among the contract documents or to be in doubt as to their meaning he shall bring the question to the Project Manager's attention, not later than 3 days before the opening date of the tender.

8 ASSIGNMENT

The Contractor shall not assign the Contract or any part thereof, or any benefit or invest or there under otherwise than by a charge in favour of Contractor's bankers of any monies due or to become due under this Contract, without prior written consent of the Project Manager.

9 SUB-CONTRACTORS

As soon as practicable and before awarding any sub-contract, the Contractor shall submit the names and details of such firms whom he is going to employ for approval of Project Manager. These details shall include the expertise, financial status, technical manpower, equipment, resources, and list of Works executed and on hand of the sub-contractor. The Contractor and the Project Manager shall mutually decide the Sub-contractor to whom the work could be awarded. It is clearly understood that the Contractor will be fully responsible for all the acts and omissions of Sub-contractor, including damages as per this Agreement or otherwise including but not limited to for waterproofing, pest

control, doors and windows, insulation and other specialist items shall be got approved well in advance.

10 SPECIALIST AGENCIES

The Contractor may entrust specialist items of work to the agencies specialized in the specified trade. The Contractor shall give the names and details of such firms whom he is going to employ for approval of Project Manager. These details shall include the expertise, financial status, technical manpower, equipment, resources, and list of Works executed and on hand of the specialist agency.

11 CONTRACTOR'S GENERAL RESPONSIBILITIES

The Contractor shall execute and maintain the Works with due care and diligence and shall provide all materials, labour including supervision thereof, constructional plant, temporary Works, transport and all other things, whether of temporary or permanent nature, required for the proper execution and maintenance of the Works.

The Contractor shall execute the whole and every part of the Works in the most substantial and workmanlike manner, both as regards materials and labour and otherwise in every respect in strict accordance with the specifications. The Contractor shall conform exactly, fully and faithfully to the designs, drawings and instructions relating to the work, in writing.

Before commencing any item of work, the Contractor shall co-relate all relevant drawings and information and satisfy themselves that the information available thereof is complete, unambiguous and without any discrepancies. The Contractor shall be responsible for any errors in the execution of the Works and/or damage caused due to any discrepancy in the Contract documents, which was overlooked by the Contractor and/or their Sub-Contractor, and is not brought to the notice of the Project Manager.

Levels, dimensions and other information shown on the drawings are believed to be correct. The Contractor shall, however, verify them for themselves and no claim or allowance whatsoever shall be entertained on account of any errors or omissions in the levels, dimensions, etc. from those shown in the drawings.

Any loss or damage caused by negligence of the Contractor to the materials whether procured by the Contractor or client shall be to their account.

Any loss or damage caused by the Contractor and their staff to the structure and/or services of the building including any damage caused to the curtain walls and glass panes shall be to Contractor's account and would be recovered from them through deductions from their running bill.

The Contractor shall submit an organization chart, specific to the project, qualification of the key personnel, number of skilled and unskilled people that the contractor would be employing to this project, detailed procurement schedule accompanied by a Project Schedule GANTT/PERT chart along with the tender.

12 DOCUMENTS MUTUALLY EXPLANATORY

The Contract documents are complimentary and cumulative and what is called for by any one shall be binding as if called for by all. The intention of the documents is to include all labour and materials, equipment and transportation necessary for proper execution of the work (exempting those materials and equipment listed separately which are to be supplied by the Owner). Materials of work described in words which so applied have a well known technical or trade meaning shall be held to refer to such recognized standards as applicable.

13 DISCREPANCIES AND ADJUSTMENTS OF ERRORS

In the event of ambiguities, discrepancies, and contradictions between the Bill of Quantities, the drawings and/or specifications, the contractor shall immediately notify the Project Manager. The Architect/ Engineering Consultant shall explain the same and the Project Manager shall in their sole discretion, determine which of the requirements govern and/or clarify any such ambiguity or discrepancy and the Contractor shall comply with such determination.

If there are discrepancies in the rates quoted by the Contractor in figures and in words, the rates quoted in words shall prevail.

All errors in extensions or computing the amounts and totalling shall be corrected. Decision of the Project Manager in this regard will be final.

The Contractor shall not be entitled to any extension of time or any compensation due to such determination.

14 DRAWINGS

The drawings shall remain in the sole custody of Project Manager/Client. Two (2) copies of the Drawings shall be furnished to the Contractor, free of charge.

One copy of the Contract Documents including drawings furnished to the Contractor shall be kept at the Site and the same shall, at all reasonable times, be available for inspection.

The Contractor shall give written notice to the Site Manager and inform Project Manager, whenever planning or progress of the work is likely to be delayed or disrupted, unless the required drawings or order including a direction, instruction or approval is issued within reasonable time.

The Project Manager shall have full power and authority to supply to the Contractor, from time to time, during progress of the Works such further drawings and instructions as shall be necessary for proper and adequate execution of the Works.

15 TYPE OF CONTRACT

Item Rate – Contract

The Contract shall be an item rate Contract. The Contractor shall be entitled to payment, in Indian Rupees, of no more than the Contract Price as stated in the Letter of Award, in consideration of the Work performed and completion of the Work. The Contractor understands and agrees that the amount payable is assessed on a measurable basis in accordance with the tendered rates. However, the Contract Price may be altered on account of a change order. The Contract Price shall include payment for the supply of all labour (including payment to his Sub-Contractors), equipment, materials, power, water, plant and machinery, tools, transportation, framework, scaffolding, all applicable taxes, insurance premiums, contributions towards employees benefits including ESI and PF and funds, profits and all services and activities constituting the Scope of Work and profits defined in the General Conditions of Contract.

16 TAXES, DUTIES ETC.:

The Contract price/rates shall be deemed to include all taxes and duties, all insurance cover and all other applicable taxes, duties and levies. client shall not entertain any claim whatsoever on this account and these rates shall remain firm during the currency of the project under what so ever reason.

Note: All payments to the contractor shall subject to the deduction of TDS, & such other statutory liabilities as may be imposed by any law in force during the currency of project. In-case any sum has to be paid by client, under any law for which the contractor is actually liable or which arises due to any action or default of the contractor then such sum shall be deducted from the contractor's dues.

17 NOTICES, FEES, BYE LAWS, REGULATIONS:

The Contractor shall comply with all applicable laws and government acts including the by-laws or regulations of local authorities relating to the Work in so far as construction, fabrication and installation activities are concerned, and he shall obtain from the local authorities all permissions and approvals required. The Contractor shall give all notices and pay all fees and charges that are and that can be demanded by law hereunder. In the Contract Price for the Work, the Contractor shall allow for such compliance and work, and for the giving of all such notices, and shall include the payment of all such fees and charges.

18 LICENSES AND PERMITS:

All licenses and permits for the materials under Government control, and those required to be obtained by the Contractor for the execution of the Work, shall be directly obtained by the Contractor. The Contract Price shall include all transportation charges and the other expenses that may be incurred in this connection.

19 ROYALTIES AND PATENT RIGHTS:

All royalties or other sums payable in respect of the supply and use of any patented articles, processes or inventions for the carrying out of the Work as described by or referred to in the Contract Documents, shall be deemed to have been included in the Contract Price.

20 SCHEDULE OF QUANTITIES

The quantities given in the Schedule of Quantities are provisional and are meant to indicate the intent and provide a uniform basis for tendering. The Contractor shall be paid for the actual quantity of work executed by them in accordance with the contract documents at the Contract Rates. Client/Project Manager reserves the right to increase or decrease any of the quantities or to totally omit any items of work and the Contractor shall not claim any extra or damages on these grounds. Any error in description or in quantity or omission of item in the Schedule of Quantities shall not vitiate this contract but shall be deemed to be a variation required by Project Manager.

21 SEPARATE CONTRACTS

Client reserves the right to award other contracts in connection with the Works. The Contractor shall give other Contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate its work and theirs. If any part of the Contractor's work depends on proper execution or results upon the work of any other Contractor, the Contractor shall inspect and promptly report to the Project Manager any defects in such work that render it unsuitable for such proper execution and results. Its failure to inspect and report shall constitute an acceptance of the other Contractor's work as fit and proper for the reception of its work, except as to the defects which may develop in the other Contractor's work after execution of the work.

22 CONTRACTOR'S DESIGNS & MANUFACTURER'S CATALOGUES

For the items of work which are executed to the Contractor's designs and specifications, the Contractor shall allow in their tender for providing client with 4 copies of all designs, drawings and specifications, general arrangement drawings and shop drawings which he needs to submit.

The Contractor shall supply 4 copies of all manufacturer's catalogues, brochures of all equipment and proprietary articles specified or which the Contractor proposes to use for the approval by the Architect/Engineering Consultant as soon as is reasonably practicable.

23 CONTRACTOR TO PREPARE 'AS BUILT' DRAWINGS AND DOCUMENTATION

The Contractor shall during the course of execution, prepare and keep updated a complete set of "as built" drawings to show each and every change from the Contract drawings. The Architect/Engineering Consultant and the Contractor shall countermand changes recorded. Three copies of "as built" drawings, folded and bound to suitable / approved size shall be supplied to the Architect/Engineering Consultant within 30 days of the completion. Four sets of these drawings in CDs shall also be supplied on latest and updated version of AutoCAD at no extra cost to client. The

contractor shall provide adequate training, if required, to client's operations and maintenance staff at the time of handing over of their Works and submit a Handing over Manual in a format prescribed by client which will be supplied to the Contractor in due course.

24 INTEREST

No interest shall be payable on any money due to the Contractor against security deposit, interim or final bills or any other payments due under this contract.

25 WORK TO SATISFACTION OF CLIENT/PROJECT MANAGER

The Contractor shall execute and maintain the Works in strict accordance with the Contract to the satisfaction of the Client/Project Manager and shall comply with and adhere strictly to the Project Manager's instructions and directions on any matter whether mentioned in the Contract or not, touching or concerning the Works. Client/Project Manager's decision relating to the use and quality of materials and visual and aesthetic effect shall be final and binding.

26 PROGRAMME EVALUATION AND REVIEW

Network based integrated time schedule shall be submitted by the Contractor. The time schedule shall also include details of mobilization of resources, materials, equipment and labour. After award of Contract, the Architect/Engineering Consultant may require the Contractor to expand the information given in the program until it is suitable for the effective review of progress during the execution of the Works. The critical path shall be determined. It is the Contractor's obligation to ensure that such a program, duly approved by the Project Manager is available within 15 days of placement of order.

The Contractor shall, every fortnight, review and update this program and furnish for the information of the Project Manager, in writing, details of the Contractor's arrangements for executing the Works, materials procured, erected, balance at Site, and expected deliveries during the next fortnight; skilled/unskilled labour, foremen, supervisors working at Site and steps proposed for speeding up progress of work.

If at anytime it should appear to the Client/Project Manager or the Architect/Engineering Consultant that the progress of the Works does not conform to the approved program, the Contractor shall furnish a revised program and take such steps at their cost, as are necessary to expedite progress and ensure completion of the Works within the completion period or extended date of completion, provided that any extension of time given by the Project Manager on account of revised programme shall not affect the penalty clauses given in Clauses as per the Schedule of Fiscal Aspects of the Contract.

Approval by the Project Manager of such programs or the furnishing of such particulars shall not relieve the Contractor of any of their duties or responsibilities under the Contract.

The Contractor shall be called upon to attend co-ordination meetings with Client /Project Manager/Architect /Engineering Consultant and other Contractors and shall fully co-operate with

such persons and agencies involved in these discussions. The Contractor shall take notes of the discussions during the meeting and shall strictly adhere to the decisions of the Project Manager in performing the Works.

27 CONTRACTOR'S SUPERVISION

27.1 The Contractor shall provide all necessary supervision during the execution of the Works and defects liability period for the proper fulfilling of the Contractor's obligations under the Contract. The Contractor or a competent and authorized agent approved in writing by the Project Manager, which approval may at any time be withdrawn; is to be constantly on the Works and shall give their whole time to supervise the Works. Such an authorized agent shall receive on behalf of the Contractor, directions and instructions from the Project Manager, the Architect or the Engineering Consultant. Apart from the Contractor/ authorized agent, independent floor managers/independent activity in-charge would be assigned to the different floors/areas for supervision and co-ordination of Works throughout the execution of the Project. The contractor's Supervisory staff must arrive at the site by 0900 hrs. every day and should lead the workforce into the site. It may be noted that the workers would not be allowed entry into the site without their respective floor supervisors/activity in charges.

27.2 The Contractor shall employ for the execution of the Works

Such technical persons as are qualified and experienced and such representatives, foremen and supervisory staff as are competent to give supervision to the work, and

Such skilled, semi-skilled and unskilled labour as is necessary for the proper and timely execution and maintenance of the Works.

27.3 Any staff of Contractor found to be negligent of duties would be replaced on the request of Project Manager without delay.

CARE OF WORKS

29. SETTING OUT

The Contractor shall be responsible for the true and proper setting out of the Works at their expense in relation to reference points, lines, levels given in the drawing or furnished by the Project Manager in writing and for the correctness of the positions, levels, dimensions and alignment of every part of the Works. If any error in setting out is noticed at any stage, the Contractor shall, at their own cost, rectify such errors to the satisfaction of the Project Manager.

30. NUISANCE

The Contractor shall not at any time do, cause or permit any nuisance on the Site or do anything which shall cause unnecessary disturbance or inconvenience to the others working on or near the Site and to the public generally.

31. WATCHING AND LIGHTING

The Contractor shall arrange necessary power and provide and maintain at their cost all lights, fans, guards, fencing and watching, when and where necessary or as directed by the Site Manager, for the protection of Works, materials, plant, equipment etc. Any loss or damage caused to the materials procured by the Contractor shall be to their account.

32. CO-OPERATION WITH OTHER CONTRACTORS

The Contractor shall co-operate with other contractors, Architect and Engineering Consultant and freely exchange with them such technical information as necessary for the proper execution of the Works.

The Contractor shall, in accordance with the directions of the Project Manager/Site Manager, afford all reasonable opportunities to other contractors and their workmen and to the workmen of client. who may be employed in the execution of the Works not included in the Contract, for carrying out their work.

All operations necessary for the execution of Works shall be carried out so as not to interfere unnecessarily or improperly with the execution of Works by other contractors. Execution of Works under this Contract shall be co-coordinated with the work of other Contractors where it would interfere with their work or working. The Site Manager and the concerned Contractor shall be informed well in time for effective coordination and proper execution of Works.

33. CONTRACTOR TO KEEP SITE CLEAR

During the progress of the Works, the Contractor shall keep the Site clean and reasonably free from all necessary obstructions and shall store or dispose of any Constructional plant and surplus materials, wreckage, rubbish or Temporary Works no longer required. If the Contractor is found to be lagging in maintaining good housekeeping practice at site, the Site Manager/ client would be authorized to have the debris cleared / cleaning carried out by some other agency and recover cost of the same from the defaulting Contractor.

34. COORDINATION OF WORK

34.1 At the commencement of work, and from time to time, the Contractor shall confer with other Contractors, sub- Contractors, and persons engaged on separate contracts in connection with the work, and with the Project Manager for the purpose of coordination and execution of the various phases of work. The Contractor shall ascertain from the other Contractors, Sub-Contractors and persons engaged in separate contracts, in connection with the Works, the extent of all chasing, cutting and forming of all opening, holes, grooves etc. as may be required to accommodate the various services and will be paid nothing extra for such Works.

34.2 The Contractor shall ascertain the routes of all services and the position of all floor and wall outlets, traps etc. in connection with the installation of plant, services and arrange for the construction of work accordingly. The breaking and cutting of the completed work must not be done unless

specifically authorized in writing by the Site Manager. Generally, all breaking shall be by the Contractor for civil/interior work and no work shall be done over broken or patched work without first ascertaining that the broken surface is adequately prepared and reinforced to receive and hold further work.

35. CLEARANCE OF SITE ON COMPLETION

35.1 Before the issue of the Completion Certificate, the Contractor shall clear away and remove from the Site all constructional plant, surplus materials, rubbish and temporary Works of every kind and leave the whole of the Site and Works clean and in workman like condition to the satisfaction of the Site Manager.

35.2 The Contractor shall on completion of work return back the storage space and office space to client. in the same condition as was provided to the Contractor in the beginning of the project.

36. PATENT RIGHTS

Contractor shall fully indemnify client against any action, claim or proceeding relating to any infringement of the use of any patent or design or any alleged patent or design rights and shall pay royalties which may be payable in respect of any article or part thereof included in the Contract.

37. LABOUR HUTS

The Contractor shall not be allowed to put up huts for labour at the Works Site as the space at the Site is very limited.

38. SITE RECORDS

The Contractor shall keep books, accounts and Site documents and documents and records showing the number of men employed each day, wage bills, delivery notes, priced invoices for all materials ordered or delivered, visitors to the Site or such records as Project Manager may require the Contractor to maintain from time to time. The Contractor shall furnish such documents and records to the Project Manager, when required. The Contractor shall ensure that there is a clear demarcation made on the amount spent on materials and labours.

39. RELEASE OF INFORMATION

All information gathered under this Contract by the Contractor all reports and recommendations relating to this contract shall be treated as confidential by the Contractor and shall not, without the prior written approval of client is made available to any person or party other than the Project Manager, the Architect, Engineering Consultant or any concerned Government Authority.

INSURANCE AND INDEMNITIES

40. INSURANCE OF WORKS

Without thereby limiting their responsibilities, the Contractor shall at its own expense carry out and maintain the following insurance:

Group Personal Accident Insurance Policy covering the Contractor's staff. The Contractor shall ensure that any sub-contractor appointed by them shall also have a similar insurance coverage.

Insurance Policy covering the Contractor's own property at site including but not limited to equipment and vehicles.

Professional Indemnity Insurance Policy sufficient to cover risks associated with contractor's services.

The Contractor shall insure, in the joint names of client and the Contractor, against all loss or damage during transit, storage, and execution or installation and commissioning from whatever cause arising, for which he is responsible under the terms of contract, and also for all loss and damage arising from improper workmanship, earth quake, floods, fire and like in such manner that client and the Contractor are covered for the period up to 3 months after the entire work/installation is certified complete. The value of the insurance cover should be adequate to cover the replacement value of the material and services.

All payments received from the insurer under the said policy or policies shall be first received by client and shall be paid to the Contractor in instalments for the purpose of rebuilding or replacement or repair of the Works and/or goods destroyed or damaged as the case may be. However any delay in receipt of insurance claim amounts shall not entitle the Contractor to any claim on client, nor shall it entitle them for any extension in the date of completion.

41. INSURANCE AGAINST ACCIDENT OR INJURY TO WORKERS:

The Contractor shall be responsible for the safety of Contractor's own property, materials, all employees or workmen engaged by them or their Sub-contractors in connection with the Work and shall forthwith report to the Project Manager any incidence of accidents causing damage to property or injury to personnel, however and wherever caused in the Works, and shall make adequate arrangement for rendering all possible aid to the victims of such accident. Contractor shall be obliged to pay any compensation to the employees or workmen employed by the Contractor in the execution of the Work, in accordance with the Workmen's Compensation Act or any other Statute as may be applicable.

The Contractor shall continue such insurance during the whole execution time that any persons are employed by them or the Sub-Contractors on the Works.

42. THIRD PARTY INSURANCE:

Before commencing the execution of the Works, the Contractor shall insure against their liability for any materials or physical damage, loss or injury which may occur to any property including that of client., and to any person including any employee of client, Project Manager, Architect, Engineering Consultant by or arising out of the execution of the Works or in carrying out of the Contract.

Such insurance must ensure a minimum coverage to the extent of IR. 10, 00,000 (Rupees Ten lakhs) per claim.

43. INSURANCE - GENERAL:

All insurance covers shall be taken from a nationalized insurance company only. If the contractor desires to take insurance cover from some other insurance company, prior approval from the Clients / Project Managers would need to be taken.

The terms of the insurance policies shall include a provision whereby, in the event of any claim in respect of which the Contractor would be entitled to receive, indemnify under the policy being brought or made against client the insurer will indemnify client against such claims and any costs, charges and expenses in respect thereof.

The Contractor shall provide client and the Project Manager with a copy of each of the Insurance policies and documents taken out by them in pursuance of the Contract immediately after such insurance coverage.

If the Contractor shall fail to effect and keep in force insurance, as per the terms of contract, client may effect and keep in force any such insurance and pay such premium or premiums as may be necessary for that purpose and from time to time deduct the amount so paid by client as aforesaid from any monies due or which may become due to the Contractor, or recover the same as a debit due from the Contractor.

The Contractor shall be responsible for preparing of all claims and make good for the damage or loss by way of repairs and/or replacement of the portion of the Works damaged or lost. The transfer of title shall not in any way relieve the Contractor of their responsibilities during the period of the contract including defects liability guarantee period.

LABOUR**44. ENGAGEMENT OF LABOUR:**

The Contractor shall make their own arrangements for the engagement of labour, local or otherwise, and for their transport, housing and payment. All labour engaged by the Contractor shall be and remain the employees of the Contractor and no claim whatsoever shall lie against client by them or Contractor and any person claiming on their behalf against client in respect of any right or benefit or compensation due to them in their employment. The Contractor shall client in case any claim is made on them in this regard.

The Contractor shall obtain a valid license under the Contract Labour (Regulation and Abolition) Act if any, before the commencement of the work and continue to have a valid license until the completion of work or expiry of guarantee period, if applicable.

The Contractor shall pay the labour employed by them directly or through Sub-Contractors, wages not less than the minimum wages notified under the Minimum Wages Act updated till completion of project.

The Contractor shall in respect of all labour employed by them either directly or through Sub-Contractors comply with or cause to be complied with the provisions of the Payment as per prevailing government norms for the labour as may be enacted by the Government or any modification thereof or any other law relating thereto and rules made there under from time to time. The contractor shall maintain all relevant records of such compliance at site and provide them for independent inspection/audit. Contractor's payment claims shall be accepted only on fulfilment of all such compliance.

Client shall on a report from the competent authority have the power to deduct from the monies due to the Contractor any sum notified under the provisions of the relevant Act.

The Contractor shall indemnify client against all or any payments to be made under and for the observance of any Act, Rules and Regulations aforesaid without prejudice to their right to claim indemnity from their Sub-Contractors.

The Contractor shall ensure compliance with the Inter-state Migrant Workmen as per prevailing govt. norms.

45. SAFETY REQUIREMENTS

NOTE - To be strictly followed and implemented at Site.

All construction personnel, visitors and any other person on the project shall wear approved Hard Hats; Colour coded T – Shirts, Safety glasses with side shields, shoes and an identification badge. These badges must clearly be shown to the security. Persons without badge will not be allowed on project site.

All ladders will be factory or shop built. They shall be tied off and extended 1.0m above the landing. Painted ladders are not allowed. Ladders of aluminium alloy would be permitted at site with adequate rubber bases. Wooden ladders would not be allowed.

All scaffolding shall have clear timber or steel planks with toe boards. It will have handrails extending 36" above the deck. A mid-rail must be provided at 18".

No workman shall walk under a load being lifted.

Job site must be kept free from scrap wood, paper, plastics, garbage, loose and broken materials. House keeping will be enforced and each contractor shall be responsible for their own work area. A housekeeping program shall be established and waste disposal will conform to local legislation. Removal of debris and waste shall be carried out without fail on a daily basis. The contractor would

be required to depute a certain number of workers (which would be communicated by the Project Manager) to the general site housekeeping team which would comprise of workers of the various contractors working at site.

All extension cords or electrical cable shall be free of cuts or scuffs. All cords shall have either male or female 3-point sockets. Bare wire stuff into a receptacle will not be allowed. All sliced wire shall be done with a splice kit, not just turned and taped. All portable electrical equipment shall be inspected by a competent person.

All electrical equipment should be grounded.

Each contractor shall have a safety meeting each Monday morning to be attended by all workers of the particular contractor. The person holding the meeting shall have a report stating the names of all persons attending, and topics discussed. These reports would be submitted to the Project Manager every Monday evening.

Each Contractor shall appoint a safety monitor to monitor their work. All contractor safety monitors shall have a scheduled weekly meeting with Project Manager/ client's Safety Manager.

All electrical hook-ups and connections to power panels, step down transformers and distribution boxes shall be done by a certified electrician.

All contractors and sub-contractors will submit a weekly report stating all accidents.

All gas bottles shall be stored upright secured by chain and separated by type. Empty bottles shall be stored in the same manner. Valve assembly caps shall be provided for all bottles.

No gas bottles shall be rolled or dragged on the ground or concrete. They must be kept upright and moved on a cart and carried.

No hoses shall be connected to the oxygen or acetylene bottles without a proper working gauges and flashback arrestor.

All contractors must develop an emergency treatment and medical evaluation procedure. He will set up a working arrangement with local medical doctor to handle injury cases, and provide for other treatment by a specialist or local hospital. Project Manager must be notified immediately of all work injuries.

Visitors are not allowed on the project site without a visitor's badge, which the contractor must obtain, for security.

Project Manager and or security are authorized to inspect all vehicles and personal lunch boxes, packages and bundles entering or leaving the project.

All scaffolding shall be manufactured frames, bracing connecting pins and other accessories. Wooden Bullies will not be allowed.

Project Manager shall have the authority to shut a portion of the work in progress or all work of the project whether they deem that the work is being carried out in an unsafe manner, safety equipment is not being used and safety procedures are not followed.

Provision for sufficient and workable fire extinguisher to be made in each zone of the site as per directions of the Project Manager at their own cost.

Maintain and active list of all hazardous substance and be in possession of material safety data sheets.

The contractor shall provide at his expense one room of -reasonable dimensions plus toilet facilities for the use of their workers as rest room. The room & toilet shall be well-lit and well ventilated. Contractor shall also provide necessary arrangement for final disposal of sewage at their cost.

The Contractor shall establish a fully equipped and staffed first aid centre on the Site to deal with accidental injuries and workers health

The Contractor shall not employ any labour less than 18 years of age on the job. If female labour is engaged, the Contractor shall make necessary provisions at his own expense for safeguarding and care of their children and keeping them in Crutch, which will also maintained by the contractor. No children shall be permitted on the Site.

If women workers are employed on the Work, the Contractor shall provide at his expense two rooms of -reasonable dimensions plus toilet facilities for the use of their children under the age of six years. One room shall be used as a playroom and the other as the bedroom of the children. The rooms shall be built to reasonably good specifications in consultation with the Project Manager. The rooms shall be well-lit and well ventilated.

Welding Works wherever carried out should be should undertaken using complete protection equipment like, but not limited to glass cover for eye protection and should always be accompanied by a fire extinguisher. Such Works should only be undertaken by trained technicians and should always be done in the presence of an extra person.

The contractor shall put safety net on edges for working at heights. Also he shall provide safety harness / safety belts etc. for workers working on edges or on height.

46. MODEL RULES

The Contractor shall at their own cost comply with or cause to be complied with Model Rules for labour welfare framed by the Government or other local bodies / authorities from time to time for the protection of health and for making sanitary arrangement for workers employed directly or indirectly on the Works. In case the Contractor fails to make arrangements as aforesaid, client shall be entitled to do so and recover the cost thereof from the Contractor.

47. RETURNS OF LABOUR

The Contractor shall furnish to the Site Manager a return every fortnight in such detail and form as the Site Manager may prescribe showing the supervisory staff and the number of labour employed by the Contractor and Sub-Contractors on the Site separately for each category of labour indicating their working hours and wages paid to them and any other information as directed by the Site Manager.

48. CONTRACTOR'S SITE ORGANIZATION AND EQUIPMENT

Site Supervisor: The Contractor shall ensure continued effective supervision with the help of a qualified, experienced person assisted by adequate staff, for the entire duration of the Works. The Site Supervisor will be responsible for carrying out the work to the true meaning of the drawings, conditions of contract, specifications, schedule of quantities and Architect's/ Consultants instructions and directions or instructions given to them in writing shall be held to have given to the Contractor officially. Attention is called to the importance of requesting written instruction from the Architect before undertaking any work where Architect's directions or instructions are required. Any such work done in advance of such instructions will be liable to be removed at the Contractor's cost. The Site Supervisor and their technical staff shall not be transferred from the work without the written prior permission from the Project Manager/Architect.

The contractor shall post at least one Graduate Engineer with relevant experience to handle the job along with the support of Diploma holder Engineers and foreman, who are competent enough to handle the job.

Equipment: The Contractor shall provide and install all necessary ladders, scaffolding, tools, plants and all transport for labour, materials and plant necessary for the property execution and completion of the work to the satisfaction of the Site Manager /Architect/Consultant/Client.

Security: The Contractor shall provide adequate number of watchmen to guard the Site premises, materials and equipment at all times at their expense.

Telephone: The Contractor shall make necessary arrangements to install a working telephone line at their own cost and maintain its upkeep. The Contractor shall pay all charges in connection with the same till the completion of the work.

T-Shirts / Helmets / Safety Shoes: The Contractor shall arrange to provide all their staff employed at site (skilled as well as unskilled) with construction helmets, safety shoes & coloured T-shirts (colour to be decided at the time of award of work and would be communicated by the Project Manager) with their company/firm name clearly embossed in the front of the T-shirt.

MATERIALS AND WORKMANSHIP**49. QUALITY OF MATERIALS AND WORKMANSHIP:**

All Materials and workmanship shall be the best of the respective kinds described in the Contract and in accordance with the instructions and directions of the Project Manager /Architect/ Engineering

Consultant shall be subjected from time to time, to such tests as the Project Manager/ Architect/ Engineering Consultant may direct at the place of manufacture or fabrication or on the Site or at such other places as may be directed by the Site Manager. The Contractor shall execute the whole and every part of the work in the most substantial and workman-like manner, both as regards to materials and workmanship and in every respect in strict accordance with the specifications etc. The Contractor shall also conform exactly and faithfully to the designs, drawings and instructions in writing of the Project Manager, Architect and the Engineering Consultant.

50. STORAGE OF MATERIALS:

All materials and equipment brought on to the Site shall be stored by the Contractor only at places approved by the Site Manager. Storage and safe custody of materials and equipment shall be the responsibility of the Contractor.

51. APPROVAL OF MATERIALS:

The Contractor shall supply samples of all materials including those specified by brand names for approval of the Client/Project Manager/Architect. The Client/Project Manager/Architect will approve the samples in writing before the Contractor arranges bulk supplies. The cost of arranging/making of test samples cost of their packing and forwarding and testing charges shall be borne by the Contractor.

The Project Manager and the Architect /Engineering Consultant may at any time during the execution of work call upon the Contractor to submit samples of any materials used or to be used in the Works for checking compliance with the Contract specifications or approved samples. Should these samples fail to comply with the Contract specifications or not conform to approved samples, then the materials from which the said samples were taken shall be removed from the Site immediately and all work executed with such materials shall be replaced and made good to the satisfaction of the Site Manager, at the expense of the Contractor. Consequence arising from delay in submission of samples should be sole responsibility of the Contractor.

52. QUALITY CONTROL:

The Contractor shall submit to the Site Manager a comprehensive quality approval plan for all materials, equipments, and things to be provided under the Contract. No material or equipment shall be dispatched by the manufacturer or vendor or brought to Site by the Contractor until the quality of the material or equipment has been established through inspection and tests or through test certificates furnished by the manufacturer. In case the Site Manager accepts such test certificates as sufficient proof that the material or equipment conforms to the Contract Specifications, he shall accord their approval for the dispatch of material or equipment. Additional tests if required by the Project Manager shall be carried out as per the specifications laid down by the Project Manager at the cost of the Contractor.

53. STANDARD OF WORKMANSHIP:

To determine the acceptable standard of workmanship, Project Manager/ Site Manager/ Architect/ Engineering Consultant may require the Contractor to execute certain proportions of Works and services such as walls, flooring, joinery, finishes, sanitary installation etc. under their close supervision. On approval such samples of work shall be termed as guiding samples. Work shall be executed to conform to the standard of workmanship of these samples. No extra cost for the preparation of such sample shall be payable to the contractor.

54. INSPECTION OF WORKS:

Client. /Project Manager, the Architect/ Consultant and any person authorized by them shall at all times have access to the Works and to all Workshops and places where work is being prepared or from where materials, or equipment are being obtained for the Works and the Contractor shall afford every facility and assistance in obtaining the right to access.

All work embracing more than one process shall be subject to examination and approval at each stage thereof and the Contractor shall give due notice to Project Manager / Site Manager when each stage is ready.

55. EXAMINATION OF WORKS:

No work shall be covered up or put out of view without the approval of the Project Manager. The Contractor shall give due notice to the Site Manager and afford them full opportunity to examine any work, which is about to be covered up or put out of view.

The Contractor shall open any part or parts of the Works as Project Manager or the Architect/ Engineering Consultant may direct from time to time and shall reinstate and make good such part or parts to the satisfaction of the Project Manager.

56. REMOVAL OF IMPROPER WORK & MATERIALS:

The Project Manager shall have full powers to order in writing for :

The removal from the Site, within such time as may be specified in the order, of any materials which, in the opinion of Project Manager are not in accordance with the Contract.

The substitution of proper and suitable materials, and

The removal and proper re-execution notwithstanding any previous test thereof or interim payment thereof, or any work which, in respect of materials or workmanship is not in the opinion of the Project Manager or, in accordance with the Contract.

In case the Contractor defaults in carrying out such order, client shall be entitled to employ and pay other persons to carry out the same and all expenses consequent thereon or incidental thereto shall be recoverable from the Contractor by client, or may be deducted by client from any monies due or which may become due to the Contractor.

CONSTRUCTIONAL PLANT, TEMPORARY WORKS AND MATERIALS**57. CONTRACTOR TO SUPPLY ALL PLANTS, MACHINERY, SCAFFOLDING, ETC.:**

No plant, machinery, scaffolding and tools & tackles will be arranged or issued by client *MATERIALS, PLANT ETC. EXCLUSIVE USE FOR THE WORKS*

All constructional plants, temporary Works and materials when brought to the Site shall be deemed to be exclusively intended for the execution of the Works. The Contractor shall not remove the same or any part thereof, without the consent, in writing, of the Site Manager, which shall not be unreasonably withheld.

Upon completion of the Works, the Contractor shall remove from the Site all the said constructional plant and temporary Works remaining thereon and any unused materials provided by the Contractor.

Client shall not at any time be liable for the loss of or damage to any of the said constructional plant, temporary Works or materials. The storage and safe custody of all materials, equipment constructional plant and the Works executed shall be the responsibility of the Contractor.

DEVIATIONS/ VARIATIONS**58. EXTRAS AND VARIATIONS**

Project Manager shall have the power to make and order any variation of the form, quality of the Works that may appear to them to be necessary during the progress of the Works. The Contractor shall carry out the Works as directed.

The quantities as mentioned in BOQ are tentative and may increase or decrease. No extra claim will be acceptable for such increase and the percentage of variation should not be more than 5% with respect to BOQ quantities. Variations shall not in any way vitiate or invalidate the Contract.

No verbal orders by Project Manager /Architect/ Engineering Consultant shall constitute an authority for the Contractor to undertake any variations from the Contract, specifications. If the Contractor, for any reason, has been given verbal orders it shall be their responsibility to ask confirmation of the orders and shall proceed accordingly only after the orders are confirmed in writing.

All altered, additional or substituted items of work shall be priced at the minimum rate arrived at based on the points mentioned as under-

An item of work included in the bills of quantities at the applicable rate in the respective bill of quantities.

An item of work similar in character to the item included in the bill of quantities at the rate derived from the rate for a similar class of work in the bill of quantities as approved by Project Manager.

If the rate for an item of work cannot be determined in the manner at (a) and (b) above, the rate shall be decided by the Project Manager on the basis of rate analysis based on the cost to the Contractor at Site i.e. cost of materials including taxes, duties, Octroi, packing and forwarding charges, handling and insurance and cost of labour plus service tax both on actual: plus 15% (Fifteen Percent) to cover Contractor's profit and overheads, except on the cost of any material or service supplied/provided by client

It shall be the responsibility of the Contractor to inform the Project Manager the rate which he proposes to claim for such item of work, supported by analysis of the rate claimed. The Project Manager shall, within fifteen days, thereafter arrive at an appropriate rate. In case it is not practical for the Contractor to furnish vouchers in support of the cost of materials or such evidence as the Project Manager shall fix only a provisional rate for the purpose of interim payments. The Contractor shall have no right to suspend the work on the plea of non-settlement of the rates and the decision of the Project Manager shall be final.

59. DEVIATION LIMIT:

As a result of variations ordered, the quantities of any individual items of work done, omitted, altered and substituted could vary to any extent, without any adjustment in the quoted unit rates.

60. CLAIMS

The Contractor shall send to the Project Manager every month, an account giving full particulars, as full and detailed as possible of all claims for any additional payments to which the Contractor may consider them selves entitled and of all extra work ordered in writing and which he has executed during the preceding month. The bills of the Contractors shall be cleared, only after all payments are made to the workmen and necessary contributions in terms of Statutory Rules are made. The Contractor shall ensure that a copy of the relevant Variation/extra items approval Register is handed over to the Site Manager, to enable them to clear the bills.

No claim for payment for any extra work or expense will be considered which has not been included in such particulars. client may consider payment for any such work or expenses where admissible under the terms of the Contract, if the Contractor has at the earliest practicable opportunity notified client in writing that he intends to make a claim for such work and expense and it is certified by Project Manager that such payment was due.

Any claim which is not notified by the Contractor in two consecutive bills shall be deemed to have been waived and extinguished.

CERTIFICATES AND PAYMENTS

63. QUANTITIES:

The quantities set out in the Bill of Quantities are to be estimated quantities of the work; they are not to be taken as the actual or correct quantities of the Works to be executed by the Contractor in fulfilment of their obligations under the Contract.

64. VALUATION:

The Site Manager shall except where otherwise stated, ascertain and determine the value of work done by measurement in accordance with the Contract.

65. WORKS TO BE MEASURED:

The measurement of work done by the Contractor shall be recorded in the Measurement books by the Site Manager, from time to time, jointly with the Contractor. Measurements of altered, additional or substituted items of work ordered shall be recorded as and when these are executed even if the rates for these items have not been settled.

The Project Manager shall, when he requires any part of the Works to be measured, give a reasonable notice to the Contractor who shall attend or send their representative to assist the Project Manager or their representative in making such measurements, and shall furnish all particulars required by them. The Contractor shall provide necessary platform for the safety of the person(s) undertaking the measurements at their own cost.

Measurements shall be signed and dated by both the Contractor and Project Manager on the completion of each set of measurements. If the Contractor objects to any of the measurements recorded by the Project Manager, the Contractor or their authorized representative shall record a note to this effect in the Measurement Book against items objected to and such a note shall be signed and dated by both the Contractor and the Project Manager.

If the Contractor fails to attend or neglects or omits to send their authorized representative, then the measurements made by the Project Manager or approved by them shall be taken to be correct measurement of the work. If after examination of such record of measurements, the Contractor does not agree with the same or does not sign the same as agreed, these shall nevertheless be taken as correct, unless the Contractor shall have within 7 days of such examination, notifies the Project Manager in writing in which respect the measurements recorded are claimed by them to be incorrect.

66. METHOD OF MEASUREMENT

The works shall be measured in accordance with relevant IS codes. Notwithstanding any general or local custom, except where otherwise specifically described or prescribed in the contract. The Client/Project Manager reserves the right to get the measurements checked/ audited by an independent agency and in such case the claim as settled by the client shall be final and binding. In addition, client reserves the right to impose suitable penalties on the Contractor if it is detected that such claims are based on wilful intent.

67. INTERIM BILLS:

The Contractor shall, as specified in the schedule of fiscal aspects of the tender submit interim bills in 4 copies showing the value of the work executed in accordance with the Contract based on the measurements recorded in the measurement books.

Note:-

The Project Manager shall evaluate the quantity of work executed at site and in consultation with in-house QS Manager approve the quality of materials, equipment and workmanship and adherence to the details as per drawings, specifications

Payment for items of work, which is partly completed, shall not be allowed except for material at site payment if allowed.

All interim payments shall be treated as payments by way of advances against final payment and not as payments for the work done or be considered as an admission of the due performance of the Contract.

Inclusion of any supplies made or Works executed in an interim bill and payment of such interim bills shall not be deemed to constitute approval by the Project Manager of any such supplies or Works nor shall it in any way affect the rights of client under the Contract.

From the amount of the interim bill certified, the Project Manager, shall deduct a value of the work as set out in the Schedule of Fiscal Aspects, towards Retention Money.

The Project Manager may by any certificate correct or modify any previous certificate and shall have the power to withhold any certificate if, the Works or any part thereof have not been carried out to Client/Project Manager/ Architect's/Consultant satisfaction.

68. FINAL BILL

Not later than 30 days after the Completion of work , the Contractor shall submit to Project Manager, 4 (four) copies of final bill with supporting documents showing in detail the value of work done in accordance with the Contract, the payments received by them and other recoveries/ deductions to be effected from the Contractor. Within 15 (Fifteen) days of the receipt of final bill and all information reasonably required for verification of the final bill, the Project Manager shall approve and render a certificate to client. that he has satisfied themselves that the work executed is as per Contract specifications and to their satisfaction. client. shall subsequently release the payment to the contractor after it's through verification with in 15 days after receiving the payment certificate from Project Manager.

Note:

1. No request for the release of ad-hoc payment against the bill shall be entertained.

An indemnity bond shall be submitted by the contractor to the effect that he shall indemnify client In-case of any financial liability/loss arising on the client. due the any action or default of the contractor.

69. WITHHOLDING OF PAYMENTS

The Project Manager may withhold or on account of subsequently discovered evidence, nullify the whole or a part of any certificate to such extent as may be necessary to protect client from loss on account of

- A Defective work not remedied within the time period given by the Project Manager
- b Failure of the Contractor to make payments properly to Sub-contractors for materials or labour or equipment
- c Damage to work of another Contractor or Sub-Contractor
- d A reasonable doubt that the Contract cannot be completed for the balance unpaid amount
- e A reasonable doubt that the Contractor intends to leave work items incomplete.
- f Due payments not made to their workmen as per labour statutes, in force.
- g Contractor has not met fully their obligation towards payments of all statutory dues.
- h Copies of relevant extracts of Statutory Registers not handed over to Site Manager.

70. CHANGE ORDERS:

The Owner reserves the right to alter the Scope of Work and consequently the Contract Price shall be suitably adjusted for such changes by reference to the rates in the Schedule of Rates. All change orders shall be issued by the Project Manager after the requisite explanations have been provided by the Architect and prior written consent obtained from the Owner's Representative. The onus shall be on the Contractor to obtain such prior written approval of the Architect.

If the rates for the additional, altered or substituted work are not specifically provided in the Schedule of Rates then such rates shall be derived from the rates that are specified for a similar class of work in the Contract. The Project Manager's interpretation as to what is a similar class of work and his decision on the method in which the rate is to be derived shall be final and binding on the Contractor.

If the rates for the additional, altered or substituted work cannot be determined in the manner specified above, then the rates for such work shall be determined on the basis of analysis of rates as contained in publications acceptable to the client.

If the rates for the additional, altered or substituted work cannot be determined in the manner specified above, then the rates for such work shall be based on actual consumption of materials, and actual use of labour and plant and machinery, as detailed below:

- a) Cost of materials supplied by the Contractor, at no more than prevailing market rates, actually incorporated in the Work.
- b) Cost of labour actually used at the Site on the Work at prevailing rates of labour.

c) Cost allocation toward the Work for the use of any plant and machinery at the Site, on actual basis.

15% of the actual costs in respect of (a), (b), and (c) above, towards Contractor's establishment and overhead and profit. Works contract tax and service tax or VAT shall be paid on change orders as per actual. However for owner supply material no profit shall be allowed to the contractor.

If the Contractor and the Project Manager cannot agree on a rate as determined in accordance with this sub-clause, then the Project Manager may determine a reasonable rate which shall be final and binding on the Contractor or, at the Owner's option, may order and direct the work to be carried out by such other persons or agencies as it may think fit, and such other persons or agencies shall not, in any manner be prevented or obstructed in their work or from entering upon the Work by the Contractor for the purpose of carrying out such work. The Contractor shall not be entitled to any payment whatsoever in connection with such work carried out by such other persons or agencies.

Before any extra work is undertaken by the Contractor, he shall ensure that he has received a specific Change Order, signed by the Owner, from the Client/Project Manager. No additional payments shall be made to the Contractor without prior agreement and receipt of the necessary signed Change Order. Each Change Order shall clearly state the value of the additional work agreed to and signed for by the Owner.

The Contractor shall at monthly intervals submit to the Project Manager an account giving particulars, as full and detailed as possible, of additional work ordered in writing by the Owner and which the Contractor has executed during the preceding month. If any Change Order instructed by the Owner causes a delay in the completion of the Work causing the Contractor to overrun the time fixed for completion of the Work, the Owner shall agree, following joint review of the circumstances with the Project Manager as to the extent of the delay, to postpone the time for completion of the Work by the period of delay, provided the Contractor has notified the Owner in writing, of such expected delay before such change order is actually issued by the Owner.

71. MATERIALS & WORKMANSHIP:

All materials and equipment to be incorporated in the Works shall be new materials and equipment and workmanship are to be of the best quality of the specified type and to the entire satisfaction of Project Manager / Architect/ Engineering Consultant. The Contractor shall immediately remove from the premises any materials, equipment and/or workmanship which in the opinion of Project Manager / Architect/ Engineering Consultant, are defective or unsuitable and shall substitute proper materials, equipment and/ or workmanship at their own cost. The term 'approval' used in connection with this Contract shall mean the approval of Project Manager. The Contractor shall, submit satisfactory evidence as to the kind and quality of materials and equipment

Where special makes or brands are called for, they are mentioned as a standard. Others of equivalent quality may be used, provided that the Project Manager considers the substituted materials as equivalent to the brand specified and approval is first obtained in writing from Project Manager / Architect/Consultant. Unless the substitutions are approved by the Client/Project Manager,

no deviation from the specifications will be permitted. The Contractor shall indicate and submit written evidence of those materials or equipment called for in the specifications that are not obtainable for installation in the building within the time limit of the Contract. Such a change shall not entitle the Contractor for any extension of the date of completion.

All materials and equipment shall be delivered so as to ensure a speedy and uninterrupted progress of the work. The same shall be stored so as to prevent overloading of any portion of the structure. The Contractor shall be entirely responsible for damage or loss to the materials, by any cause whatsoever.

Within 15 days after signing the Contract, the Contractor shall submit for approval of Project Manager, a complete list of all materials and equipment he and their Sub-Contractors propose to use in the work, or definite brand or make, which differ in any respect from those specified; also the particular brand of any article where more than one is specified as a standard. He shall also list items not specifically mentioned in the specifications but which are reasonably inferred and are necessary for the completion of the work.

The Contractor shall employ the right kind of workmen, jigs, tools and equipment to fabricate all materials and equipment, whether locally purchased or imported. They shall be fabricated and installed without any damage and in accordance with the manufacturer's instructions and manuals.

All materials, equipment and workmanship shall be subject to inspection, examination and test by Project Manager at any and all times during manufacture and/ or construction. Project Manager shall have the right to reject defective material, equipment and workmanship or require its correction. Rejected workmanship shall be satisfactorily corrected and rejected materials and equipment shall be satisfactorily replaced with proper material and equipment without charge therefore, and the Contractor shall promptly segregate and remove the rejected materials and equipment from the premises. If the Contractor fails to proceed at once with the replacement of rejected materials and/or the correction of defective workmanship, client may contract or otherwise replace such materials and equipment and/or correct such workmanship and charge and recover the cost thereof to the Contractor or may terminate the right of the Contractor to proceed further with the work. The Contractor shall furnish promptly, without additional charge all reasonable facilities, labour, materials and equipment necessary for the safe and convenient inspection and test that may be required by Project Manager.

All tests on material, equipment and workmanship shall be carried out through an organization selected by the Project Manager. The Contractor shall arrange for such tests and also bear all expenses in connection therewith.

72. DEDUCTIONS FOR UNCORRECTED WORK:

If Project Manager deem it in expedient to correct work damaged or not done in accordance with the contract, an equitable deduction from the Contract Price shall be made thereof and client Project Manager's decision in this respect shall be final.

73. CORRECTION OF WORK BEFORE COMPLETION OF WORK:

Project Manager in conjunction with the Architect/Client shall conduct a final inspection just before the completion of the work and prepare a list of materials, equipment, and items of work, which fail to conform to the Contract's Specifications. The Contractor shall promptly replace and re-execute such items in accordance with the Contract and shall bear all expenses of making good all work and cost of all work of other Contractors destroyed or damaged by such replacement or removal. If the Contractor fails to remove and replace above rejected materials, equipment and/ or workmanship within a reasonable time, fixed by written notice, client may employ and pay other persons to amend and make good such defects at the expense of the Contractor. All expenses incurred by client in rectifying the defects including all damages, loss and expense consequent to the defects shall be recoverable from any amount due or that may become due to the Contractor.

74. TIME - ESSENCE OF CONTRACT:

The time allowed for carrying out the Work as entered in the tender shall be strictly observed by the Contractor and shall be deemed to be of the essence of the Contract and shall be reckoned from the date of award of the Contract. The Work shall proceed with due diligence until Final Completion. The Contractor shall prepare a Construction Programme with time schedule keeping in view the completion period stipulated for specific portions of the Work and also the overall completion time and submit same for the approval of the Project Manager and the Owner's Representative. The Contractor shall comply with the time schedule as approved by the Project Manager and the Owner's Representative. In the event of the Contractor failing to comply with the overall and individual milestones contained in the time schedules, he shall be liable to pay liquidated damages as provided for in this Contract.

75. CAUSES OF DELAY FOR WHICH CLAIMS FOR EXTENSION OF TIME MAY BE CONSIDERED;

The Contractor shall be entitled to claim for extension of time, subject to the Conditions herein, should he be delayed or impeded in the execution of the Work by reason of the following:

Force Majeure;

Delay in the receipt of 'construction status' drawings from the Architect/Consultant provided that, in the opinion of the Project Manager, the Contractor has made every effort and endeavour to minimize the effect of such delays.

Any change orders directed by the Project Manager, which in the opinion of the Project Manager entail the requirement of additional time for completion of the Work.

In respect of items (a), (b) and (c) above, the Contractor shall submit in writing to the Project Manager his intention to claim for an extension of time within seven (7) working days of any of the above mentioned reasons or events causing a delay. Any claim of extension of time in respect of item (c) shall be notified by the Contractor before such change order is actually issued. The Contractor shall thereafter detail and submit his claim for the extension of time within fourteen (14)

working days of such delay having occurred. If the Contractor does not comply with both these conditions for each and every delay caused by any of the above mentioned reasons or events then he shall not be entitled to any extension of time.

The Project Manager shall study and verify the particulars of the claim for extension of time submitted by the Contractor and shall then reject or amend or accept the claim. He will extend the time by notifying the Contractor in writing for completion of the Work by such period as he shall think adequate with the prior approval of the Owner's Representative and the time for completion of the Work so extended shall for all purposes of the Contract be deemed the time specified for completion of the Work. The decision of the Project Manager in this regard shall be final and binding on the Contractor. No extension of time shall be granted separately for any concurrent or parallel activities, and only a delay, caused by any of the above mentioned reasons or events, in a critical activity which has a direct effect on the overall completion of the Work, shall form a basis for granting extension of time.

Should any deletions or changes in the scope of the Work reduce the time required to complete the Work under the Contract, then the time savings accruing from such deletions may be considered by the Project Manager in off-setting the durations awarded for an extension of time.

76. NO FINANCIAL OR OTHER COMPENSATION FOR DELAYS:

EXTENTION OF TIME

In case the work is delayed beyond stipulated period of completion and the causes of delay are considered not attributable to the contractor, Client shall, upon written request of the contractor to this effect at least one month prior to stipulate date of completion, grant suitable extension of time. No escalation shall be payable for extension period if granted.

INDEMNITY:

a. The Contractor shall indemnify, defend and hold and keep indemnified, the Owner from and against all actions, suits, claims, costs, liabilities and demands brought or made against the Owner in respect of any matter or thing done or omitted to be done by the Contractor or any of his Sub-Contractor(s) or their employees, workmen representatives, agents, servants or suppliers in the execution of or in connection with the Work or the Contractor's or Sub-Contractor's performance under this Contract and against any loss or damage to the Owner in consequence of any action or suit being brought against the Contractor or any of his Sub-Contractor(s) or their employees, workmen, representatives, agents, servants or suppliers for anything do or omitted to be done in execution of the Work and the Project Coordination Services under this Contract, including but not limited to meeting the Project milestones, non compliance with the applicable laws and regulations of the government and local authorities, not obtaining the relevant licenses and permits Infringing any patents rights and specifically regarding use, storage and disposal of Hazardous materials.

The obligations of the Contractor under this clause shall survive the termination of this Contract. The contractor shall also keep Oriental Hotels Ltd. indemnified and hold harmless against all claims, losses, damages, costs, expenses of any nature, whatsoever, on account of any defect in

material or workmanship or otherwise in the Work carried out by the Contractors, its sub-contractor, agent, representatives etc.

b. The Contractor shall ensure that the Sub-Contractors indemnify, defend and hold, and keep indemnified the Owner harmless from all actions, suits, claims, costs, fines, judgments and liabilities in respect of any matter or thing done or omitted to be done by the Sub-Contractors or their employees, workmen, representatives, agents, servants and suppliers in execution of or in connection with the Work or arising out of or in any way alleged to be in connection with Sub-Contractors' performance under this Contract, including but not limited to, not meeting the Project milestones, non-compliance with the applicable laws and regulations of the government and local authorities, not obtaining the relevant licenses and permits, infringing any patents rights and specifically regarding the storage, use or disposal by the Sub-Contractors of hazardous materials in, on or under the Site or at any location whatsoever in connection with the Project in any way. The Sub-Contractors' responsibility under this indemnification shall also include any and all hazardous materials introduced to the Site by their agents, representatives, employees, workmen, servants and suppliers. The obligations of Sub-Contractors under this clause survive the termination or expiry of this Contract.

c. The liability of the Owner shall, notwithstanding any thing to the contrary contained herein, whether in tort or by contract, whether for special, incidental or consequential damages, direct or indirect, shall be limited to the Contract Price.

77. LIQUIDATED DAMAGES / PROGRAMME CHART / MILESTONES:

The project milestones shall be identified from the detailed micro project schedule submitted by individual contractor along with the quote. If the milestones are not achieved by the Contractor shall pay the Owner liquidated damages as contained in the Schedule of Fiscal Aspects for each week/day that the milestones work is incomplete in any way whatsoever after the date assigned for completion of the milestone work. Extension if allowed has to be obtained in writing from the Project Manager/Owner's Representative well in advance of completion dates.

78. PENALTY / FINE:

If the Project Manager notifies the Contractor of non-compliance with safety codes as in clause no. 45 of General Conditions of Contract, the Contractor shall immediately if so directed or in any event not more than 10 hours after receipt of such notice, make all reasonable effort to correct such non-compliance.

If the Contractor fails to do so, the Project Manager shall levy fine of Rs. 500 per head per day for not wearing personal safety equipment as indicated in this document and Rs. 5000 per day towards non-compliance of site conditions, as indicated in this document.

79. COMPLETION:

a. The work shall be considered as complete when Client/Project Manager has certified in writing on recommendation of Architect/Engineering Consultant.

- b. The defect liability period shall commence from the date of such certificate.
- c. Should client decide to occupy any portion of the building or use any part of any equipment, before the Contract is completed, same shall not constitute an acceptance of any part of the work unless so stated in writing by the Client/Project Manager.

GUARANTEES, MAINTENANCE & DEFECTS

80. MAINTENANCE

The Contractor shall maintain the Works against defects for a period of 12 months reckoned from the date of Virtual Completion of the Works, termed as Defect Liability Period or Guarantee; and in the event of more than one certificate of completion, from the respective dates so certified by the Project Manager.

81. DEFECTS

The Contractor shall make good, at their own cost, and to the satisfaction of the Project Manager/Architect/Engineering Consultant, all defects, other faults, arising in the opinion of the Project Manager from work or materials not being in accordance with the Drawings or Specifications or Schedule of Quantities or the instructions of Project Manager, which may appear within 24 months after completion of work etc.

The Contractor may not maintain staff and labour at Site throughout the defects liability period. However, if any major defects are noted requiring their urgent attention, he shall attend to the same immediately.

82. RECTIFICATION OF DEFECTS/ REPAIRS

Should the Project Manager/Client consider, at any time during the construction or reconstruction or prior to the expiration of the Guarantee/Defects Liability Period, that any work has been executed with unsound or imperfect materials or unskilled workmanship or is of an inferior quality or not otherwise in accordance with the Contract, in respect of which the decision of the Project Manager shall be final, the Contractor shall, on demand in writing from the Project Manager specifying the fault; notwithstanding that the same may have been inadvertently passed, certified and paid for, rectify forth or remove and reconstruct the defective work so specified, in whole or in part, as the case may require, at their own expense: and in the event of their failing to do so within the period specified by the Project Manager in their demand/direction, Client may carry out the work by other means at the risk and expense, in all respects, of the Contractor.

If it becomes necessary for the Contractor to replace or renew any defective portions of the Works, plant or installation under this clause, the provisions of this clause shall apply to the portions of the Works/plant/installation so replaced or renewed until the expiration of 24 months from the date of such replacements or renewals.

83. GUARANTEE:

Besides guarantees required elsewhere, the Contractor shall guarantee the work in general for 24 months from the date of completion as noted in the General Conditions.

All required guarantees shall be submitted to Project Manager by the Contractor when requesting Certification of accounts for payment by client.

All required guarantees shall be submitted to Client / Project Manager in the format given as a pre-requisite to acceptance and payment.

84. DRAWINGS, SPECIFICATIONS ETC:

After the Contract is signed, the Contractor will be furnished with two copies of the drawings and one copy each of the Conditions of Contract, Specifications and schedule of Quantities without cost to them for their use until the completion of the Contract.

In general, the drawings shall indicate dimensions, positions and type of construction; the specifications shall indicate the qualities and the methods; and the Schedule of Quantities shall indicate the quantity and rate for each item of work. However, the above documents being complementary, what is called for by any one shall be as binding as if called for by all. In case of any discrepancies in or among the documents, the most stringent of all shall apply.

Any work indicated on the drawings and not mentioned in the Schedule of Quantities or Specifications or vice versa, shall be deemed as though fully set forth in each. Work not specifically detailed, called for, marked or specified, shall be the same as similar parts that are detailed, marked or specified or as specified by the Architect.

No deviations from the Drawings, Specifications and Schedule of Quantities shall be made. Project Manager's interpretation of these documents shall be final.

Errors or inconsistencies discovered in the Plans and Specifications shall be promptly called to the attention of Project Manager for interpretation or correction. Local conditions which may affect the work shall likewise be brought to the Project Manager's attention at once. If, at any time, it is discovered that work being done which is not in accordance with the approved plans and Specifications, the Contractor shall correct the work immediately. Correction of defective work shall not be a basis for any claims for extension of time and/or rates. The Contractor shall not carry on the work except with the knowledge of the Site Manager.

Figured dimensions on the scale drawings and large-scale details shall govern. Large-scale details take precedence over scale drawings. Any work done before receipt of such details if not in accordance with the same, shall be removed and replaced or adjusted as directed, without expense to client.

All Drawings, Specifications and Schedule of Quantities and copies thereof furnished by client / Project Manager are property of client. They shall not be used on any other work and shall be returned to client. at their request or at the completion of the Contract.

85. SAMPLES & SHOP DRAWINGS:

After the award of the Contract, the Contractor shall furnish for the approval of Project Manager, samples and shop drawings required by the Specifications or Project Manager. Samples shall be delivered as directed by Project Manager. No extra payment shall be made to the Contractor for preparation of any samples. A schedule giving dates for the submission of samples shall be included in the time schedule. Unless specifically authorized all samples must be submitted for approval within 15 days of signing the Contract.

86. GUARANTEE CERTIFICATE

The Contract shall not be considered as completed until Guarantee/Defects Liability Period shall have expired. The Guarantee Certificate stating that the Works have been completed and maintained to their satisfaction and that all the defects notified had been rectified, shall be given by the Project Manager within one month of the expiry of the Guarantee period, and if different Guarantee periods shall become applicable to different parts of the Works, the expiry of the last such period; or as soon thereafter as any work ordered to be rectified during such period shall have been completed to the satisfaction of the Project Manager.

Provided that in the case of fraud, concealment or fraudulent concealment relating to the Works or materials or to any matter dealt with in any certificate, the Guarantee certificate shall not be conclusive evidence as to its sufficiency.

87. SAFETY PROCEDURES

The Contractor shall incorporate in their operation the requirements of all the "Safety Codes" as per govt. norms. If the Contractor fails to take safety measures and provides facilities at the Site of work to ensure safety of Works and injuries to workmen, Client. /Project Manager shall have the power to do so and recover the cost thereof from the Contractor. In no case shall the provisions enlisted in the Safety Requirements in Item 45 be diluted.

The Contractor shall provide safe means of access to all working places.

The Contractor shall properly design scaffolding, temporary access, ladders, ramps and hoisting arrangements, cranes etc. as applicable, to ensure safety of workmen as well as Works. All scaffolds, ladders and other safety devices shall be maintained in safe conditions.

All necessary personal safety equipment shall be kept available for the use of the persons employed on the Site and maintained in a condition for immediate use. The Contractor shall take adequate steps to ensure proper use of equipment by those concerned.

Adequate precautions shall be taken to prevent danger from electrical equipment.

No materials on the Site of Works shall be so stacked or placed as to cause danger or inconvenience to any persons.

All consequences, damages or losses arising by reasons of any violation of safety norms as specified in the Contract shall be met by the Contractor. The Contractor shall be bound to pay compensation to the persons for the injuries sustained or death owing to neglect of the safety precautions. Should any claim proceedings be filed against client, the Contractor hereby agrees to indemnify client. against the same.

FORE-CLOSURE AND DETERMINATION OF CONTRACT

88. FORECLOSURE OF CONTRACT

If at any time after the commencement of work, client shall for any reason whatsoever, not require the whole or part of the Works specified, client shall give notice in writing of that to the Contractor who shall have no claim to any payment of compensation whatsoever on account of any profit or advantage which he might have derived from the execution of work in full but which he did not derive in consequence of the full amount of work not having been carried out. The Contractor shall be paid at the contracted rates full amounts for the Works executed at Site and in addition a reasonable amount as certified by the Project Manager for the following which could not be utilized on the work to the full extent because of the foreclosure

The amount payable in respect of any preliminary items so far as the work or service comprised therein has been carried out and a proper proportion, as certified by the Project Manager, of any such items, the work or service comprised, which has been partially carried out or performed.

Cost of materials reasonably ordered for the Works which shall have been delivered to the Contractor or which the Contractor is legally liable to accept delivery.

A sum to be certified by the Project Manager being the amount of any expenditure reasonably incurred by the Contractor in the expectation of completing the whole of the Works in so far as such expenditure shall not have been covered by the payments made to the Contractor.

Provided that against any payments due from client under the clause, client shall be entitled to be credited with any outstanding balances due from the Contractor for any advances in respect of materials and otherwise and any other sum which on the date of foreclosing was recoverable by OHL from the Contractor under the terms of Contract.

89. CANCELLATION OF CONTRACT ON DEFAULT OF CONTRACTOR

If the Contractor shall become bankrupt, or being a corporation, shall go into liquidation (other than a voluntary liquidation for the purpose of amalgamation or reconstruction), or if the Contractor shall assign the Contract without the consent in writing of client first obtained, or shall have an execution levied on their goods or if the Project Manager shall certify in writing to client that in their opinion the Contractor has abandoned the Contract, or time being the essence, without reasonable excuse has suspended the progress of the Works for five days after receiving from the Project Manager written

notice to proceed, or despite previous warnings by the Project Manager, in writing, is not executing the Works in accordance with the Contract, or is persistently or flagrantly neglecting to carry out their obligation under the Contract, or has in defiance of client or their authorized representative's instructions to the contrary, assigned any part of the Contract, during the term of the contract, has suspended work for a total period of more than 15 (fifteen) days will not apply if the work is suspended as per instructions from Project Manager then client may, after giving fourteen days notice in writing to the Contractor, determine the Contract, and enter upon the Site and Works without releasing the Contractor from any of their obligation or liabilities under the Contract, or affecting the rights and powers conferred on client by the Contract and may either themselves complete the Works or may employ any other Contractor to complete the Works. Client may use for such completion so much of the said Constructional Plant Temporary Works and materials, which may have been deemed to be reserved exclusively for the execution of the Works under the provisions of the Contract, as client may think proper; and client may at any time sell any of the Construction Plant, Temporary Works and unused materials and apply the proceeds of sale in or towards the satisfaction of any sums due or which may become due to client from the Contractor under the Contract.

The Project Manager shall, as soon as may be practicable after any such determination by client fix and determine ex-parte, or by or after reference to the Contractor and shall certify what amount, if any, had at the time of such determination reasonably accrued to the Contractor and the value of any of the said un-used or partially used materials, any Constructional Plant and any Temporary Works.

If client determines the Contract under this clause, they shall not be liable to pay the Contractor any money on account of the Contract until the expiration of the Guarantee period and thereafter until the cost of execution and maintenance, rectification of defects, damages for delay in completion, and all other expenses incurred by client have been ascertained and the amount thereof certified by the Project Manager. The Contractor shall then be entitled to receive only such sum or sums, if any, as the Project Manager may certify would have been payable to them upon due completion by them after deducting the said amounts. The Contractor shall be paid accordingly.

90. CHANGE IN CONSTITUTION

If, there is a change in the constitution of the Contractor firm, after or prior to the award of the Contract and if prior approval is not obtained, the Contractor shall have been deemed to have been assigned and client reserves the right to determine the Contract and the same consequence shall follow as if the Contract was determined on the Contractor's default.

91. DETAILS OF CONSTRUCTION NOT SPECIFICALLY MENTIONED & MINOR CHANGES

Rates quoted shall be deemed to allow for all constructional details which may not have been specifically described in the Bill of Quantities, shown on the drawings or given in the specifications but are essential for the execution of the work and services in a workman like manner, details of constructions not specifically shown in drawings/specified shall be furnished to the Contractor or by the Contractor during the execution of the work. In case of any difference of opinion between the Contractor and Architect/ Consultant, the Project Manager shall determine as to whether or not the

item involved constituted a constructional detail or minor extra and their decision shall be final and binding.

92. URGENT REPAIRS

If, by any reason of any accident, or failure, or other event occurring, either during the execution of the Works or during the Guarantee Period, any remedial or other work or repair shall, in the opinion of the Project Manager, be urgently necessary for the safety of the Works and the Contractor is unable or unwilling to do such work or repair, client may employ and pay other persons to carry out such work or repair as the Project Manager may consider necessary. If the work or repair is so done by client, is work which, in the opinion of the Project Manager, the Contractor is liable to do at their own expense under the Contract, all expenses incurred by client in so doing shall be recoverable from the Contractor by client or may be deducted from any monies due or which may become due to the Contractor. Provided always that the Project Manager shall, as soon after the occurrence of any such emergency as may be reasonably practicable, notify the Contractor thereof in writing.

93. USE OF COMPLETED PORTIONS

Client shall have the right to take possession of and use any completed or partially completed portion of the Work, notwithstanding that the time for completing the entire work may not have expired. Taking such possession and use shall not be deemed acceptance of any work completed in accordance with the terms of this Contract.

94. FORCE MAJEURE

Force Majeure is defined as events which are not the fault of any party, which substantially prevents performance of contractual obligations, which could not be foreseen at the time this Contract is concluded and which are not capable of being remedied. Acts of God, Acts of War, Acts of Government blockades, strikes, civil commotion, riots and the like may constitute a Force Majeure if the elements thereof as defined in this clause exist but it excludes shortages, alleged shortages, price escalation and business risks. The Contractor shall make alternative arrangements for supplies when strikes or lockout period extends beyond reasonable time that affects completion unnecessarily

The party affected by Force Majeure shall give notice within a period of 5 days from the date of occurrence of Force Majeure indicating its cause and the period for which it is likely to last or affect execution.

The sole remedy of the Contractor to the exclusion of any other right or remedy, in the event of Force Majeure, shall be to extension of time for completion of the Works by a period to be determined by client at its sole discretion.

95. PERSONAL LIABILITY

Neither client nor the Project Manager nor the Architect/Engineering Consultant nor their Representatives shall be personally bound or liable for the acts or obligations or default or omission in the observance of any of the acts, matters or things which are herein contained.

96. NON WAIVER OF DEFAULTS

Failure of client / Project Manager to insist upon strict performance of any terms and conditions of the Contract or condemnation by them of any breach by the Contractor or any Sub-Contractor of any stipulations and conditions of the Contract shall in no way prejudice or affect or be construed as a waiver of any rights and remedies that client may have and will not be deemed a waiver of any subsequent default under the terms and conditions of the Contract.

97. USE BEFORE COMPLETION CERTIFICATE

If by reason of any default on the part of the Contractor, a completion certificate has not been issued in respect of every portion of the Works within one week after the time for completion or extended time as the case may be, client shall be at liberty to use the Works or any portion thereof in respect, of which a completion certificate has not been issued, provided that Works or the portion so used as aforesaid shall be reasonably capable of being used and that the Contractor shall be afforded the earliest opportunity of taking such steps as may be necessary to permit the issue of the certificate of completion.

Client. shall be at liberty from time to time or at any time before the completion of the Works to take possession of and use any part of the Site or uncompleted Works and in such case the Contractor shall completely finish the said incomplete parts or a part of the Works as and when the Project Manager shall direct whether before or after the respective prescribed time or extended time or times (if any) for the completion of the Works and if required by the Project Manager while client is in possession of the said part or parts of the Site or Works.

98. PRICE ESCALATION

The contracted rates shall be final and binding. No escalation on any account whatsoever shall be allowed during currency of project.

99. PRICE ADJUSTMENTS

The rates quoted by the Contractor and accepted by client shall hold good till the completion of the work and no additional claim will be admissible on account of statutory increase in prices, fluctuation of market rates/exchange rates, increase in duties, taxes/and any other levies/ fees etc.

100. WORKING AT ALL HEIGHTS

Item rates quoted by the Contractor in the bills of quantities shall include allowance for executing work at all heights above the ground level, except where specific provision has been made to measure work separately at different heights. Indian Standard Method of Measurement with latest amendments shall be deemed to be modified accordingly.

101. JURISDICTION:

All matters arising out of or in any way connected with this Agreement shall be deemed to have arisen in Kathmandu and only the Courts in Kathmandu shall have Jurisdiction to determine the same.

102. ARBITRATOR

In the event of any dispute or difference between the parties hereto as to the construction or operation of this contract, or the respective rights and liabilities of the parties on any matter in question, dispute or difference on any account or as to the withholding by the owner of any certificate to which the contractor may claim to be an entitled to or if the owner fails to make a decision within 30 days of the receipt of the contractor's claim, then and in any such case, the contractor after 45 days of his presenting his final (last) claim on the disputed matters, may demand in writing that the dispute or difference be referred to and settled by two arbitrators, one to be nominated by the owner and the other by the contractor. The award of the arbitrators, or the umpire, who shall be appointed by the two arbitrators if there is any disagreement between the two arbitrators before entering on the reference, shall be final and binding on both the parties. The India Arbitration Act(if any) and of the Rules shall be deemed to apply to and be incorporated in this Contract. Place of Arbitration procedures shall be at Lucknow.

103. PROTECTION AND CLEANING:**PROTECTION OF SITE**

The Contractor shall protect and preserve the Works from all damage or accident by providing temporary roofs, windows and door coverings, boxing or other construction as required by the Project Manager. This protection shall be provided for all property adjacent to the Site as well as on the Site.

104. COVERING UP

The Contractor must give at least three working days clear notice to the Project Manager and the Site Manager before covering up any of the work in foundation, ceiling, partitions, drains etc. in order that proper measurement may be taken of the work as executed and in the event of the Contractor failing to provide such notice, he is, at their own expense, to uncover as required to allow the measurements to be taken and afterwards to reinstate the work satisfactorily.

105. TOLERANCE

The Contractor shall exercise every care to ensure that all structural members are sufficiently plumb and true to dimensions called for on the drawings to receive prefabricated finishing elements such as doors, windows, cabinet work, ceramic work, concrete, tiles etc. Any variations may require rectification in the structural members or may involve remaking or replacing the finishing elements, fabricated to fit into the openings or spaces, as called for on the Drawings. Contractor whose work does not conform to dimensions called for, shall be liable for all the expenses which have been incurred for rectification or replacement as may be required by the Project Manager for the proper

installation of the finishing elements. the Project Manager's decision in this respect shall be final and binding on the parties concerned.

106. SETTLEMENT OF DISPUTES

All disputes and differences of any kind whatever arising out of or in connection with the Contract or the carrying out of the Works (whether during the progresses of the Works or after their completion, and whether before or after the determination, abandonment or breach of the Contract) shall be referred to and settled by client /Project Manager after hearing the disputing parties. The client Project Manager shall state their decisions with reasons therefore. Such decisions may be in the form of a final Certificate or otherwise. The decision of client. The Project Manager with respect to any or all of the following matters shall be final.

The variation or modifications of the design.

The quality or quantity of Works or the addition or omission or substitution of any work.

Any discrepancy in the Drawings and/or Specifications and Schedule of Quantities.

The removal and/or re-execution of any Works executed by the Contractor.

The dismissal from the Works of any persons deployed thereupon.

The opening up for inspection of any Works covered up.

The amending and making good of any defects under defects liability period.

Acceptability of materials, equipment and workmanship.

Materials, labour, tools, equipment and workmanship necessary for the proper execution of work.

Assignment and sub-letting

Delay and extension of work

Termination of Contract by Client.

107.0 Handing Over Requirement Overview

1. Connection and Commissioning
2. Licenses, Certificates and Registrations
3. Defects Liability Period – Maintenance and Certifications
4. 'As Constructed' Information and Manuals

Appendix A Maintenance Manuals

Background

The handover of a project to the client at the end of construction is a very important stage of the project procurement process and facility operation success. A well organized, efficient and effective transfer of information from project works to the Hotel is essential.

The transfer of ownership of the project from contractor to client can have an effect on fire and life safety, reliability, standards of operation, maintenance and operational cost efficiencies to the Hotel. The transfer/handover period can be a very stressful time for contractors' staff, and building owners and occupants alike as spaces become occupied and operation of the facility starts. The commissioning and fine tuning operations during handover can impact heavily on core business of the hotel if not managed in a structured manner. The capital works project management process identifies broad activities of the project handover stage.

The following sections of this document detail the requirements and actions required to be undertaken during any project handover.

The handover program shall be organized by the project manager in conjunction with the head contractor and subcontractors.

Pre Project Handover Site Meeting

Projects will require a dedicated project meeting to discuss the project handover process and to agree on requirements and outcomes. The meeting should be held no less than four weeks prior to the proposed project completion date.

A pro-forma agenda for the meeting would include:

- introduction and reason for the meeting
- CAD information
- plant and equipment asset detail collection
- Maintenance manuals
- Prescribed essential safety and health features and measures (PESHFM) maintenance during the defects liability period (DLP) - Understanding and process development
- defects management and after-hours callouts

- connection and commissioning
- systems operational training planning (includes building operations such as evacs)
- licenses and certificates
- warranties and guarantees
- security systems (includes key handover process)
- Space use information verification

The project manager will arrange this meeting with all concerns (architects, engineers, head contractor, major subcontractors and consultants).

Hotel Property Services staff members will be nominated to attend various elements of project handovers, meetings and operational training sessions.

Requirement Overview

A 'certificate of practical completion' shall not be issued and the project will not be handed over (for occupation and use) until the following five important 'contracted' activities have been undertaken or fulfilled:

1. Connection and commissioning of all systems, plant and equipment shall be complete and all testing data and reports made available (as part of the maintenance manuals to be supplied).
2. Licenses, certifications and registrations required by Workplace Standards, the national Building Codes or any other legislation shall be provided prior to taking occupancy or accepting the project as being handed over.
3. Defect liability period (DLP) maintenance management processes shall be in place and confirmed by the Hotel unit and the maintenance service provider.
4. Training sessions will have been successfully held to the satisfaction of operational managers in each field of expertise.
5. As-constructed or as-removed information must be supplied, at a minimum in draft prior to the project handover meeting.

The above task details and requirements are expanded in the subsequent pages and support information is offered in appendices:

Appendix A – Maintenance Manuals

1. Connection and Commissioning

POLICY STATEMENT

Specific testing and commissioning requirements and programs for individual projects will be those that are agreed at a pre-commissioning meeting attended by the contractor, project management, and Property Services staff. Connection testing and commissioning of all systems, plant and equipment shall be complete to the satisfaction of the Consulting Engineers and client.

REQUIREMENT

- Provide testing and commissioning procedures at least a week in advance of the event that the Hotel staff will witness.
- Provide relevant authorities inspections, manufacturers and consultant's witness/acceptance test reports and commissioning data as part of the as-constructed information documentation.
- Label all equipment, switches and controls eligibly in accordance with clients requirement.

2. Licenses, Certificates and Registrations

POLICY STATEMENT

All licenses, certifications and documentation required by Workplace Standards or by any other specialized legislation such as the NBC or Building Code of India or other certifying agency shall be provided prior to taking occupancy or accepting the project as being handed over.

3. Defects Liability Period – Maintenance and Certifications

POLICY STATEMENT

Maintenance does not include construction defect repairs. Defects are dealt with separately under the construction contract.

The NBC and Building Regulations require client (as the building owner or occupier) to certify all prescribed essential safety and health features and measures (PESHFM) maintenance and other tasks have been undertaken.

□ The Annual Maintenance Statement and shows confirmation from the Building Owner or Occupier that all required certificates specified requirements have been undertaken during the preceding year.

REQUIREMENT

□ All maintenance activities undertaken during the defects liability period (DLP) must be undertaken by the construction project contracted providers/installers.

□ To ensure the required maintenance activities are actioned during the DLP, maintenance schedules for all essential services assets shall be in place and confirmed by the Hotel facilities manager prior to a project being handed over.

□ A separate process for management of contract related building defects shall be organized by the project manager.

□ During the month prior to the end of the DLP, a report must be submitted to the project manager from the various engineering consultants identifying how the various engineering systems/installations/works actually performed as compared to the design criteria; achievement of environmental targets including energy and water consumptions; quality of the indoor environment; and outline any inadequacies and adjustments made.

□ At the conclusion of the DLP, final inspections must be certified, including final seasonal adjustments undertaken to ensure proper operation of all systems.

4. As-Constructed Information and Manuals

POLICY STATEMENT

As-constructed information is required by the University to allow a smooth transition from project to actual use or occupation. As-constructed information includes schedules of equipment, technical data and manufacturer's technical literature including performance information on individual plant and equipment; original software programs and all passwords; copies of certifications and warranties; all test results, maintenance schedules and complete as-built drawings in CAD format; list of suppliers; list of programmed operational time periods, thermostatic settings, etc.

REQUIREMENT

- It is recognized that it is very difficult to gather all as-constructed information prior to project handover due to the busyness of completing projects in the final stages and also the process of commissioning plant during the same period. Submit progressive as- installed drawings especially for those concealed/ underground cable and piping routes shall be provided prior to backfilling of excavation or concreting of floor slab or installation of non removable ceiling. Provide critical dimensions and access points.
- It is suggested that collection of required information is a managed process by site managers. Collecting information as tasks are complete or the equipment is installed helps avoid the rush at the end of the project.
- Items identified by (□). These must be provided, at a minimum in draft format prior to the final project handover meeting.
- All other listed items (if included in the project) must be provided within four weeks after the date of issue of a Certificate of Practical Completion.
- Various information that must be supplied as maintenance manuals. All information shall be provided in duplicate (1 x original and 1 x copy) hard copy, bound into 3- or 4-ring folders. These folders shall contain a compact disk or disks of electronic copies of the information supplied in the folders.
- Manuals must not contain superfluous information such as product catalogues that ‘add bulk ‘ and make it look a healthy presentation. Only useful information shall be provided such as instructions, schedules, and maintenance plans etc covering the information identified.
- For small projects, the Hotel project manager may approve an alternative to providing the information in 3-ring folders. As an example the information required for the installation of a split system air conditioner may take the form of operational instructions, schematic updates, warranties and appropriate asset detail forms. These could all be supplied on a CD.
- Update existing maintenance manuals information as required with details such as system schematics and schedules for works that have been undertaken in existing buildings.

Appendix -A Maintenance Manuals

(to include soft copy of data)

Electrical Information3-ring folder ☐loose leaf ☐

☐ Operation manual including a full step-by-step description of how the system works and interacts with other services (photographs encouraged)

☐ Maintenance strategies, recommendations and service schedules

o Single line wiring diagrams (schematics)

☐ Completed circuit identification cards (for cabinets)

o Emergency lighting and exit sign schematics

☐ Installers certificate of compliance

o Thermo graphic scan results of switchboards.

TENDER DETAILS FOR ELECTRICAL WORKS

- | | | | |
|----|--|---|--|
| 1. | Date of collection Tenders | : | On or Before 10/09/2018 in office of Project Manager, HOTEL CLARKS-LUCKNOW. |
| 2. | Time and Date to receipt of Sealed Tenders | : | Up to 15:00 hrs. on 20/09/2018 in office of Project Manager, HOTEL CLARKS-LUCKNOW. |
| 3. | Validity of Offer | : | 90 days from the date of opening of tender |
| 4. | EMD (Earnest Money Deposit) | : | Rs. 1,00,000.00 (Rupees One Lac Only). |

SPECIAL CONDITIONS**1. GENERAL**

These special conditions are intended to amplify the General Conditions of Contract, and shall be read in conjunction with the same. For any discrepancies between the General Conditions and these Special Conditions, the more stringent shall apply.

2. SCOPE OF WORK

The general character and the scope of work to be carried out under this contract is illustrated in Drawings, Specifications and Schedule of Quantities. The Contractor shall carry out and complete the said work under this contract in every respect in conformity with the contract documents and with the direction of and to the satisfaction of the Owner's site representative. The contractor shall furnish all labour, materials and equipment (except those to be supplied by the owner) as listed under Schedule of Quantities and specified otherwise, transportation and incidental necessary for supply, installation, testing and commissioning of the complete electrical system as described in the Specifications and as shown on the drawings. This also includes any material, equipment, appliances and incidental work not specifically mentioned herein or noted on the Drawings/Documents as being furnished or installed, but which are necessary and customary to be performed under this contract. The electrical system shall comprise of (but not limited to) the following :

- a. All conduit work including junction boxes, outlet boxes and wiring for lighting and power circuit , telecommunication system, AV system, Data system & room thermostat wiring.
- b. Switches, plug sockets, cover plates and other wiring accessories.
- c. Cables (HT / LT), Mains and Sub-Mains.
- d. Cables on cable trays and / or within suspended ceiling spaces including Supply & installation, cable trays, hangers, supports, cable terminations and all fixing accessories.
- e. Supply, Installation, Testing & commissioning of Rising Mains & Bus ducts
- f. Installation, Testing & commissioning LT panel, Main Distribution, Sub Distribution panels, Final Distribution boards & Capacitor Panels.
- g. Earthing (Grounding) System.
- h. Lightning Protection System.
- i. Supply and installation of Lighting Fixtures for areas not supplied by the owner. (BOH & Parking Areas)

- j. Installation of Lighting Fixtures supply by the Owner. (Public areas , Guest Rooms & Guest corridors)
- k. Installation, Testing & commissioning of HT switchgear, transformers.
- l. Sub Station earthing
- m. Supply, Installation, Testing & commissioning of UPS

3. ASSOCIATED CIVIL WORKS

Following civil works associated with Electrical installation are excluded from the scope of this contract except for all minor civil work like wall chasing by wall chaser, making holes etc. for installation of conduits/cables and making good by covering the chase with chicken wire mesh having a overlap of at least 150mm on both side of the chase & a rough plaster. The following shall be executed by other agencies in accordance with approved shop drawings of, and under direct supervision of the electrical contractor.

- i. RCC foundation for Transformer with angle iron frame (properly painted with fire retardant paint) at the edges to protect these from damage.
- ii. RCC Trenches inside Sub-station and LT panel room including cable supports for laying of LT cables.
- iii. PCC foundation blocks with angle iron frame work edging for all power control centers and motor control centers.
- iv. Air-tight fire doors shall be as per FIRE norms and requirement of CFO for Sub-Stations & LT panel room.

4. BUILDING AUTOMATION SYSTEM (BAS)

The scope of the Electrical Contractor related to BMS shall be to include the following for the interface to Building Management System.

- i. Stop/Manual/ Auto switches along with potential free contacts for monitoring the manual operation status (wherever applicable), to be provided for those equipment whose start / stop is controlled by Building Automation System.
- ii. Potential free 'NO' contacts for monitoring 'Run' status of equipment wherever required.
- iii. The installation of current transformer & Transducer along with wiring between Current Transformer & Transducer up to the terminal block shall be provided by the Electrical contractor. **All transducers shall be supplied by BAS contractor.**
- iv. The low voltage BAS Cables shall be brought upto the electric panel by BAS contractor and all terminations into the electrical panels shall be made by

Electrical contractor after satisfying himself of the wiring system. It is to be clearly understood that the final responsibility for the sufficiency, adequacy and conformity to the contract requirements, of the Electrical system, lies solely with the contractor.

5. PROJECT EXECUTION AND MANAGEMENT

The Contractor shall ensure that senior planning and erection personnel from his organization are assigned exclusively for this project. The Contractor shall appoint one Project Manager holding senior management position in the organization. He shall be assisted on full time basis by a minimum of two electrical engineer & three senior supervisors. **(The CVs of the supervisory staff deployed shall be forwarded to the client for their approval before they are deputed at the site of works).** The entire staff shall be posted at site on full time basis. Separate ID card to be given by the Contractor to each worker working on site.

The project management shall be through modern technique. The Contractor's office at site shall be fully equipped with fax, computers & plotter and shall prepare proper bar chart and completion schedules to be submitted & ensure timely completion. Erection engineer and supervisors shall be provided with mobile communication system so that they can always be reached.

For quality control ,monitoring & safety of workmanship, contractor shall assign at least one full-time engineer who would be exclusively responsible for ensuring strict quality control, adherence to specifications and ensuring top class workmanship for the electrical installation. Contractor shall furnish details of licenses of supervisors/workmen to be employed at site.

6. PERFORMANCE GUARANTEE

The contractor shall carry out the work in accordance with the Drawings, Specifications, Schedule of Quantities and other documents forming part of the Contract.

The contractor shall be fully responsible for the performance of the selected equipment (installed by him) at the specified parameters and for the efficiency of the installation to deliver the required end result.

The contractor shall guarantee that the Electrical system as installed shall perform to complete satisfaction of the owner & conformance of the necessary relevant codes & I.E. rules. The guarantee shall be submitted in the Performa given in Appendix - II.

Complete set of architectural drawings is available in the Architect/Consultant's office and reference may be made to same for any details or information. The contractor shall also guarantee that the performance of various equipment individually, shall not be less than the quoted capacity; also actual power consumption shall not exceed the quoted rating, during testing and commissioning, handing over and guarantee period.

At the close of the work and before issue of final certificate of virtual completion, the contractor shall furnish written performance guarantee against defective materials and

workman-ship for a period of two years from date of testing, commissioning and satisfactory handing over. The guarantee shall be submitted in proforma given in Appendix-II.

The Contractor shall hold himself fully responsible for reinstallation or replacement, free of cost to Owner the following:

- a. Any defective work or material supplied by the Contractor.
- b. Any material or equipment damaged or destroyed as a result of defective workmanship by the Contractor.

7. BYE-LAWS AND REGULATIONS

The work shall be carried out to the satisfaction of the Owner's site representative and in accordance with the Specifications, Regulations of the Electric Supply Authority, Nepal Electricity Rules and Regulations, latest Indian Standards and as per the requirements of the Chief Fire Officer.

8. FEES AND PERMITS

The Contractor shall pay any and all fees and obtain permits required for the installation of this work. On completion of the work, the contractor shall obtain and deliver to the Owner, certificate of final inspection and approval by the local electricity authority (CFO/ Municipal, State/Central govt. whichever is applicable)

9. DRAWINGS

The Electrical Drawings listed under Appendix-I, which may be issued with tenders, are diagrammatic only and indicate arrangement of various systems and the extent of work covered in the contract. These Drawings indicate the points of supply and of termination of services and broadly suggest the routes to be followed. Under no circumstances shall dimensions be scaled from these Drawings. The architectural/interiors drawings and details shall be examined for exact location of equipment, electrical points & fixtures.

The contractor shall follow the tender drawings as base while preparing his shop drawings, and for subsequent installation work. He shall check the drawings of other trades to verify spaces in which his work will be installed.

Maximum headroom and space conditions shall be maintained at all points. Where headroom appears inadequate, the contractor shall notify the Architect/Consultant/Owner's site representative before proceeding with the installation. In case installation is carried out without notifying, the work shall be rejected and contractor shall rectify the same at his own cost.

The contractor shall examine all architectural, structural, plumbing, HVAC and other services drawings and check the as-built works before starting the work and report to the Owner's site representative any discrepancies and obtain clarification. Any changes found essential to coordinate installation of his work with other services and trades, shall be

made with prior approval of the Architect/Consultant/Owner's site representative without additional cost to the Owner.

10. SPECIFICATIONS

The Specifications shall be considered as part of this contract. The Drawings indicate the extent and general arrangement of power distribution, location of lighting fixtures, controlling switches, wiring system, cabling and earthing. These drawings are essentially diagrammatic. The Drawings indicate the point of termination of conduit runs and broadly suggest the routes to be followed. The work shall be installed as indicated on the Drawings. However, any change found essential to coordinate the installation of this work with other trades shall be made without any additional cost to the Owner. The data given herein and on the Drawings is as exact as could be secured, but its complete accuracy is not guaranteed. The drawings are for the guidance of the contractor, exact locations, distances and levels shall be governed by the site conditions and the Architectural & Interior layouts.

11. SHOP DRAWINGS

11.1 All the shop drawings shall be prepared on computer through Auto-cad System based on Architectural Drawings, site measurements and Interior Designer's Drawings. Within eight weeks of the award of the contract, contractor shall furnish, for the approval of the Architect/Consultant, two sets of detailed shop drawings of all equipment and materials including layouts for all conduit layouts, distribution panels, switch boards, cabinets, special pull boxes, cable trays and any other requirement to be fabricated or purchased by the contractor.

11.2 These shop drawings shall contain all information required to complete the Project as per specifications and as required by the Architect/Consultant/Owner's site representative. These Drawings shall contain details of construction, size, arrangement, operating clearances, performance characteristics and capacity of all items of equipment, also the details of all related items of work by other contractors. Each shop drawing shall contain tabulation of all measurable items of equipment/materials/ works and progressive cumulative totals from other related drawings to arrive at a variation-in-quantity statement at the completion of all shop drawings.

Each item of equipment/material proposed shall be a standard catalogue product of an established manufacturer strictly from the manufacturers listed in Appendix-IV.

When the Architect/Consultant makes any amendments in the above drawings, the contractor shall supply two fresh sets of drawings with the amendments duly incorporated alongwith check print, for approval. The contractor shall submit further twelve sets of shop drawings to the Owner's site representative for the exclusive use by the Owner's site representative and all other agencies. No material or equipment may be delivered or installed at the job site until the contractor has in his possession, the approved shop drawing for the particular material/equipment/installation.

- 11.3 Shop drawings shall be submitted for approval sufficiently in advance of planned delivery and installation of any material to allow Architect/Consultant ample time for scrutiny. No claims for extension of time shall be entertained because of any delay in the work due to his failure to produce shop drawings at the right time, in accordance with the approved program.
- 11.4 Manufacturers drawings, catalogues, pamphlets and other documents submitted for approval shall be in four sets. Each item in each set shall be properly labeled, indicating the specific services for which material or equipment is to be used, giving reference to the governing section and clause number and clearly identifying in ink the items and the operating characteristics. Data of general nature shall not be accepted.
- 11.5 Samples of all materials like conduits, accessories, switches, wires, control cables etc shall be submitted to the Owner's site representative prior to procurement. These shall be submitted in two sets for approval and retention by Owner's site representative and shall be kept in their site office for reference and verification till the completion of the Project.
- 11.6 Approval of shop drawings shall not be considered as a guarantee of measurements or of building dimensions. Where drawings are approved, said approval does not mean that the drawings supersede the contract requirements, nor does it in any way relieve the contractor of the responsibility or requirement to furnish material and perform work as required by the contract.
- 11.7 Where the contractor proposes to use an item of equipment, other than that specified or detailed on the drawings, which requires any redesign of the structure, partitions, foundation, wiring or any other part of the mechanical, electrical or architectural layouts; all such re-design, and all new drawings and detailing required therefore, shall be prepared by the contractor at his own expense and gotten approved by the Architect//Consultant/ Owner's site representative.
- 11.8 The contractor shall extend full co-operation to HVAC contractor in preparation of his coordinated services drawings. He shall issue floppies and hard prints of his shop drawings to HVAC contractor well in advance to complete the coordinated services drawings in accordance with schedule prepared by the Owner site representatives. Where the work of the contractor has to be installed in close proximity to, or will interfere with work of other trades, he shall assist in working out space conditions to make a satisfactory adjustment. If so directed by the Owner's site representative, the contractor shall prepare composite working drawings and sections at a suitable scale, not less than 1:50, clearly showing how his work is to be installed in relation to the work of other trades. If the Contractor installs his work before coordinating with other trades, or so as to cause any interference with work of other trades, he shall make all the necessary changes without extra cost to the Owner.
- 11.9 Within four weeks of approval of all the relevant shop drawings, the contractor shall submit four copies of a comprehensive variation in quantity statement, and itemized price list of recommended (by manufacturers) imported and local spare

parts and tools, covering all equipment and materials in this contract. The Project Manager shall make recommendation to Owner for acceptance of anticipated variation in contract amounts and also advise Owner to initiate action for procurement of spare parts and tools at the completion of project.

12. ACCESSIBILITY

The Contractor shall verify the sufficiency of the size of the shaft openings, clearances in wall cavities and suspended ceilings for proper installation of his conduits cables, cable trays, panels etc.. His failure to communicate insufficiency of any of the above, shall constitute his acceptance of sufficiency of the same. The Contractor shall locate all equipment which must be serviced, operated or maintained in fully accessible positions. The exact location and size of all access panels, required for each concealed control damper, valve or other devices requiring attendance, shall be finalized and communicated in sufficient time, to be provided in the normal course of work. Failing this, the Contractor shall make all the necessary repairs and changes at his own expense. Access panel shall be standardized for each piece of equipment / device / accessory and shall be clearly nomenclature / marked.

13. MATERIALS AND EQUIPMENT

All materials and equipment shall conform to the relevant Indian Standards and shall be of the approved make and design. Makes shall be strictly in conformity with list of approved manufacturers as per Appendix - III.

The Contractor shall be responsible for the safe custody of all materials and shall insure them against theft or damage in handling or storage etc. A list of items of materials and equipment, together with a sample of each shall be submitted to the Owner's site representative within 15 days of the award of the contract. Any item which is proposed as a substitute, the contractor shall state the credit, if any, due to the Owner in the event the substitution is approved. All changes and substitutions shall be requested in writing and approvals obtained in writing from the Owner's site representative.

14. MANUFACTURERS INSTRUCTIONS

Where manufacturer has furnished specific instructions, relating to the material and equipment used in this project, covering points not specifically mentioned in these documents, manufacturer's instructions shall be followed in that case.

15. COMPLETION CERTIFICATE

On completion of the electrical installation a certificate shall be furnished by the Contractor countersigned by the licensed supervisor, under whose direct supervision the installation was carried out. This certificate shall be in the prescribed form as required by the local, state/central govt./ municipal / fire authorities concerned.

16. INSPECTION AND TESTING

The Owner may carry out inspection and testing at manufacturer's works for this contract. No equipment shall be delivered without prior written confirmation from the Owner's site Engineer. In case factory inspection is carried out then all travelling and lodging expenses for two persons one from owner and one from consultants shall be borne by the Contractor, also all expenses related to testing shall be to Contractor account. Tests on site of completed works shall demonstrate the following:

That the equipment installed complies with specification in all respect and is of the correct rating for the duty and site conditions.

That all items operate efficiently and quietly to meet the specified requirements.

That all circuits are fully protected and that protective devices are properly coordinated.

That all non-current carrying metal parts are properly and safely grounded in accordance with the specification and appropriate Codes of Practice.

The contractor shall provide all necessary instruments and labour for testing, shall make adequate records of test procedures and readings, shall repeat any tests requested by the Owner and shall provide test certificate signed by a authorized person. Such test shall be conducted on all materials and equipment and tests on completed work as called for by the Owner at contractor's expenses unless otherwise called for.

If it is proved that the installation or part thereof is not satisfactorily carried out then the contractor shall be liable for the rectification of the same. Owner Site Engineer's decision as to what constitutes a satisfactory installation shall be final.

All tests shall be carried out by a test house approved by the Owner / Consultants.

17. COMPLETION DRAWINGS

Upon completion of the work and before issuance of certificate of virtual completion the contractor shall submit to the Owner's site representative four sets of layout drawings in progressive manner for individual systems drawn at approved scale indicating the complete wiring system as installed. Drawings shall be prepared on AUTO-CAD (latest version) . Along with the hard copies, the contractor shall submit copies of all drawings on CD and one set of all drawings on RTF shall also be submitted. These drawings must provide:

- a. Electrical Substation equipment layout & all power distribution panel layout.
- b. Single line power distribution diagram including control wiring.
- c. Cable Trays with number and size of cables installed.
- d. Run and size of conduits, inspection, junction and pull boxes.
- e. Raceways layout and junction Boxes.

- f. Number and size of conductors in each conduit with phase identification.
- g. Location and rating of sockets and switches controlling the lighting and power outlets.
- h. Location and details of distribution boards/panels, mains, switches along with phase balancing details.
- i. Detail drawing of Bus duct/ Rising mains.
- j. A complete wiring diagram as installed and single line diagrams showing all connections in the complete electrical system.
- k. Location of all earthing stations, route and size of all earthing conductors manhole.
- l. Layout and particulars of all HT & LT cables.
- m. Instruction, maintenance and operation manuals including maintenance schedule for all equipment. Testing & commissioning reports of all electrical equipment.

18. OPERATING INSTRUCTION & MAINTENANCE MANUAL

Upon completion and commissioning of part Electrical system the contractor shall submit a draft copy of comprehensive operating instructions, maintenance schedule and log sheets for all systems and equipment included in this contract. This shall be supplementary to manufacturer's operating and maintenance manuals. Upon approval of the draft, the contractor shall submit four (4) complete bound sets of typewritten operating instructions and maintenance manuals; one each for retention by Consultant and Owner's site representative and two for Owners Operating Personnel. These manuals shall also include basis of design, detailed technical data for each piece of equipment as installed, spare parts manual and recommended spares for 4 year period of maintenance of each equipment.

19. ON SITE TRAINING

Upon completion of all work and all tests, the Contractor shall furnish necessary operators, labour and helpers for operating the entire installation for a period of thirty (30) working days of ten (10) hours each, to enable the Owner's staff to get acquainted with the operation of the system. During this period, the contractor shall train the Owner's personnel in the operation, adjustment and maintenance of all equipment installed.

20. MAINTENANCE DURING DEFECTS LIABILITY PERIOD

20.1 Complaints

The Contractor shall receive calls for any and all problems experienced in the operation of the system under this contract, attend to these within 10 hours of

receiving the complaints and shall take steps to immediately correct any deficiencies that may exist.

20.2 Repairs

All equipment that require repairing shall be immediately serviced and repaired. Since the period of Mechanical Maintenance runs concurrently with the defects liability period, all replacement parts and labour shall be supplied promptly free-of-charge to the Owner.

21. UPTIME GUARANTEE

The contractor shall guarantee for the installed system an uptime of 98%. In case of shortfall in any month during the defects liability period, the Defects Liability period shall get extended by a month for every month having shortfall. In case of shortfall beyond the defects liability period, the contract for Operation and Maintenance shall get extended by a month for every month having the shortfall and no reimbursement shall be made for the extended period.

The Contractor shall provide log in the form of CDs and bound printed comprehensive log book containing tables for daily record of all temperatures, pressures, humidity, and power consumption. Starting and stopping times for various equipment, daily services rendered for the system alarms, maintenance and record of unusual observations etc. Contractor shall also submit preventive maintenance schedule.

Each tenderer shall submit along with the tender, a detailed operation assistance proposal for the Owner's site representatives/ Consultant's review. This shall include the type of service planned to be offered during Defects Liability Period and beyond. The operation assistance proposal shall give the details of the proposed monthly reports to the Management.

The tenderer shall include a list of other projects where such an Operation Assistance has been provided.

22. MAINTENANCE

Contractor may be required to carry out the maintenance of the Electrical installation for the defects liability period. Further, he may also be required to carry out all inclusive maintenance of the entire system for a period of three years beyond the defects liability period.

22.1 All Inclusive Maintenance Contract

a. Scope.

The AMC shall cover all the items installed by the contractor including replacement of all switches, fittings etc. consumable like bulbs, tubes, oil etc. shall be excluded.

b. Routine Preventive Maintenance Schedule to be submitted

- i. Schedule to cover manufacturer's recommendation and/or common engineering practice (for all plant and machinery under contract).
 - ii. Plant and machinery history card giving full details of equipment and frequency of checks and overhaul.
 - iii. Monthly status report.
 - iv. Entire Electrical installation to be repainted in fourth year (from commissioning) before the expiry of operation and maintenance contract.
- c. Uptime during maintenance contract
 - i. 98% uptime of all systems under contract.
 - ii. Up time shall be assessed every month and in case of shortfall during any month the contract shall be extended by a month.
 - iii. There shall be no reimbursement for the extended period.
 - iv. Break-downs shall be attended to within ten hours of reporting.
- d. Manpower
 - i. Adequate number of persons to the satisfaction of the Owner's site representative shall be provided including relievers.
 - ii. Statutory requirements of EPF, ESIC and other applicable labour legislations to be complied with; and monthly certification to that effect to be submitted.
 - iii. Duty allocation and Roaster control shall be contractor's responsibility.
 - iv. No overtime shall be payable by Owner for any reason whatsoever.
- e. Shut Downs
 - i. Routine shut downs shall be permitted only as allowed by the Chief Engineer.
 - ii. Contractor shall be at liberty to carry out routine maintenance as and when required but with prior permission of the Owner.
- f. Payment Terms

- i. Monthly payment at the beginning of each month on pro-rata basis.

23. METHOD OF MEASUREMENT

The works shall be measured in accordance with relevant IS codes & normal engineering practices. Notwithstanding any general or local custom, except where otherwise specifically described or prescribed in the contract.

24. DEMONSTRATION TO OWNER

At completion, devices subject to manual operation shall be operated at least five times in presence of Owner's site representative to demonstrate satisfactory operation.

25. TOOLS AND TACKLES

The Contractor shall provide and install all necessary hoists, ladders, scaffolding, tools, tackles, all transport for labour and materials and plant necessary for the proper execution and completion of the work to the satisfaction of the Owner's site representative.

26. PARTIAL ORDERING

Owner through the Architect/Consultant/ Owner's site representative reserves the right to order equipment and material from any and all alternates, and /or to order high side and /or low side equipment and materials or parts thereof from one or more tenderer.

27. SITE CONDITIONS

Location : LUCKNOW

Ambient Temperature

Maximum : 44 Degree Centigrade

Minimum : 02 Degree Centigrade

Notes: All equipment shall give required output under the above conditions.

28. TYPE OF BUILDING HOTEL BUILDING

APPENDIX-II**GUARANTEE PROFORMA****GUARANTEE FOR ELECTRICAL INSTALLATION**

We hereby guarantee the year round Electrical System which we have installed in the Complex described below :

Building : **HOTEL**

Location : **LUCKNOW**

Owner : **CLARKS- LUCKNOW**

For a period of 12 months from the date of final handing over & acceptance of the total installation, WE AGREE TO repair or replace to the satisfaction of the Owner, any or all such work that may prove defective in workmanship, equipment or materials within that period, ordinary wear and tear and unusual abuse or neglect excluded, together with any other work, which may be damaged or displaced in so doing. In the event of our failure to comply with the above mentioned conditions within a reasonable time, after being notified in writing, we collectively and separately, do hereby authorize the Owner to proceed to have the defects repaired and made good at our expense, and we shall pay the cost and charges thereof, immediately upon demand.

WE ALSO HEREBY UNDERTAKE to test the entire installation upon completion and also ensure that all units are functioning satisfactorily even after 24 months of operation.

SIGNATURE OF CONTRACTOR
for ELECTRICAL INSTALLATION

DATE

SEAL

APPENDIX - IV**LIST OF STANDARDS (IS)**

IS : 374 - 1979	Ceiling fans and regulators (3rd revision)
IS : 694 - 1990	PVC insulated Electric cable for working voltage upto and including 1100 volts.
IS : 732 - 1989	Code of practice for electrical wiring and installation
IS : 1255 - 1983	Code of Practice for installation and maintenance of Power Cables upto and including 33 KV rating (Second Revision)
IS : 1258 - 1987	Bayonet lamp holders(Third revision)
IS : 1293 - 1988	Three pin plugs and sockets outlets rated voltage upto and including 250 volts and rated current upto and including 160 amps.
IS : 1554 - 1988 (Part - I)	PVC insulated (Heavy Duty) electric cables for working voltages upto and including 1100 volts.
IS : 1646 - 1982	Electrical installation fire safety of buildings (general) Code of practice.
IS : 1885 - 1971	Glossary of items for electrical cables and conductors
IS : 1913 - 1978	General and safety requirements for fluorescent lamps luminaries Tubular.
IS : 2026 - 1977 to 81 (Part I to IV)	Power Transformers
IS : 2071 - 1974 - 76	Methods of high voltage testing
IS : 2309 - 1989	Protection of building and allied structures against lightning
IS : 2551-1982	Danger notice plate.
IS : 3043 - 1987	Code of practice for earthing.
IS : 3427 – 1997	AC Metal enclosed switch gear and control gear for rated voltages above 1 KV and upto and including 52 KV.
IS : 3480 - 1966	Flexible steel conduits for electrical wiring.
IS : 3837 - 1976	Accessories for rigid steel conduit for electrical wiring.
IS : 4146 - 1983	Application guide for voltage transformers

IS : 4615 - 1968	Switch socket outlets.
IS : 5133 - 1969 (Part -I)	Boxes for the enclosure of electrical accessories.
IS : 5216 - 1982 (Part-I)	Guide for safety procedures and practices in electrical work.
IS : 5424 - 1969	Rubber mats for electrical purposes.
IS : 5578 & 11353-1985	Marking and arrangement of bus bars
IS : 7098 - 1985 (Part - II)	Cross linked polyethylene insulated PVC sheathed cables. For working voltages from 3.3 KV upto and including 33 KV
IS : 8130 - 1984	Conductors for insulated electric cables and flexible cords
IS : 8623 -1977 (Part -I)	Factory built assemblies of switchgear and control gear for voltages upto and including 1000 V AC and 1200 V D C.
IS : 8623 - 1980 (Part -II)	Bus Bar trunking system
IS : 8828 - 1996	Miniature Circuit Breakers
IS : 9537 - 1981	Rigid Steel Conduits for electrical wiring (Second Revisions)
IS : 10810 - 1988	Methods of test for cables.
IS : 12640 - 1988	Earth Leakage Circuit Breakers
IS : 13947-1993 (Part-II)	Air Circuit Breakers
IS : 13947-1989 (Part-)	Moulded Case Circuit Breakers
IS : 13947 - 1993 (Part-)	Degree of protection provided by enclosures for LV switchgear and control gear.
IS : 13947 - 1993 (Part-)	General requirement for switchgear and control gear for voltage not exceeding 1000 Volts.
IS : 1651 & 1652 1991	Stationary cells and batteries lead acid type.

LIST OF INTERNATIONAL STANDARDS

BS – 7430:	Earthing & Bonding
NZA/AS/1768:1991	Advanced Lighting Protection System
BS – 7671: 2001(Amendment No. 2: 2004)	"Requirements for electrical installations"

APPENDIX - V

ABBREVIATIONS

The following abbreviations have been used in the accompanying Specifications, drawings and Schedule of Quantities.

CU	stands for copper.
GI	stands for Galvanized Iron (Mild Steel)
V	stands for Volts
KV	stands for Kilo Volts
HV	stands for High Voltage (3.3 KV and above)
MV	stands for Medium Voltage (110 V ,230 V ,415 V, 600 V, 110 V)
LV	stands for Low Voltage (32 V & Below)
HT	stands for High Tension
LT	stands for Low Tension
VCB	stands for Vacuum Circuit Breaker
PVC	stands for Poly vinyl Chloride
AMP	stands for Amperes
KWH	stands for Kilowatt Hours
KW	stands for Kilo Watts
IEE	stands for Institution of Electrical Engineers - London
NEC	stands for National Electrical Code
ACB	stands for Air Circuit Breaker
RCCB	stands for Residual Current Circuit Breaker

MCB	stands for Miniature Circuit Breaker
MCCB	stands for Moulded Case Circuit Breaker
SP	stands for Single Pole
DP	stands for Double Pole
TP	stands for Triple Pole
TPN	stands for Triple Pole and Neutral
4 Pole	stands for 3 phase and neutral of same capacity (size)
MDB	stands for Main Distribution Board
SDB	stands for Sub Distribution Board
FDB	stands for Final Distribution Board
MCC	stands for Motor Control Centre

APPENDIX – VI
SCHEDULE OF FISCAL ASPECTS

Name of Project	RENOVATION OF HOTEL CLARKS
Location	LUCKNOW, INDIA
Validity of offer	90 days from date of submission of tender
Date of Commencement	Immediately upon receipt of Letter of Intent by Owner.
Period of Completion	6 Months from date of issue of letter of intent.
Earnest Money Deposit	Rs.1 Lacs in the form of Bank Guarantee or Demand Draft Payable at LUCKNOW in favour of HOTEL CLARKS-LUCKNOW.
Liquidated Damages	1 percent of the contract value per week of delay subject to a maximum of five percent (5%) of contract value
Performance Bond	5% of the total contract value(imported + indigenous) valid till DLP
Defects Liability Period	12 months from the date of commissioning.

Term of Payment

- 10% of contract value payable as advance against contractor's submission of Bank Guarantee in prescribed format for equal value valid for contract period.
- 60% of contract value prorate upon delivery of materials at site and advance will adjusted in supply bill.
- 20% of contract value against installation.
- 10% of contract value upon testing and commissioning report as per agreed schedule and milestone.
- 5% of contract value upon handing over. (Virtual Completion of Contract)
- 5% retention will be released after defect liability period or submission of bank guarantee of same amount valid for defect liability period.

Final Payment

Within 60 days from the date of receipt of final bill, after system is handed over.

Escalation

All unit rates shall be firm and escalation free for duration of contract period, subject to only the statutory variation in taxes and duties on undelivered equipment & materials and subject to foreign exchange rate variation on undelivered imported components.

Storage and safe custody

Space shall be provided by owner. Security of materials shall be the responsibility of the contractor.

Taxes and duties

Rates shall be inclusive of all taxes and duties, central and local, by whatever name called, in the quoted price. No escalation shall be permitted due to any reason whatsoever.

Insurance & other charges

Transit Insurance.

Delivery F.O.R. at site including unloading at designated place. All Test reports , Government clearance , if required are inclusive in the rates.

Extra items

Actual cost of material / equipment in the open Market + labor + (15% overheads and profits as approved by the clients) + (18% GST if applicable).

TECHNICAL SPECIFICATIONS

A) WIRING

1 GENERAL

Technical Specifications in this section cover the Internal Wiring Installations comprising of :

- Wiring for lights and convenience socket outlets etc. in concealed/surface conduit/raceways.
- Wiring for telephone outlets.
- Sub main wiring.
- Wiring for TV system
- Wiring for Data Networking
- Wiring for Security System
- Wiring for Fire Alarm System

2 STANDARDS AND CODES

The following Indian Standard Specifications and Codes of Practice will apply to the equipment and the work covered by the scope of this contract. In addition the relevant clauses of the Indian Electricity Act 1910 and Indian Electricity Rules 1956 as amended up to date shall also apply. Wherever appropriate Indian Standards are not available, relevant British and/or IEC Standards shall be applicable.

BIS certified equipment shall be used as a part of the Contract in line with Government regulations. Necessary test certificates in support of the certification shall be submitted prior to supply of the equipment.

It is to be noted that updated and current Standards shall be applicable irrespective of those listed below.

660/1100 V grade PVC insulated wires.	IS 694 : 1990
Rigid steel conduits for electrical wiring.	IS 9537 : Part I 1980
	IS 9537 : Part II 1981
PVC conduits for electrical wiring.	IS 9537 : Part III 1980
Accessories for rigid steel conduits	IS 3837 : 1990
Flexible steel conduits for electrical wiring	IS 3480 : 1990
Switch socket outlets	IS 4615 : 1990
Switches for domestic and similar purposes	IS 3854 : 1997
Boxes for the enclosure of electrical accessories	IS 5133 : Parts I & II 1969
Code of practice for personal hazard fire safety of buildings	IS 1644: 1998
Code of practice for electrical installation fire safety of buildings	IS 1646 : 1997
Code of practice for electrical wiring installations	IS 732 : 1989

3 CONDUITS

3.1 PVC Conduits

Wiring shall be carried out in recessed /surface PVC conduits. The PVC conduits conform to IS 9537 Part-III and shall be ISI embossed. The conduits shall be heavy gauge (minimum 1.5 mm wall thickness) and the interiors of the conduits shall be free from all obstructions. All joints in

conduits shall be sealed/cemented with approved solvent cement. Damage conduits/fittings shall not be used. Cut ends of conduits shall not have sharp edges.

3.3 Bends

Large right angle bends (more than 75 mm radius) or non right angle bends in conduit runs shall be made by means of conduits bending machines carefully so as not to cause any crack in the conduit. Small right angle bends in conduits runs can be made by standard conduit accessories (solid/inspection bends/elbows) no run of conduits shall have more than four right angle bends from outlet to outlet. Bends in multi runs of conduits shall be parallel to each other and neat in appearance, maintaining the same distance as between straight runs of conduits.

3.4 Conduit Accessories.

3.4.1 Standard accessories

Heavy duty black bakelite/pvc conduit fittings and accessories like standard/extra-deep circular boxes, looping in boxes, junction boxes, PVC bends, PVC solid elbows, solid/inspection tees, couplers, nipples, saddles, check nuts, earth clips, ball socket joints etc. shall be of superior quality and of approved makes. Heavy duty covers screwed with approved quality screws shall be used. Superior quality screwed PVC bushes shall be used Samples of all conduits fittings and accessories shall be got approved by Project Manager before use.

3.4.2 Fabricated accessories

Wherever required, outlet/junction boxes of required sizes shall be fabricated from 1.6 mm thick MS sheets or PVC junction box excepting ceiling fan outlet boxes which shall be fabricated from minimum 3 mm thick sheets. The outlet boxes shall be of approved quality, finish and manufacture. Suitable means of fixing connectors etc., if required, shall be provided in the boxes. The boxes shall be protected from rust by zinc phosphate primer process. Boxes shall be finished with minimum 2 coats of enamel paint of approved color. A screwed brass stud shall be provided in all boxes as earthing terminal.

3.4.2.1 Outlet Boxes For Ceiling

Outlet boxes for ceiling fans shall be fabricated from minimum 3 mm thick MS sheet steel. The boxes shall be hexagonal in shape of minimum 100 mm depth and 60 mm sides. Each box shall be provided with a recessed fan hook in the form of one 'U' shaped 15 mm dia rod welded to the box and securely tied to the top reinforcement of the concrete slab for a length of minimum 150 mm on either side. 3 mm thick Perspex/ hylam sheet cover of matching colour shall be provided.

3.4.3 Boxes For Modular Wiring Accessories

3.4.3.1 Switch Boxes - Modular Type

Switch boxes suitable to house modular type switches of required ratings, and fan regulators as required shall be provided. In case the number of switches in one box is not tallying with that available in standard manufacture, the box accommodating the next higher number of switches shall be provided without any extra cost. In case fan regulator/regulators is /are to be provided at a later date, suitable provision for accommodating such regulators shall be made in the switch boxes and blank off covers shall be provided without any extra cost.

Switch boxes shall be so designed that accessories are mounted on a grid plate with tapped holes for brass machine screws leaving ample space at the back and on the sides for accommodating conductors, check-nuts and screwed bushes at conduit entries etc. The grid plates and M.S. boxes shall be fitted with a brass earth terminal. Boxes shall be attached to conduits by means of inserting the conduits in the outlet boxes. Extra length of conduit shall be cut-off inside the box with the help of cutting blade. Moulded front covers made from high impact resistant, flame retardant and ultra violet stabilized engineering plastics shall be fixed by means of counter sunk chromium plated brass machine screws. No timber shall be used for any supports. Switch boxes shall be located with bottom at 1200 mm above floor level unless otherwise indicated.

3.4.3.2 Modular Type Boxes For Socket/ Telephone/Call Bell Outlets

Outlet boxes shall be suitable for housing modular type switched socket outlets/ telephone outlets/ buzzers and any other outlet as required. These shall be so designed that accessories are mounted on a grid plate with tapped holes for brass machine screws leaving ample space at the back and on the sides for accommodating conductors. The grid plates and M.S. boxes shall be fitted with a brass earth terminal. Boxes shall be attached to conduits by means of inserting the conduits in the outlet boxes. Extra length of conduit shall be cut-off inside the box with the help of cutting blade. Moulded front covers made from high impact resistant, flame retardant and ultra violet stabilized engineering plastics shall be used to mount the outlets and shall be fixed to the outlet M.S. boxes by means of counter sunk chromium plated brass machine screws. No timber supports shall be used. Boxes shall be located at skirting level or bottom at 1200 mm from floor or inside raceways on laboratory work tables., as indicated in drawings and/or as directed.

3.5 Cross Section

The conduits shall be of ample sectional area to facilitate simultaneous drawing of wires and permit future provision also. Total cross section of wires measured overall shall not normally be more than half the area of the conduit. Maximum number of PVC insulated 660/1100 Voltage grade copper conductor cable conforming to IS - 694 - 1990 as per table give below.

Maximum no of PVC/MS insulated 660/1100 V grade aluminium/copper
Conductor cable conforming to IS : 694 – 1990

Nominal cross Sectional Area Sq mm	20 mm dia	25 mm dia	32 mm dia	40 mm dia	50 mm dia
1.0	7	12	20	-	-
2.5	6	10	14	-	-
4.0	4	8	12	14	-
6.0	3	6	8	11	-
10.0	-	5	7	9	12
16.0	-	4	6	5	6
25.0	-	2	4	2	5
35.0	-	-	2	2	5
50.0	-	-	-	2	3

4. WIRES

Wiring shall be carried out with PVC insulated 660/1100 volt grade unsheathed single core wires with electrolytic annealed stranded copper (unless otherwise stated) conductors and conforming to IS 694/1990. All wire rolls shall be ISI marked. All wires shall bear manufacturer's label and shall be brought to site in new and original packages. Manufacturer's certificate, certifying that wires brought to site are of their manufacture shall be furnished as required.

5 COAXIAL CABLES

The coaxial cables shall be of wideband type with operation up to 300 MHz capability. Aging resistance shall comply with DIM 472.52 part 2 e.i. maximum 5% increase in attenuation at 200 MHz measured by artificial aging (14 days at 80o C) cables shall meet all exceed following specifications

Center core Dia	0.8 mm
Diaelectric Dia	4.8 mm
Dielectric	PE
Outer Conductor Dia	5.4 mm
Outer Dia	7.0 mm
Bending radius	more than 30 mm
Impedance	75 ohms
D.C Resistance	50 ohms/KM
Screening factor	more than 50
Attenuation	
50 Mhz	6.5
100 Mhz	9
200 Mhz	13
300 Mhz	16

6 LAYING OF CONDUITS

- Conduits shall be laid either recessed in walls and ceilings or on surface on walls and ceilings or partly recessed and partly on surface, as required.
- Same rate shall apply for recessed and surface conduiting in this contract.
- Stranded copper conductor insulated wire of size as per schedule of quantities shall be provided in entire conduiting for loop ear thing.
- GI wire of suitable size to serve as a fish wire shall be left in all conduit runs to facilitate drawing of wires after completion of conduiting.

6.1 Recessed Conduiting

Conduits recessed in concrete members shall be laid before casting, in the upper portion of slabs or otherwise as may be instructed, so as to embedded the entire run of conduits and ceiling outlet boxes with a cover of minimum 12 mm concrete. Conduits shall be adequately tied to the reinforcement to prevent displacement during casting at intervals of maximum 1 meter. No reinforcement bars shall be cut to fix the conduits. Suitable flexible joints shall be provided at all locations where conduits cross expansion joints in the building.

Conduits recessed in brick work shall be laid in chases to be cut by electrical Contractor in brick work before plastering. The chases shall be cut by a chase cutting electric machine. The chases shall be of sufficient width to accommodate the required number of conduits and of sufficient depth to permit full thickness of plaster over conduits. The conduits shall be secured in the chase by means of heavy duty pressed steel clamps screwed to MS flat strip saddles at intervals of maximum 1 meter. The chases shall then be filled with cement and coarse sand mortar (1:3) and properly cured by watering.

Entire recessed conduit work in concrete members and in brick work shall be carried out in close coordination with progress of civil works. Conduits in concrete members shall be laid before casting and conduits in brick work shall be laid before plastering. Should it become necessary to embedded conduits in already cast concrete members, suitable chase shall be cut in concrete for the purpose. For minimizing this cutting, conduits of lesser diameter than 25 mm and outlet boxes of lesser depth than 50 mm could be used by the Contractor for such extensions only after obtaining specific approval from Project Manager . For embedding conduits in finished and plastered brick work, the chase would have to be made in the finished brick work. After fixing conduit in chases, chases shall be made good in most workmanlike manner to match with the original finish.

Cutting chases in finished concrete or finished plastered brick work for recessing conduits and outlet boxes etc shall be done by the Contractors without any extra cost.

6.2 Surface Conduiting

Wherever so desired, conduit shall be laid in surface over finished concrete and/or plastered brickwork. Suitable spacer saddles of approved make and finish shall be fixed to the finished structural surface along the conduit route at intervals not exceeding 500 mm. Holes in concrete or brick work for fixing the saddles shall be made neatly by electric drills using masonry drill bits. Conduits shall be fixed on the saddles by means of good quality heavy duty MS clamps screwed to the saddles by counter sunk screws. Neat appearance and good workmanship of surface conduiting work is of particular importance. The entire conduit work shall be in absolute line and plumb.

6.3 Fixing of conduit fittings and accessories

For concealed conduiting work, the fittings and accessories shall be completely embedded in walls/ceilings leaving top surface flush with finished wall/ceiling surface in a workman like manner.

Loop earthing wire shall be connected to a screwed earth stud inside outlet boxes to make an effective contact with the metal body.

6.4 Painting and Colour coding of conduits

Before laying, conduits shall be painted specially at such places where paint has been damaged due to vice or wrench grip or any other reason but not applicable for PVC conduits.

If so specified, surface conduits shall be provided with 20 mm wide and 100 mm long colour coding strips as below

Use	Code colour
Low voltage	Grey
Telephone	Black
Earthing system	Green
Control system lighting	Purple
Electrical Wiring	Light Grey

6.5 Protection of Conduits

To safeguard against filling up with mortar/plaster etc. all the outlet and switch boxes shall be provided with temporary covers and plugs which shall be replaced by sheet/plate covers as required. All screwed and socket joints shall be made fully water tight with white lead paste.

6.6 Cleaning of Conduit Runs

The entire conduit system including outlets and boxes shall be thoroughly cleaned after completion of erection and before drawing in of cables.

6.7 Protection Against Dampness

All outlets in conduit system shall be properly drain and ventilated to minimize chances of condensation/sweating.

6.8 Expansion Joints

When crossing through expansion joints in buildings, the conduit sections across the joint shall be through approved quality heavy duty metal flexible conduits of the same size as the rigid conduit.

6.9 Loop Earthing

Loop earthing shall be provided by means of insulated stranded copper conductor wires of sizes as per Schedule of Quantity laid along with wiring inside conduits for all wiring outlets and sub-mains. Earthing terminals shall be provided inside all switch boxes, outlet boxes and draw boxes etc.

7 LAYING AND DRAWING OF WIRES**7.1 Bunching of Wires**

Wires carrying current shall be so bunched in conduits that the outgoing and return wires are drawn into the same conduit. Wires originating from two different phases shall not be run in the same conduit.

7.2 Drawing of Wires

The drawing of wires shall be done with due regard to the following precautions:-

- No wire shall be drawn into any conduit, until all work of any nature, that may cause injury to wire is completed. Burrs in cut conduits shall be smoothen before erection of conduits. Care shall be taken in pulling the wires so that no damage occurs to the insulation of the wire. Approved type bushes shall be provided at conduit terminations.
- Before the wires are drawn into the conduits, conduits shall be thoroughly cleaned of moisture, dust, dirt or any other obstruction by forcing compressed air through the conduits if necessary..
- While drawing insulated wires into the conduits, care shall be taken to avoid scratches and kinks which cause breakage of conductors.
- There shall be no sharp bends.
- The Contractor shall, after wiring is completed, provide a blank metal/sun mica plate on all switch / outlet / junction boxes for security and to ensure that wires are not stolen till switches / outlets etc.. are fixed at no extra cost the contractor shall be responsible to ensure that wires and loop

earthing conductors are not broken and stolen. In the event of the wire been partly / fully stolen , the contractor shall replace the entire wiring along with loop earthing at no extra cost. No joint of any nature whatsoever shall be permitted in wiring and loop earthing .

7.3 Termination /Jointing of Wires

- Sub-circuit wiring shall be carried out in looping system. Joints shall be made only at distribution board terminals, switches/buzzers and at ceiling roses/connectors/lamp holders terminals for lights/fans/socket outlets. No joints shall be made inside conduits or junction/draw/inspection boxes.
- Switches controlling lights, fans or socket outlets shall be connected in the phase wire of the final sub circuit only. Switches shall never be connected in the neutral wire.
- Wiring conductors shall be continuous from outlet to outlet. Joints where unavoidable, due to any special reason shall be made by approved connectors. Specific prior permission from Project Manager in writing shall be obtained before making such joint.
- Insulation shall be shaved off for a length of 15 mm at the end of wire like sharpening of a pencil and it shall not be removed by cutting it square or wringing.
- Strands of wires shall not be cut for connecting terminals. All strands of wires shall be twisted round at the end before connection..
- Conductors having nominal cross sectional area exceeding 1.5 sq. mm shall always be provided with crimping sockets. Tinning of the strands shall be done wherever crimping sockets are not available as per instructions of the Project Manager
- All wiring shall be labelled with appropriate plastic ferrules for identification.
- At all bolted terminals, brass flat washer of large area and approved steel spring washers shall be used.
- Brass nuts and bolts shall be used for all connections.
- The pressure applied to tighten terminal screws shall be just adequate, neither too much nor too less.
- Switches controlling lights, fans, socket outlets etc. shall be connected to the phase wire of circuits only.
- Only certified valid license holder wiremen shall be employed to do wiring / jointing work.

7.4 Load Balancing

The Contractor shall plan the load balancing of circuits in 3 phase insulation and get the same approved by the Project Manager before commencement of the work.

7.5 Colour Code of Conductors

Colour code shall be maintained for the entire wiring installation - red, yellow, blue for three phases, black for neutral and green for earth.

8. SWITCHES AND FIXTURES

8.1 SWITCHES

All 6 and 16 amps switches shall be of the modular enclosed type flush mounted 230 Volt AC of the best quality and standard. The switch moving and fixed contacts shall be of silver nickel and silver graphite alloy and contact tips coated with silver. The housing of switches shall be made from high impact resistant, flame retarding and ultra violet stabilized engineering plastic material.

The switch controlling the light point shall be connected on to the phase wire of the circuit.

8.2 FLUSH PLATES

Switches, receptacles and telephone system outlets in wall shall be provided with moulded cover plates of shape, size and colour approved by the Project Manager made from high impact resistant, flame retarding and ultra violet stabilized engineering plastic material, and secured to the box with counter sunk round head chromium plated brass screws. Where two or more switches are installed together, they shall be provided with one common switch cover plate as described above with notches to accommodate all switches either in one, two or three rows.

One and two gang switch cover plate, telephone outlet cover plate, 6 and 16 amps switched/ unswitched plates, shall have the same shape and size. Three and four gang switch cover plates shall have the same shape and size. Six and eight gang switch cover plates shall have the same shape and size. Nine and twelve switch cover plates shall have the same shape and size. Wherever five switches, seven switches, ten switches and eleven switches are to be fixed the next higher size of gang switch cover plate to be used and extra openings shall be provided with blank-off.

8.3 EXTERNALLY OPERATED SWITCHES

Externally operated switches, shall be of general purpose type, 250 volts of the proper size and rating and shall be provided in weather proof enclosures, complete with weather proof gasket covers. The MCB's for all externally operated switches shall be separate and of proper rating.

8.4 WALL SOCKET OUTLETS

All 6/16 amps wall socket outlets unless otherwise mentioned on the drawings shall be switched, five/six round pin and fitted with automatic linear safety shutters to ensure safety from prying fingers. Un switched 6/16 amp wall socket outlets where called for in the drawings shall be of five/six round pin type. The socket outlets shall be made from high impact resistant, flame retarding and ultra violet stabilized engineering plastic material.

The switch and sockets shall be located in the same plate. The plates for 6 amp switched/unswitched plugs and telephone outlets shall be of the same size and shape.

All the switched and un switched outlets shall be of the best standard.

The switch controlling the socket outlet shall be on the phase wire of the circuit.

An earth wire shall be provided along the cables feeding socket outlets for electrical appliances. The earth wire shall be connected to the earthing terminal screw inside the box. The earth terminal of the socket shall be connected to the earth terminal provided inside the box.

8.5 LIGHTING FIXTURES

The light fixtures and fittings shall be assembled and installed complete and ready for service, in accordance with details, drawings, manufacturer's instructions and to the satisfaction of the Project Manager.

Wires brought out from junction boxes shall be encased in PVC flexible pipes for connecting to fixtures concealed in suspended ceiling. The flexible pipes shall be provided with a coupler at the fixture end.

Pendant fixtures specified with overall lengths are subject to change and shall be checked with conditions of the job and installed as directed.

All suspended fixtures shall be mounted rigid and fixed in position in accordance with drawings, instructions and to the approval of the Project Manager.

Fixtures shall be suspended true to alignment, plumb, level and capable of resisting all lateral and vertical forces and shall be fixed as required.

All suspended light fixtures etc. shall be provided with concealed suspension arrangement in the concrete slab/roof members. It is the duty of the Contractor to make these provisions at the appropriate stage of construction.

All switch and outlet boxes shall be bonded to earth with insulated stranded copper wire as specified.

Wires shall be connected to all fixtures through connector blocks.

Flexible pipes, wherever used, shall be of make and quality approved by the Project Manager.

9. MEASUREMENT AND PAYMENT OF WIRING

Wiring for lights, fans, convenience socket outlets and telephone outlets etc. shall be measured and paid for on POINT BASIS as itemized schedule of quantities and as elaborated as below unless otherwise stated.

9.1 Primary and Secondary light point wiring

In respect of group control of lights (more than one light controlled by one switch or MCB), wiring up to the first light in the group shall be measured and paid for as a primary light point. Wiring for other lights looped in one group for switch controlled as also MCB controlled lights shall be measured and paid for as secondary light points. Primary light points for switch controlled lights shall include the cost of control switch whereas primary light points controlled by MCBs shall not include the switch cost. The cost of MCB controlling such lights shall not be included in the primary light point rate since the MCB shall be paid for in the item of DB.

The point wiring basis shall assume average wiring length and average conduiting length per point based on parameters stipulated in Para 9.2 below. The average wiring length and average conduiting length forming the basis of point wiring payment, shall take the electrical layouts of the entire project into consideration. Tenderers are advised to seek clarifications, if they so desire, on this aspect before submitting their tenders. No claim for extra payment on account of electrical layouts in part or whole of the project requiring larger average wiring and conduiting length per point, whether specifically shown in tender drawings or not, shall be entertained after the award of contract.

9.2 Parameters: Wiring shall be carried out as per following parameters in recessed/ surface conduit system.

- Only looping system of wiring shall be adopted throughout. No joints excepting at wiring terminals shall be permitted.
- All accessories shall be flush type unless otherwise stated.
- For estimation of load, following loads per point shall be assumed.

Light points	100 Watts.
6 amps socket outlet points	100 Watts.
Fan points	60 Watts.
Exhaust fan points	300 Watts or as specified.
16 amp socket outlet points	1000 Watts.

- Lights, fans and 6 amp socket outlets may be wired on a common final such circuit. Such circuit shall not normally have more than a total of ten lights, fans or socket outlets or a load of 800 watts whichever is lesser.
- Power circuits shall normally have maximum one 16 amps socket outlet unless otherwise stated. Separate circuit shall be run for each geyser, kitchen equipment, window air conditioners and similar appliances.
- Wiring rates shall include painting of conduits and other accessories as required.
- Wiring rates shall include cleaning of dust, splashes of colour wash or paint from all fixtures, fans, fittings etc. at the time of taking over of the installation.
- Wiring rates shall include blanking of outlet boxes to prevent damage/pilferage of wires

9.3 Definitions

9.3.1 Wiring for Lights

Primary Light Points : Wiring for primary light points, as defined in para 9.1 above, shall commence at the Distribution Board terminals and shall terminate at the ceiling rose/connector in ceiling box/lamp holder via the control switch (for switch controlled lights). Rates for primary light point wiring shall be deemed to be inclusive of the cost of entire material and labour require for completion of primary light point thus defined including : .

- Recessed / surface conduiting system with all accessories, junction/draw/inspection boxes, bushes, check nuts etc. complete as required,
- Wiring with stranded copper conductor PVC insulated 660/1000 volt grade wires including terminations etc. complete as required.

- Control switch with switch box and cover plate of specified type including fixing screws, earth terminal etc. complete as required. Cost of this switch is applicable only for switch controlled points. This cost shall not be applicable for DB controlled points.
- Loop earthing with insulated copper wires.

Secondary Light points :

Secondary light points, as defined in para 9.1 above, shall cover the cost of interconnection wiring between group controlled light fittings and shall be deemed to be inclusive of the cost of entire materials and labour required for completion of the secondary light point thus defined including

- Recessed / surface conduiting system with all accessories, junction/draw/inspection boxes, bushes, check nuts etc. complete as required,
- Wiring with stranded copper conductor PVC insulated 660/1000 volt grade wires including terminations etc. complete as required.
- Loop earthing with insulated copper wires.

9.3.2 Wiring for Ceiling Fans

Wiring for ceiling fan points shall be same as for primary light points and shall, in addition, include ceiling outlet box with recessed fan hooks.

9.3.3 Wiring for Exhaust Fans

Wiring for exhaust fan points shall be same as for primary light points and shall in addition include the cost of providing a 3/5 pin 6 amp socket outlet near the fan along with plug top and a 6 amp control switch at convenient location near the room entry.

9.3.4 Wiring for Call Bell Points

Wiring for call bell points shall be the same as for primary light points and shall in addition include the cost of a call bell/buzzer of approved type and make in the required location and a call bell in lieu of the control switch at a convenient location as required.

9.3.5 Wiring for Telephone Outlets

Wiring for telephone outlets points shall include the entire wiring and conduiting from the telephone tag block to the telephone outlet including the telephone outlet complete as required and as itemized in the Schedule of Quantities

9.3.6 Wiring for TV Outlets

Wiring for TV outlet points shall include the entire wiring and conduiting from the central point to the TV outlet including the TV outlet complete as required and as itemized in the Schedule of Quantities

9.3.7 Wiring for Convenience Socket Outlets

3/5 pin 6 amps and 3/6 pin 16 amps single phase switched convenience socket outlets shall be provided in the building as indicated in the layout drawings. In addition, combined 3 pin 6 / 16

amps socket outlets at modular intervals in special PVC raceway over the work tables in laboratories shall be provided. Wherever required, 20/32/50 amps single phase and 32/50 amps 3 phase outlets shall also be provided.

Wiring for 3/5 pin 6 amps convenience socket outlets

Point wiring for 3/5 pin 6 amps socket outlets (in locations other than over the laboratory work tables) on point wiring basis shall be the same as primary light point defined in para 8.3.1 and shall in addition include 3/5 pin 6 amp socket outlet with 6 amp control switch in MS box with cover. including loop earthing of the third pin complete as required as itemized in scheduled of quantities.

Wiring for 3/6 pin 16 amps convenience socket outlets

Point wiring for 3/6 pin 16 amps socket outlets (in locations other than over the laboratory work tables) on point wiring basis shall be the same as primary light point defined in para 8.3.1 and shall in addition include 3/6 pin 16 amp socket outlet with 16 amp control switch in MS box with cover including loop earthing of the third pin complete as required as itemized in scheduled of quantities.

9.3.8 Sub mains wiring

Sub mains wiring shall be measured from outer end of the boxes. Extra Loop length shall be left at each end as required.

10. ROUTINE AND COMPLETION TESTS

10.1 Installation Completion Tests

At the completion of the work, the entire installation shall be subject to the following tests:

1. Wiring continuity test
2. Insulation resistance test
3. Earth continuity test
4. Earth resistivity test

Besides the above, any other test specified by the local authority shall also be carried out. All tested and calibrated instruments for testing, labour, materials and incidentals necessary to conduct the above tests shall be provided by the contractor at his own cost.

10.2 Wiring Continuity Test

All wiring systems shall be tested for continuity of circuits, short circuits, and earthing after wiring is completed and before installation is energized.

10.3 Insulation Resistance Test

The insulation resistance shall be measured between earth and the whole system conductors, or any section thereof with all protection in place and all switches closed and except in concentric wiring all lamps in position of both poles of the installation otherwise electrically connected together, a direct current pressure of not less than twice the working pressure provided that it does not exceed 1100 volts for medium voltage circuits. Where the supply is derived from AC three phase system, the neutral pole of which is connected to earth, either direct or through added resistance, pressure shall be deemed to be that which is maintained between the phase conductor and the neutral. The insulation resistance measured as above shall not be less than 50 mega ohms divided by the number of points provided on the circuit the whole installation shall not have an insulation resistance lower than one mega ohm.

The insulation resistance shall also be measured between all conductors connected to one phase conductor of the supply and shall be carried out after removing all metallic connections between the two poles of the installation and in those circumstances the insulation shall not be less than that specified above.

The insulation resistance between the frame work of housing of power appliances and all live parts of each appliance shall not be less than that specified in the relevant Standard specification or where there is no such specification, shall not be less than half a mega ohm or when PVC insulated cables are used for wiring 12.5 mega ohms divided by the number of outlets. Where a whole installation is being tested a lower value than that given by the above formula subject to a minimum of 1 Mega ohms is acceptable.

10.4 Testing Of Earth Continuity Path

The earth continuity conductor including metal conduits and metallic envelopes of cable in all cases shall be tested for electric continuity and the electrical resistance of the same along with the earthing lead but excluding any added resistance of earth leakage circuit breaker measured from the connection with the earth electrode to any point in the earth continuity conductor in the completed installation shall not exceed one ohm.

10.5 Testing Of Polarity Of Non-Linked Single Pole Switches

In a two wire installation a test shall be made to verify that all non-linked single pole switches have been connected to the same conductor throughout, and such conductor shall be labelled or marked for connection to an outer or phase conductor or to the non-earthed conductor of the supply. In the three or four wire installation, a test shall be made to verify that every non-linked single pole switch is fitted to one of the outer or phase conductor of the supply. The entire electrical installation shall be subject to the final acceptance of the Project Manager as well as the local authorities.

10.6 Earth Resistivity Test

Earth resistivity test shall be carried out in accordance with IS Code of Practice for earthing IS 3043.

10.7 Performance

Should the above tests not comply with the limits and requirements as above the contractor shall rectify the faults until the required results are obtained. The contractor shall be responsible for providing the necessary instruments and subsidiary earths for carrying out the tests. The above tests are to be carried out by the contractor without any extra charge.

10.8 Tests And Test Reports

The Contractor shall furnish test reports and preliminary drawings for the equipment to the Project Manager for approval before commencing supply of the equipment. The Contractor should intimate with the tender the equipment intended to be supplied with its technical particulars. Any test certificates etc., required by the local Inspectors or any other Authorities would be supplied by the Contractor without any extra charge. All test reports shall be approved by the Project Manager prior to energizing of installation.

B) MEDIUM VOLTAGE DISTRIBUTION BOARDS

1. GENERAL

This section covers specification of DBs.

2. STANDARDS AND CODES

The following Indian Standard Specifications and Codes of Practice will apply to the equipment and the work covered by the scope of this contract. In addition the relevant clauses of the Indian Electricity Act 1910 and Indian Electricity Rules 1956 as amended up to date shall also apply. Wherever appropriate Indian Standards are not available, relevant British and/or IEC Standards shall be applicable.

BIS certified equipment shall be used as a part of the Contract in line with Government regulations. Necessary test certificates in support of the certification shall be submitted prior to supply of the equipment.

It is to be noted that updated and current Standards shall be applicable irrespective of those listed below.

Miniature Air Circuit Breakers for AC circuits	IS 8828 : 1978
Degrees of Protection provided by enclosures for low voltage switchgear	IS 2147 : 1962
Code of Practice for installation and maintenance of switchgear not exceeding 1000 volts	IS 10118 : 1982
General requirements for switchgear and control gear for voltages not exceeding 1000 volts	IS 4237 : 1982

3. MINIATURE CIRCUIT BREAKERS

- The MCB's shall be of the completely moulded design suitable for operation at 240/415 Volts 50 Hz system.

- The MCB's shall have a rupturing capacity of 10 KA at 0.5 p.f.
- The MCB's shall have inverse time delayed thermal overload and instantaneous magnetic short circuit protection. The MCB time current characteristic shall coordinate with PVC cable characteristic.
- Type test certificates from independent authorities shall be submitted with the tender.

4. FINAL DISTRIBUTION BOARDS

- Final distribution boards shall be flush mounting, totally enclosed, dust and vermin proof and shall comprise of miniature circuit breakers, earth leakage circuit breakers, neutral link etc as detailed in the schedule of quantities.
- The distribution equipment forming a part of the Distribution Boards shall comply to the relevant Standards and Codes of the Bureau of Indian Standards and as per detailed specifications included in this tender document.
- The board shall be fabricated from 16 gauge CRCA sheet steel and shall have a hinged lockable spring loaded cover. All cut-outs and covers shall be provided with synthetic rubber gaskets. The entire construction shall give a IP 42 degree of protection.
- The bus-bar shall be of electrical grade copper having a maximum current density of 1.6 ampere per square mm and PVC insulated throughout the length. The minimum spacing between phases shall be 25 mm and between phase and earth 19 mm
- Separate neutral link for each phase shall be provided.
- All the internal connections shall be with either solid copper PVC insulated or copper conductor PVC insulated wires of adequate rating.
- All the internal connections shall be concealed by providing a hinged protective panel to avoid accidental contact with live points.
- All outgoing equipment shall be connected direct to the bus bar on the live side. The equipment shall be mounted on a frame work for easy removal and maintenance.
- The sheet steel work shall undergo a rigorous rust proofing process, two coats of filler oxide primer and final powder coated paint finish.
- All the circuits shall have an independent neutral insulated wire, one per circuit, and shall be numbered and marked as required by the Project Manager.
- A sample of the completed board is to be got approved by the Project Manager before commencement of supply and erection.

- Before commissioning, the distribution boards shall be meager tested for insulation and earth continuity.

5 SHEET STEEL TREATMENT AND PAINTING

- Sheet Steel materials used in the construction of these units should have undergone a rigorous rust proofing process comprising of alkaline degreasing, de-scaling in dilute sulphuric acid and a recognized phosphating process. The steel work shall then receive two coats of oxide filler primer before final painting. Castings shall be scrupulously cleaned and fettled before receiving a similar oxide primer coat.
- All sheet steel shall after metal treatment be given powder coated finish painted with two coats of shade 692 to IS 5 on the outside and white on the inside. Each coat of paint shall be properly stoved and the paint thickness shall not be less than 50 microns.

6. NAME PLATES AND LABELS

- Suitable engraved white on black name plates and identification labels of metal for all Switch Boards and Circuits shall be provided. These shall indicate the feeder number and feeder designation.

C) TELEPHONE WIRING SYSTEM:

1.0 SCOPE:

- 1.1 This section relates to specification for the supply, installation, testing & commissioning of works included in electrical section for telephone system.

The scope of work included in this section is as follows :

- a) Supply and installation of cables/wires G.I. fabricated perforated cable trays for laying telephone from the telephone exchange room up to each floor. (Cable tray quantity covered in cabling works).
- b) Providing & installing cable ladders in the telephone vertical duct from Ground floor up to 2nd floor in each block of the building (Quantity covered in cabling works).
- c) Providing & installing PVC conduits run from corridor to each office unit /Guest room to connect between cable tray & the telephone tag block.
- d) Providing conduits for telephone wiring in the public areas with G.I. fish wire.
- e) Providing & installing G.I./PVC moulded boxes including plug-in type telephone outlets in public/Guest office areas.
- f) Providing & installing pipe sleeves for P&T incoming lines into the EPABX room if required.

The electrical contractor shall co-ordinate with P & T and other agencies to finalize the exact requirement.

2.0 CONDUITING :

- 2.1 All concealed /surface installation including the conduit run above the false ceiling space shall be heavy gauge black PVC conduit. The specification for materials & installation shall be same as described in electrical section. All relevant clauses are applicable for telephone system as well. The conduit for telephone system shall be installed minimum 20 cm away from the power conduit. Care shall be taken so that no telephone conduit is run in parallel to Electrical conduit in close proximity. Wherever telephone conduits cross power conduits, they shall be at right angle, to each other. All telephone conduits shall be earthed.

Size of Cable	Conduit Size
Up to 5 pair	20 mm
Above 5 pair up to 10 pair	25 mm
Above 10 pair up to 20 pair	32 mm
2 Nos. 2 pair	20 mm
3 to 5 Nos. 2 pair	25 mm
6 to 10 Nos. 2 pair cable	32 mm

The size of conduit shall depend upon no. of wires to be drawn. However minimum size of conduits shall be 20 mm.

- 2.2 All telephone wires shall be 0.61 mm dia annealed tinned copper conductor PVC insulated and PVC sheathed cables. All telephone cables inside the building shall be un-armoured Each out let shall be wired with 2 pair cables from final tag unless otherwise specified separately. From main tag block to sub tag block cabling shall be done with suitable size of telephone un-armoured cable laid in conduit/pipe/ cable trays.

3.0 CABLE TRAYS:

The specification & installation method described in the other section of electrical specification shall be applicable.

4.0 BOXES & TELEPHONE OUTLETS:

All concealed boxes shall be of G.I. as described in the electrical wiring section & shall match with electrical wiring accessories. The boxes/main Junction box shall be suitable for wall mounting having opening for cable/ conduit entry. All PVC cable shall enter the telephone junction box from the bottom through brass cable glands and enough cable length shall be available for termination. Each PVC cable serving the telephone socket shall be marked for identification.

Junction boxes shall be fully enclosed, kept tight with lockable hinged doors.

Prior to the system installation the contractor shall consult telephone department for their requirements and notify the Construction manager/Consultants on the same. All equipment like tag blocks, wires shall be MTNL approved makes.

5.0 SUPPLY OF MATERIALS:

Exclusions:

- a) Telephone Exchange & Telephone instruments.
- b) Main incoming cable.

Rest all material for distribution of telephone system as covered in BOQ shall be in the Contractors scope.

The telephone outlet shall be plug-in (clip on) type socket outlet. The switch plate shall be similar to the electrical wiring devices.

M) CABLING FOR TV SYSTEM:

- 1.0 The Co-axial shall be of wide band type with operation capability up to 500 MHz.
- 2.0 The ageing resistance of the co-axial cable shall comply with DIN 47252. Part 2, i.e. max. 5% increase in attenuation at 200 MHz measured by artificial ageing (14 days at 80 deg.C).
- 3.0 Cables shall meet or exceed the following specifications.

	RG-6 CA TV Type	RG-11 CA TV Type
a. Centre Conductor	18 AWG copper coated steel 18% conductivity	12 AWG copper coated steel 18% conductivity.
b. Dielectric	Foam polyethylene Nom. Dia. 0.180	Foam polyethylene Nom. Dia. 0.280
c. Shield	Foil – 0.003 Al. Tape Braid – 34 AWG 4 end Al. 60% coverage dia. 0.212	Foil – 0.003 Al. Tape Braid – 34 AWG 6 end Al. 60% coverage dia. 0.314
d. Jacket	Black PVC flame retardant dia. Over jacket 0.272 ± 0.008 Min. spot 0.023	Black PVC flame retardant dia. Over jacket 0.405 ± 0.010 Min spot 0.032.

Electrical Properties

a. Dielectric Strength	Conductor to shield 2000 VDC	Conductor to shield 1500 VDC
b. Capacitance	16.2 PF/Ft. Nom.	16.2 PF/Ft. Nom.
c. Impedance	75.0 ± 3.0 ohms	75.0 ± 3.0 ohms
d. Attenuation	DB/100 ft. 0.65 DB at 5 MHz 0.76 DB at 10MHz	DB/100 ft. 0.35 DB at 5 MHz 0.94 DB at 50MHz

	0.96 DB at	20 MHz	1.28 DB at	100 MHz
	1.98 DB at	100 MHz	1.78 DB at	200 MHz
	4.21 DB at	450 MHz	2.20 DB at	300 MHz
	4.80 Db at	550 MHz	2.75 Db at	450 MHz
	6.49 DB at	1000	4.30 DB at	1000 MHz
	MHz			
e. Velocity of Propagation	82.0% Nom		92.0% Nom	
f. DCR	35.47 ohms/1000 ft.		14.29 ohms/1000 ft.	
g. SRL	30 DB (10 MHz to 300 MHz)		20 DB (5 to 450 MHz)	

4.0 Directional Couplers

- 4.1 These shall be of Ultra Wideband type and of hybrid circuit design.
- 4.2 These shall have a near flat frequency response over the entire operating range.
- 4.3 These shall have an aluminium cast housing for high frequency radiation resistance.
- 4.4 These shall have 'F' sockets for all input, output and branch ports.
- 4.5 The Tap offs shall be available in one way, two way and four way configurations.
- 4.6 The splitters shall be available in two way, three way and four way configurations.
- 4.7 The Tap offs shall be available in different tap values ranging from 11 dB, 15 dB, 20 dB, 25 dB and 30 dB.
- 4.8 These shall meet or exceed the following specifications:

	Tap offs	Splitters
a) Tap Loss	11-30 dB	----
b) Through Loss	0.5-4 dB	4.0 – 8.0 dB
c) Isolation	>22 dB	> 22 dB
d) Screening Factor	> 50 dB	> 50 dB

O) LIST OF APPROVED MAKES:

Description	Makes
MCB	: Legrand/Schneider/Siemens/Orange
Moulded Case Circuit Breaker	: Legrand/ Schneider/Siemens/ Orange
MCB Distribution Board	: Legrand/Schneider/Siemens/Orange
1100/650V grade PVC A cables/wires	: KEI / Hevell's/ Bonton/Corus/Orange
Cable lugs for 1100V grade cables	: Dowells
Cable compression glands for 1100 volt grade cables	: Peeco/Comet
Cable Tray	: Pilco/RICO Steel/Approved by Consultant
GI pipes	: Jindal - Hissar /Tata
Current Transformers	: Automatic Electric/Kappa
Meters	: Rishab / Automatic Electric/Secure
Selector Switches	: Kaycee/Salzer
Indication lamps and push buttons	: BCH/L&T/Seimens
PVC Conduit	: BEC/Poly Pack
Switches, Socket Plugs, TV, Telephone etc.	: Legrand-arteor/Wipro-platia/Orange
Telephone Tag Blocks	: Krone/ Pouyet
Telephone wires	: Amp/Belden/Molex/Orange
PVC Insulated Wire	: Bonton/ Polycab/Corus/Orange
Industrial Socket in sheet steel enclosure	: Clipsal/Orange
Ceiling Rose	: Anchor
Light Fitting	: Philips/Crompton Greaves/ Wipro or as per Architect
Ceiling/Exhaust Fan	: Orient/ Crompton Greaves
Panel Boards	: Enerlac/ Adela/SPC
Relays	Alstom/L&T/GE/Siemens/ As approved :
Indicating Instruments	L&T/MECO/Rishabh :

:

Description	Make	Makes
Contactors & Starters	:	Siemens/L&T /Schneider Electric/ S+S
Push Buttons	:	L&T/BCH/Siemens
Relays	:	Alstom/L&T/ S+S/ Neptune
Timers& Indicating Lamps	:	L&T/BCH
	:	Comscope – USA

BILL OF QUANTITIES				
1.0	The Bill of Quantities should be read with all the other sections of this Tender. All the items of work mentioned in the Bill of quantities covered by this contract shall be carried out as per the drawings, specifications and directions of the Owners and shall include the cost of all labour, materials, tools and plants, materials, testing if any with sub-Contractor's testing appliance, all octroi, royalties, taxes and Contractor's profit and overheads etc.			
2.0	The Tenderer shall be deemed to have studied the drawings, specifications and details of work to be done within the time schedule and to have acquainted himself of the conditions prevailing at site. The Quoted Rates shall be applicable for all works in any section/size/shape and Design etc.			
3.0	In case where the specifications given in the Description of the item of work given in Bill of Quantities are found wanting, the General Specification for Electrical Works Part – I (Internal), 1994 (with amendments upto date) shall be followed: where not specified the latest edition of relevant IS. Specifications shall be applicable. In case of any ambiguity in interpretations the Owners decision shall be final and binding.			
4.0	The rate(s) shall include the cost of providing / executing all ancillary – jobs / activities e.g. necessary excavations of earth, back filling, lean current concrete 1 : 4 : 8, RCC 1 : 2 : 4 with reinforcement and Shutterings, Brick Masonry in Cement mortar 1 : 4; Cement Plaster 1 : 5 (1 Cement : 5 Sand); Cutting holes, fixing clamps, lugs, M.S. Bolts / Nuts, Dashfastners, M.S. / G.I. screws, drilling holes, grouting in cement concrete 1 : 2 : 4; primer and painting to all steel works, welding, locking devices to Panel Boards etc. in any items for the scope of works contained in the tender documents, whether mentioned in description of item of work or not; and the contractor shall make the job complete as per drawings and direction of Engineer-in-charge, and nothing extra shall be payable on all such activities / jobs.			
5.0	The rates quoted for items of work shall include working in all conditions at all heights/depths including in/under water, liquid mud, foul conditions etc. and shall also include bailing or pumping out water from the foundations basements or any other place of construction collected from rain or any other source whatsoever at any time, till the completion of work including all suspension period and delays whatsoever.			
6.0	The Quantities in this schedule are provisional. The Contractor will be paid for the actual quantity of work executed at site at the rates quoted in his tender. The Owner reserves the right to increase or decrease any of the quantities or to totally omit any item of work and no claims by the Contractor on these accounts shall be entertained.			
7.0	All the items of work given in this schedule of quantities shall be executed strictly in accordance with Indian Electricity Rules and requirements of the Electric Supply Authority and British Standards Read in conjunction with the relevant drawings, specifications and the appropriate Indian Standards.			
8.0	The contractor shall visit the site and shall satisfy himself as to conditions under which the wok is to be performed. No extra claim consequence of ignorance or on grounds of insufficient description will be allowed at a later date.			
9.0	No Alteration whatsoever is to be made to the text or quantities of this Bill of quantities unless alteration is authorised in writing by the Owner. Any such alterations, notes or additions shall, unless authorised in writing be disregarded when tender documents are considered.			
10.0	In the event of error occuring to the amount column of the Bill of quantities, as a result of wrong extension unit rate and quantity, the unit rate quoted by the Tenderer shall be regarded as firm and the extension shall be amended on the basis of the rates.			
11.0	All error in totaling in the amount column and in carrying forward totals shall be corrected by owner. Any error in description or in quantity or omission of items from the contract Bill of quantities shall not viate this contract but shall be corrected and deemed to be a variation required by the owner.			
12.0	All materials shall be an Approved make of materials from the tender document.			
13.0	Any approvals and load sanction required from local authorities shall become part of the contractual obligations of the Contractor and nothing extra shall be payable to him.			

	<u>ELECTRICAL TENDER</u>				
A.	<u>SURGE PROTECTION DEVICES & FINAL DISTRIBUTION BOARDS</u>				
	The rates for the distribution boards shall also include the following :				
1.0	Supporting rigid steel framework.				
2.0	Cubicle type, 14 gauge CRCA sheet steel enclosed.				
3.0	Complete with interconnections and distribution bus bars.				
4.0	Proper bonding to earth.				
5.0	Painting/lettering on Breakers and distribution boards, the location and pupose, SLD of each panel and DB details.				
6.0	Providing cable clamps / supports within distribution boards cable alley.				
7.0	Door interlocking for all outgoing feeders shall be provided.				
10.0	TPN MCCBs shall be provided with Four pole.				
12.0	All MCCBs shall be ICS = ICU.				
13.0	All MCCB shall have rotory handle with pad locking arrangement.				
14.0	Minimum breaking capacity for MCBs shall be 10 KA.				
15.0	All indicating lamps shall be provided with 2 amps control MCBs.				
16.0	All outgoing terminals shall be provided in cable alley on proper insulated supports				
17.0	Degree of protection of distribution panel enclosure shall be as under:				
a	IP 52 for indoor panels.				
b	IP 54 for service area panels.				
c	IP 55 for outdoor panels.				
18.0	Bus bar rating shall be considered as 1.0 amps and 1.6 amps per Sq mm for aluminum and copper bus bars respectively.				
19.0	All hinged door shall be earthed through 2.5 sq mm tinned braided copper wire.				
20.0	The tripping characteristics of MCBs shall be as under:				
a	Type "C" - For motor protection				
b	Type "B" - For resistive, lighting and convenience power				
c	Type "D" - For UPS and discharge lamps				
21.0	Potential free contacts and power contactor shall be provided in main LT panel, sub LT panel and SDBs for BMS integration for monitoring data and all starters required potential free contact for monitoring and controlling.				
22.0	MCCBs above 250 Amps shall have microprocessor based releases and upto 250 Amps shall have thermal magnetic trip unit. Only thermal shall not be acceptable.				
23.0	Removable lifting hook shall be provided in all transportation section.				

**RENOVATION OF HOTEL CLARKS-LUCKNOW
ELECTRICAL WORKS**

SN	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT
1.0	FINAL DISTRIBUTION BOARDS & ISOLATORS				
1.1	Supply, installation, tesing and commissioning of the following MCCB Isolator/MCB Isolator in powder coated, MS enclosure of minimum 1.6 mm thickness (IP 42) with all accessories as required.				
a.	32/40 Amps FP MCB ,10KA in MS enclosure	Nos.	17		
2.0	FLOOR DB				
	Comprising of following:				
	Incoming:				
	One (1) No. 63 A TPN MCB (10 KA)				
	Three (3) No. 40 A DP RCCB of 100mA sensitivity				
	Outgoing:				
	Thirty Six (36) Nos. 20/10A SP MCB (10 KA)				
	Busbar:				
	100A DP copper bus bar				
	Earthing:				
	Suitable for 36 Nos. outgoing.				
	Distribution board as described above	Nos.	4		
3.0	Common Area D.B.				
	Comprising of following:				
	Incoming:				
	One (1) No. 63 A FP MCB (10 KA)				
	Three (3) Nos. 40 A DP RCCB of 100mA sensitivity				
	Outgoing:				
	Twenty Four (24) Nos. 10/20A SP MCB (10 KA)				
	Busbar:				
	100A DP copper bus bar				
	Neutral link:				
	Separate for each phase.				
	Earthing:				

RENOVATION OF HOTEL CLARKS-LUCKNOW
ELECTRICAL WORKS

SN	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT
	Suitable for 24 Nos. outgoing.				
	Distribution board as described above	Nos.	5		
4.0	UPS DB				
	Comprising of following:				
	Incoming:				
	One (1) No. 32 A DP MCB (10 KA)				
	One (1) No. 32 A DP RCCB of 100mA sensitivity				
	Outgoing:				
	Four (4) Nos. 10A SP MCB (10 KA)				
	Busbar:				
	50A DP copper bus bar				
	Earthing:				
	Suitable for 4 Nos. outgoing.				
	Distribution board as described above	Nos.	2		
5.0	Supply, Installation, Testing and Commissioning of 01KVA, Off line UPS with 15min. Maintenance free battery backup. Including lockable mounting rack.	Set	2		
8.0	SURGE PROTECTION DEVICES				
a	SPD as per Schedule 2 (Three Phase DBs/MDBs/SDBs) for Phase to phase and phase to earth as per specification.	Nos.	8		
	TOTAL CARRIED TO SUMMARY				
B.	LT CABLES & CABLE TRAYS				
	The rate shall also include the following :				
1.0	Providing and fixing junction boxes with covers including painting where ever required.				
2.0	Providing all fixing accessories such as clamping devices nuts, bolts and screws.				
3.0	Wherever the cables are of aluminium and bus bars of copper bimetallic lugs shall be used.				
4.0	All cable shall be laid with one diameter gap.				
5.0	All cables shall be IS approved.				
6.0	Double compression glands				

RENOVATION OF HOTEL CLARKS-LUCKNOW
ELECTRICAL WORKS

SN	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT
7.0	FR paint one meter on both side of wall penetration and at termination as per specifications.				
8.0	Burried LT cables to be laid atleast 750 mm below ground.				
B.	<u>LT CABLES ,CABLE TRAYS</u>				
1.0	Supply,laying,testing and commissioning of following 1100 volt grade PVC insulated PVC sheathed flexible copper conductor armoured cable on cable trays, burried cables including the cost of providing identification tags,route markers etc. complete as per specification and as per site requirements.				
1.1	4 x 6 Sq.mm Copper cable	RM	210		
1.2	4 x 10 Sq.mm Copper cable	RM	180		
1.3	4 x 16 Sq.mm Copper cable	RM	270		
2.0	Supplying of all materials and making terminations of 1.1 KV grade Copper multicore cables of the following sizes. The work includes cable glanding using brass plated double compression glands, sizing the core leads, removing insulation, fixing suitable crimping type Copper lugs/ thimbles by using hydraulic crimping tools with correct size of the dies, shaping the leads and neatly connecting the same to the equipment terminals.				
2.1	4 x 6 Sq.mm Copper cable	Nos.	14		
2.2	4 x 10 Sq.mm Copper cable	Nos.	12		
2.3	4 x 16 Sq.mm Copper cable	Nos.	18		
3.0	Supplying and fixing cable trays of the following sizes (in one/two/ three tier fashion either on one side of the wall or on two sides of the wall) of GI perforated type including grouting supports/hangers required hardwares etc. as specified in the drawings.				
3.1	40mm x 450mm x 40mm x 2mm with 2 Nos. of 25 x 3m GI strip.	RM	0		
3.2	40mm x 300mm x 40mm x 2mm with 2 Nos. of 25 x 3m GI strip	RM	120		
3.3	50mm x 200mm x 50mm x 2mm with 2 Nos. of 25 x 3m GI strip	RM	56		
	TOTAL CARRIED TO SUMMARY				
C.	<u>INSTALLATION OF LIGHTING FIXTURES</u>				
	The rates shall include all components that may be required to complete the installation in all respects such as :				
a.	Internal wiring between accessories.				
b.	Earthing of light fixtures.				

RENOVATION OF HOTEL CLARKS-LUCKNOW
ELECTRICAL WORKS

SN	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT
c.	Suitable length of GI down rod, hanger and connecting wires, etc required to complete the installation.				
d.	Clamps, GI bolts, nuts, brass screws, saddles, and other fixing accessories as required.				
e.	Testing of all fixtures & ceiling fans.				
C.	INSTALLATION OF LIGHT FIXTURES				
	Storing, installation, testing and commissioning of the following lighting fixtures including fixing arrangement and with all accessories as required for the following complete with necessary GI pipe required for hanging of lighting fixtures.				
1.0	PUBLIC AND COMMON AREA				
a	Wall scone lamp public area fixture as approved by ID/Lighting Consultant/Owner.	Nos.	24		
b	Small Chandelier/Surface mounted dn. light as approved by ID/Lighting Consultant/Owner.	Nos.	120		
c	Recessed downlight fixture as approved by ID/Lighting Consultant/Owner.	Nos.	855		
d	Strip LED light as approved by ID/Lighting Consultant/Owner.	Mtr.	80		
e	Under water light as approved by ID/Lighting Consultant/Owner.	Nos.	42		
	TOTAL CARRIED TO SUMMARY				
D.	INTERNAL WIRING				
1.0	The internal wiring shall include the wiring of light/fan/outlets to the distribution board via switch to the point.				
2.0	All fixing accessories such as clips, brass screws etc.				
3.0	All the switch boxes, ceiling fan regulator boxes, outlet and junction boxes shall be covered with modular cover plate as per specifications.				
4.0	All necessary material to complete the wiring as specified.				
5.0	1100 volts grade FRLS PVC insulated copper conductor stranded flexible PVC insulated wire of green colour for earthing of outlet boxes, light fixtures, and socket outlets.				
6.0	Painting of junction boxes.				
7.0	Embedding conduits and fittings in walls/ceiling etc. during construction including cutting chases and making good the same as necessary in the case of concealed conduit work.				
8.0	Outlet boxes and junction box.				
9.0	Providing GI saddles of approved quality and make and grouting the same for any exposed conduit work.				

RENOVATION OF HOTEL CLARKS-LUCKNOW
ELECTRICAL WORKS

SN	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT
10.0	All socket outlets shall be shuttered type with earth terminal.				
11.0	The quoted rates for metal clad splash proof socket outlets shall include the cost of suitable plug top.				
12.0	Lighting and power circuits shall be kept separate.				
13.0	Junction boxes for fans shall be covered with 3 mm thick hylam sheet.				
14.0	The minimum conduit size shall be kept 20 mm.				
D.	INTERNAL WIRING				
	COMMON AND PUBLIC AREA				
1.01	Wiring for light point/fan point/call bell point with 1.5mm ² PVC insulated, copper conductor cable in recessed heavy duty 2mm thick PVC conduit as required with fixing of plate box, switch and earthing complete with all accessories as required (first point shall be used from 1.5 mm ² 660V grade PVC insulated copper wires & looping with 1.5mm ²).				
	Switch Controlled				
a	Primary Point	Point	50		
b	Secondary Point	Point	318		
1.02	Wiring for 13A international/universal light plug point with 1.5 mm ² PVC insulated, copper conductor cable in surface/recessed 2mm thick heavy duty PVC conduit as required with fixing of plate, box, 6A switch socket and earthing complete with all accessories as required (first point shall be wired from 1.5 mm ² 660V grade PVC insulated copper wires & looping with 1.5mm ²).	Point	163		
1.03	Wiring for 16 Amp power outlet with 4.0 Sqmm PVC insulated copper conductor wires in recessed/surface 2mm thick heavy duty PVC conduit including supply and fixing of 6 pin 16 amps shuttered switch socket with internal wiring in G.I. box, earthing of 3rd pin with PVC insulated, green colour 2.5 Sqmm copper wire, complete with all accessories as required. (Power Socket).				
a)	One 16A outlets in one circuits with switch sockets of approved make.	Nos.	54		
b)	Two 16A outlets in one circuits with switch sockets bou in different location of approved make.	Set	50		
1.04	Wiring for 2 Way Switch with 1.5mm ² PVC insulated, copper conductor cable in recessed 2mm thick heavy duty PVC conduit as required with fixing of plate box, switch and earthing complete with all accessories as required (first point shall be used from 1.5 mm ² 660V grade PVC insulated copper wires & looping with 1.5mm ²).	Nos.	6		

RENOVATION OF HOTEL CLARKS-LUCKNOW
ELECTRICAL WORKS

SN	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT
1.05	Wiring for light point(MCB Control) with1.5 mm2 PVC insulated in recessed 2mm thick heavy duty PVC conduit as required, with all accessories as required (first point shall be used from 1.5 mm2 660V grade PVC insulated copper wire and looping with1.5 mm2)- For Public area. Service area.				
	MCB Controlled				
a	Primary Light Point	Nos.	104		
b	Secondary Light Point(Looped)	Nos.	649		
1.12	Wiring for light point with1.5 mm2 PVC insulated in recessed 2mm thick heavy duty PVC conduit as required, with all accessories as required (first point shall be used from 1.5 mm2 660V grade PVC insulated copper wire and looping with1.5 mm2)- For Public area, Service area through UPS- DB				
g)	Lights controlled from MCB	Nos.	32		
1.13	Wiring for light point with3x1.5 mm2 PVC insulated flexible copper cable - unarmoured including recessed 2mm thick heavy duty PVC conduit as required, with all accessories as required for under water light.	Mtrs.	530		
	TOTAL CARRIED TO SUMMARY				
E. TELEPHONE, DATA & MATV SYSTEM					
	Providing and installing of all conduiting and wiring for telephone, data & IPTV system including providing and fixing of the following:				
1.0	All necessary specials and fittings				
2.0	Fixing of cover plates for inspection, junction and outlet boxes.				
3.0	Supply and fixing of 2 mm thick outlet boxes and junction boxes.				
4.0	All fixing accessories such as clips, nails, screws etc.				
5.0	Providing and fixing approved saddles, nooks and grouting the same as required, in the case of all exposed conduit work.				
6.0	Embedding conduits and accessories in wall, floors etc. during construction and / or cutting chases and making good as necessary in the case of all concealed conduit work.				
E. TELEPHONE, DATA SYSTEM					
1.0	Supply and installation of following 2 mm thick heavy duty FR PVC conduits including cost of junction boxes, bends, elbows, sockets, tees and all accessories, laying in slab cutting chasis and making good or surface mounted including all fixing hardware.				
1.1	20 mm dia PVC conduit	RM	520		

RENOVATION OF HOTEL CLARKS-LUCKNOW
ELECTRICAL WORKS

SN	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT
1.2	25 mm dia PVC conduit	RM	400		
2.0	Supply and installation of plug - in type telephone socket outlet with G.I outlet box and cover plate complete as required in 3 module plate.				
a)	RJ - 11	Nos.	20		
3.0	Supply, installation, testing and commissioning of category 6 flush mounted information outlets wired according to T568B standard with a faceplate. The plastic shall be high impact, flame retardant & UL-rated thermoplastic with minimum insulation resistance of 500 M Ohm.				
a)	Single surface mounted box only 3module	Nos.	16		
4.0	Supply, installation, testing and commissioning of 4 pair category 6 non plenum cable of 24 AWG solid copper	Mtrs.	2400		
TOTAL CARRIED TO SUMMARY					-
E.1	<u>MATV SYSTEM</u>				
	Providing and installing of all conduiting and cabling for TV including providing and fixing of the following:				
1.0	All necessary specials for fittings				
2.0	Approved cover plates for inspection, junction and outlet boxes.				
3.0	2 mm thick outlet boxes and junction boxes.				
4.0	All fixing accessories such as clips, nails, screws etc..				
5.0	Providing and fixing approved saddles, hooks and grouting the same as required, in the case of all exposed conduit works.				
6.0	Embedding conduits and accessories in wall, floors etc. During construction and / or cutting chases and making good as necessary in the case of all concealed conduit work.				
7.0	All necessary cable connectors.				
E.1	<u>MATV SYSTEM</u>				
1.0	Supply and installation of following 2 mm thick heavy duty FR PVC conduits including cost of junction boxes, bends, elbows, sockets, tees and all accessories, laying in slab cutting chasis and making good or surface mounted including all fixing				
i	20 mm dia PVC conduit	RM	200		
ii	25 mm dia PVC conduit (For RG-11 Co-axial cable)	RM	0		

**RENOVATION OF HOTEL CLARKS-LUCKNOW
ELECTRICAL WORKS**

SN	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT
2.0	Fixing of following outlets with 2 mm thick GI box complete with cover plate, connector etc. including cutting, chases, fixing of GI boxes and making good.				
2.1	TV Signals outlet	Nos.	6		
3.0	Supply, erection, testing and commissioning of following tap off with boxes for MATV system.				
3.1	One way Tap off (T-1)	Nos.	0		
3.2	Two way Tap off (T-2)	Nos.	3		
3.3	Three way Tap off (T-3)	Nos.	0		
5.0	Supply, laying, connecting and commissioning of RG-11 co-axial cable for MATV system complete with all accessories required to complete the installation and as per specification in existing conduit	RM	0		
6.0	Supply, laying, connecting and commissioning of RG-6 co-axial cable for MATV system complete with all accessories required to complete the installation and as per specification in existing conduit	RM	210		
	TOTAL CARRIED TO SUMMARY				
F. GI RACEWAYS & JUNCTION BOXES					
1	GI Raceway & Junction boxes				
1.1	Supply and fixing of 1.6 mm thick factory fabricated steel sheet galvanized raceway with internal metallic partitions as per site requirements including 1.6 mm thick GI cover, knockout holes, fixing accessories, earthing with 8 SWG copper bare conductor complete as required including bends, access boxes and cross over as per specification and site requirement.				
a.	300 mm wide x 40 mm deep raceway	RM	0		
b.	200 mm wide x 40 mm deep raceway	RM	0		
c.	150 mm wide x 40 mm deep raceway	RM	0		
d.	100 mm wide x 40 mm deep raceway	RM	0		
2	Providing and fixing 350 x 350 x 50 mm deep 1.6 mm thick GI sheet junction box including providing 1.6 mm thick stainless steel cover as per specification.	Nos.	8		

**RENOVATION OF HOTEL CLARKS-LUCKNOW
ELECTRICAL WORKS**

SN	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT
3	Providing and fixing 250 x 250 x 50 mm deep 1.6 mm thick GI sheet junction box including providing 1.6 mm thick stainless steel cover as per specification.	Nos.	0		
4	Providing and fixing 200 x 200 x 50 mm deep 1.6 mm thick GI sheet junction box including providing 1.6 mm thick stainless steel cover as per specification.	Nos.	0		
5	Providing and fixing 150 x 150 x 50 mm deep 1.6 mm thick GI sheet junction box including providing 1.6 mm thick stainless steel cover as per specification.	Nos.	0		
	TOTAL CARRIED TO SUMMARY				
SUMMARY					
S.NO.	DESCRIPTION				AMOUNT
I.	SUMMARY				
A	DISTRIBUTION BOARDS	RS.			
B	LT CABLES AND CABLE TRAYS	RS.			
C	INSTALLATION OF LIGHT FIXTURES	RS.			
D	INTERNAL WIRING	RS.			
E	TEL, DATA	RS.			
E.1	MATV SYSTEM	RS.			
F.	RACEWAYS AND JUNCTION BOXES	RS.			
	TOTAL	RS.			