

PART – I

TECHNICAL BID

ITEM RATE TENDER

FOR

SITC of 14 nos. lifts for SGPC at various locations

MAY 2014

TENDER DOCUMENTS

FOR SUPPLY INSTALLATION TESTING COMMISSIONING OF 14 NOS.PASSENGER LIFTS FOR SGPC AT VARIOUS LOCATIONS

Architects : architects atelier pvt. ltd.,
s.c.o. 8, sector 17-e,
chandigarh.

Owner : SGPC , SRI AMRITSAR (SGPC Trusts where installed)

Project : SITC of 14 nos. lifts for SGPC at various locations

Cost of Tender Document Rs. 1000/- (Non Refundable)

Tender issued to

dated

architects atelier pvt. ltd.,
s.c.o. 8, sector 17-e,
chandigarh

SGPC, SRI AMRITSAR

TENDER DOCUMENTS

SITC OF 14 NOS. LIFTS FOR SGPC AT VARIOUS LOCATIONS

1.01 NOTICE INVITING TENDERS

1.02 Sealed item rate Tenders are hereby invited by the SGPC, Sri Amritsar & its various trusts for the following works :

Name of Project	:	SITC of 14 nos. lifts at various locations.
Earnest Money	:	NIL

1.03 The Tender Documents can be downloaded from www.sgpc.net against payment of Rs. 1000/- per tender, by crossed D.D. in favour of Secretary, SGPC Payable at Amritsar downloaded tenders shall attach the D.D with the technical bid document failing which the tender document shall be rejected.

1.04 The Notice Inviting Tenders and enclosed Specifications, General Conditions, Schedule of Quantities along with its tender drawings etc. shall form the Tender Documents.

1.05 The rates should be quoted on item rate basis and to assist him, item wise tentative quantities are stated in Schedule of Quantities. Although all precautions have been taken while working out the quantities but owner does not take any guarantee for correctness of the same. The payment will be made for the actually executed and measured quantities at agreed rates.

1.06 The rates should be quoted in figures and words and the respective amounts or total shall be given by each Tenderer. In case of any difference in rates in figures/word, those given in words shall hold good as quoted rate.

1.07 The tenders shall remain valid for acceptance for 90 days from the last date of submission.

1.08 The site is available and is free from any encumbrances and each Tenderer shall be deemed to have visited the site and seen the site conditions before quoting his Tender. No claim on ground for want of such knowledge/site inspection shall be entertained at any stage.

1.09 The Owner reserves the right to reject any/all Tenders without assigning any reason and shall not be bound to accept the lowest or any other Tender.

1.10 Incomplete and late Tenders shall be rejected without any further reference.

1.11 The Time for completion of work is 4 months (Four Months) from date of letter of award.

1.12 The tender proceedings shall be held as per the following schedule.

Date of issue of tender : **22-05-2014 to 30-05-2014 Up To 17.00 Hrs**

Pre bid Meeting : **31-05-2014 at 12.30 Hrs. at SGPC Sub Office, house no-30, sector-5,Chandigarh**

Last date for receipt of tender : 07-06-2014 up to 13.00 Hrs

Date of opening of tender : 07-06-2014 at 13.30 Hrs

- 1.13 Tender Document consisting of Specifications, the Schedule of Quantities of the various classes of work to be done and the set of terms and conditions of contract to be complied with by the contractor whose tender may be accepted and the other necessary documents can be seen in the office of **Construction Department, SGPC, Sri Amritsar or Architects Atelier, Sco-8, Sector-17/e, Chandigarh between 11.00 hrs to 16.00 hrs** on all working days before the last date of receipt of tender.
- 1.14. **The Secretary, SGPC** does not bind himself to accept the lowest or any other tender, and reserves to himself the authority to reject any or all of the tenders received without the assignment of a reason. All tenders, in which any of prescribed conditions is not fulfilled or any condition including that of conditional rebate is put forth by the tenderer shall be summarily rejected.
- 1.15. **The Secretary, SGPC** reserves to himself the right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at the rate quoted.
- 1.16. The Tenderers are not allowed to make additions and alterations in the tender document. Any additions and alterations shall be at tenderers risk. Conditional / modified Tenders are liable to be rejected.
- 1.17. It will be obligatory on the part of the tenderer to sign the tender document for all the components (The Schedule of Quantities, Conditions and Special Conditions etc.) on each page.
- 1.18. The tender for the works shall remain open for acceptance for a period of ninety days from the date of opening of tenders. If any tenderer withdraws his tender before the said period or makes any modifications in the terms and conditions of the tender which are not acceptable to the competent authority, then **The Secretary, SGPC** shall reject that tender.
- 1.19. This Notice Inviting Tender shall form a part of the contract document. The successful tenderer contractor, on acceptance of his tender by the Accepting Authority, shall within **10 days** from the stipulated date of start of the work sign the contract consisting of:
- a) The Notice Inviting Tender, all the documents including additional conditions, specifications and drawings, if any, forming the tender as issued at the time of the invitation of tender and acceptance thereof together with any correspondence leading thereto.

C. PREPARATION OF BIDS

1. LANGUAGE OF BID

The bid, and all correspondence and documents related to the bid exchanged between the bidder and the Employer shall be written in the English language. Supporting documents and printed literature furnished by the bidder may be in another language provided they are accompanied by an accurate translation of the relevant passages in

the English language, in which case, for purposes of interpretation of the bid, the English translation shall prevail.

2 DOCUMENTS COMPRISING THE BID

2.1 The bids shall be submitted in two parts which comprise the following documents:-

PART-I: TECHNICAL BID

- i) Rs 1000, DD as tender fee.
- ii) Power of Attorney of the person Authorized to sign on behalf of the firm.
- iii) Any other material / information required to be submitted in accordance with these **Instructions To Bidders (ITB)**.

PART-II: FINANCIAL BID:

- v) **Schedule 'A'** Priced Schedule of Quantities - duly filled in and signed on each page

Each part shall be separately sealed and marked.

2.2 The bidder shall prepare and submit the bid in original.

3. QUOTED RATES

3.1 The rates quoted by the tenderer shall include for transportation of men and material at higher or lower level. The quoted rates shall be inclusive and cover the cost of material including wastage, freight, all types of taxes, duties, royalties, fees, rents, erection, construction, testing of materials, samples / brought / bought for approval, tools and tackles, plants and equipments, supervision, overheads, profit and any other expenditure incurred for completion of work as per drawings, specifications and to the full satisfaction of the Employer.

3.2 The rates quoted by the tenderer in the schedule of rates will be deemed to be for the finished work and shall also include all charges for following wherever applicable.

- a) Labour, maintenance, fixing, arranging, clearing, making good hauling etc.
- b) No tools and plants shall be issued by the Employer under the Contract.

4 CURRENCIES OF BID AND PAYMENT

4.1 The unit rates and the prices shall be quoted by the bidder entirely in Indian Rupees

4.2 All payments including advances, if any, shall be made in Indian Rupees.

Dated : _____ 2014

SGPC
Sri amritsar.

2.0 INSTRUCTIONS TO TENDERERS

- 1 Tender not properly filled, mutilated with incorrect calculations or generally not complying with the conditions may be rejected. Conditional tenders are liable to be summarily rejected.
2. Tenderer should quote their rates both in figures and in words.
3. The schedule of quantities as mentioned must be fully priced and the total of each page along with carried over figures of the previous page shall be given in ink and signed by the tenderer.
4. If the tender is submitted by or on behalf of a company incorporated under the Company Act (1959) it shall be signed by Managing Director or by one of the Directors duly authorized on their behalf. If it is, submitted by a partnership firm it shall be signed with the Co-partnership firm name by a member of the firm who shall sign his own name and give the name and address of each partner of the firm and attach a copy of Power of Attorney with the tender authorizing him to sign on behalf of the partners. A certified copy of the registered partnership deed shall also be submitted along with the tender. The tender should be in the sealed cover.
5. A schedule of approximate quantities for various items accompanies the tender. It shall be definitely understood that the owner do not accept any responsibility for the correctness or completeness of the schedule in respect of items and quantities. This schedule is liable to alteration by omission, deductions or additions at the discretion of the owner without affecting the terms of contract and without any extra claim on account of any reason or reasons.
6. All quoted rates shall include the cost of all materials and labour and transportation of materials to the site, all Government taxes and revenues such as Sales Tax, Turnover Tax, Sales Tax on Work Contract, Royalties, Toll Tax, Income Tax, Excise Duty, Service tax and Octroi., Contractors profit and overheads ESI, PF, labour cess etc. and the fixing or placing in position for which the items of work is intended to be operated as per specifications.
7. No alteration shall be made by the tenderer in the Instructions to the Tenderers or NIT, Contract Form, conditions of the Contract, Drawings and specifications and if any such alteration are made or any special condition attached, the tender is liable to be rejected.
8. The acceptance of the tender rests with the owner, who reserves the right of rejecting any or all the tenders including the lowest tender without assigning any reasons whatsoever.
9. The owner reserves the rights of accepting the whole or any part of a tender received and the tenderer shall be bound to perform the same at the quoted rates.
10. Every tenderer shall furnish alongwith the tender, latest income tax clearance certificate and the Registration No. / certificate from Sales Deptt. for work Contract tax etc. failing which his tender is liable to be rejected.
11. From the date of actual handing over of the works to the owner, the contractor shall be responsible to make good any defects which may occur within a period of 12 months and this period is treated as "Defect Liability Period".

12. The Contractor shall not be entitled to any compensation for any loss suffered by hindrance on account of delays in commencing or executing the work, whatever the cause for such delays may be including delays in procuring Government controlled or other materials.
13. The rates of different items are of all heights, depths, curvatures, and width unless otherwise specified in the item of work.
14. The detailed schedule of programme in the form of a BAR CHART for the whole work shall be drawn and submitted by the contractor within 10 days of the award of work order. The work shall be progressed from month to month and completed in the order and according to the schedule after approval of the same by the Architects & engineer-in-charge.
15. If the Owner wants to occupy areas in part, the contractor shall have to complete the work of these areas in consultation with the owner and hand over the same without affecting any of the clauses of contract agreement.
16. After acceptance of the tender the tenderers shall sign the necessary contract papers within 7 days from the receipt of the above intimation. In case of delay the "Earnest Money" may be forfeited and the tender cancelled or the contract enforced as per the terms of the tender and the tenderer shall thus be bound to execute the work even though the formal agreement has not been executed and signed.
17. Electricity : The contractor will make his own arrangement for electricity. The electric connection if required will be arranged by the Contractor himself. Necessary cabling etc. will be done by him at his cost and he will also pay for consumption at the prevailing rates of charges to Punjab Electricity Board, Sri amritsar as per bills. The Contractor will purchase or hire generator to meet the requirement of electricity for the works and its cost for running/maintenance will be borne by contractor himself. The owner will have no responsibility in this connection/
18. Water : Water will be arranged by the contractor himself. Contractor will make his own arrangement for storage of water and further piping etc. No responsibility lies with the owner. The water used should be suitable for construction purpose and should be got tested from approved laboratory by contractor at his own cost before start of work.
19. Weather : No extension of time will be allowed to the Contractor due to weather conditions prevalent in the area. The contractor is expected to take all the precautions at his own risk and cost so that the workmanship, the materials and progress of work are not affected in the inclement weather.
20. Cleaning up and Handing over : Upon completion of the work all the site area should be cleaned. All works shall be cleaned in manner which will render the work acceptable to the owner. All rubbish shall be removed from the site and shall not be dumped in the surrounding area.
21. The work as described in the drawings and schedule of quantities shall be completed on or before the stipulated date of completion.
22. The contractor shall not be allowed to possess any space or rooms inside the premises.
23. The contractor should quote their offer keeping in view the basic minimum rates of labour wages with upto date corrections as on the day of submission of the tender as per notification by Punjab PWD & Delhi Schedule of rates.

24. The Contractor shall include in his rate all taxes viz Octroi, royalties, sales tax, work contract tax, labour cess and all duties and no claim on this account will be entertained.

25. The Income Tax and Work contract tax as specified will be deducted as per Govt. Notification/regulation from the bills for paying to the Government and by the Employer.

26. The rate quoted by the Contractor shall remain firm till the work is completed.

27. The contractor shall get the inspector of lifts certificate for running & installations of lifts if required under any laws..

28. Proper record for all the materials required for the above work shall be kept at site by the contractor jointly with Engineer-in-charge.

29. The owner reserves the right to reject any or all the tenders without assigning any reason, and at the same time is not bound to accept the lowest tenderer.

The owner also reserves the right to accept the tender in full or in parts and in the latter case the tenderer is bound to execute the work at his quoted rates.

Dated : 2014

SGPC,
Sri amritsar.

3.00 FORWARDING LETTER

From :

To
SGPC
Sri amritsar

Sub : SITC of 14 nos. lifts for SGPC at various locations.

Dear Sir,

With reference to the tenders invited by you for the above work, I/we do hereby offer to perform, provide, execute and complete the above work in conformity with the drawings, terms and conditions and specifications for the amount as shown in the schedule of quality attached hereto.

I/We have satisfied ourselves to the location and conditions of the site and have read the articles of agreement, conditions of contract and specifications etc. and we understand that the work are to be completed within the specified period and fully understood that the time will be the essence of this contract.

Name of the partners/Directors

1. _____

Yours faithfully

2. _____

Signatures

3. _____

Date

Address

4.0 ARTICLES OF AGREEMENT

ARTICLES OF AGREEMENT made the _____ day of 2011, between SGPC (herein after called "The owner") of one part and M/s _____ whose registered office situated at _____ (hereinafter called "The Contractor") of the other part.

WHEREAS the Owner is desirous of installing _____ lifts at _____ and has caused Drawing and bill of quantities showing and describing the work to be done to be prepared by or under the direction of architects atelier, sco 8, sector 17-e, Chandigarh.

AND WHEREAS the Contractor has supplied the Owner with a fully priced copy of the said bills of quantities (which copy is hereinafter referred to as "the contract bills" and whereas the said drawing (hereinafter referred to as "the contract drawings") and the contract bills have been signed by or on behalf of the parties hereto.

AND WHEREAS the contractor has deposited the sum of Rs. _____ (Rupees only) with the Owner for the due performance of this agreement.

NOW IT IS HEREBY AGREED AS FOLLOWS :

For the consideration hereinafter mentioned the Contractor will upon and subject to the conditions annexed carry out and complete the work shown upon the contract drawings and described by or referred to in the Contract bills in the said conditions.

The owner will pay the contractor the said amount of Rs. _____ (Rupees) or such other sum as shall become payable, hereunder at the ties and in the manner specified in the said contractors.

The term "The Architect" in the said conditions shall means the said Mr. Amit Saini / S.K Saini of architects atelier, s.c.o. 8, sector 17-e, chandigarh or in the event of his death or ceasing to be the Architect for the purpose of this contract, such other person as the firm shall nominate for that purpose.

The said conditions and Appendix thereto shall be read and constructed as forming part of this agreement and the parties hereto shall respectively abide by, submit themselves to the said conditions and perform the agreements on their parts respectively in the such conditions contained.

Notwithstanding anything contained in this agreement, the Secretary, SGPC, Sri amritsar shall have power to review the decisions/recommendations made or proposed to be made about any matter connected with the work to be executed under this contract, before/after these are

implemented, call for additional information from the Architect/Contractor or any other source, hold discussions if necessary and arrive at his decision. This decision would be applicable for the work. If the contractor feels aggrieved by this decision, he would be free to raise this matter as a dispute for arbitration, under the agreement but would not stop the work on any pretext and proceed with the work in accordance with this decision.

As witness the hands of the said parties

Signed by the said in the
presence of witness

Owner

Name
Address :
Signed by the said

Contractor

SPECIAL CONDITIONS OF CONTRACT SCHEDULE OF FISCAL ASPECTS

Name Of Work	:	SITC of 14 nos. lifts for SGPC at various locations.
Defect Liability Period	:	24 months after completion of entire work. During Defect Liability Period of 24 months the contractor will depute his staff for attending to all types of defects included under his scope of contract and rectify the defects free of cost.
Period of Final Measurements and Valuation	:	Within 3 months from date of handing over the work.
Date of Commencement	:	After 7 days of issue of the award letter from the owner.
Time for Completion	:	The whole works will be completed within 04 months.
Agreed Liquidated Damages	:	Architect/Owner will have the full power to decide on the quantum of liquidated damages upto 0.2% on the contract sum of the works per day of delay.
Minimum value of work for interim certificate	:	Advance payable on Letter of Award - 25% Payable at Receipt of Dispatch letter- 35% Payable at receipt of material at site – 25% Payable after installation testing commissioning And handing over to the client - 15%
Security Deposit Percentage	:	5% from Gross amount of each bill as per conditions of contract.
Limit of Security Deposit	:	5% of the Gross amount of work.
Refund of Security Deposit after Completion	:	80% after 6 months of completion of the works subject to finalization of bill and rest 20% after defect liability period of 24 months, subject to all defects rectified by the contractor. The security deposit maybe refunded against bank Guarantee of same amount.
Period of Honouring Certificate	:	75% within 7 days of submission of bills, duly certified by the Site Engineer and Executive Engineer balance within 15 days to submission of bill duly measurement checked and verified by the accountant and certified by the Chartered Accountant.

- AMC conditions : The five years AMC contract shall be comprehensive and inclusive of all parts. Any taxation shall be paid separately over and above the equitable AMC amount as per prevalent Govt. norms. The company shall submit a bank guarantee as per the value given in the schedule of quantities for the entire period of 5 years or can submit the bank guarantee of 2.5 years each.
- Splitting /withdrawal of works : The owner reserves the right to withdraw/ split any item wholly or partly from the bill of quantities at any time during/before the execution/award of work.
- Specialized works : The contractor shall use specialized agencies for carrying out specialized works wherever mentioned in the contract. In case the contractor fails to do this the owner shall have the right to award the work directly to the agency and debit the entire payment from the bill of the contractor at the rates quoted by him even if the agency has charged higher rates than quoted by the contractor.
- Taxes after award of work : Any new taxes levied by the central government after the award of work shall be borne by the owner. The owner may ask to contractor to produce the original deposit receipt of the same for release of this amount or may deposit it directly themselves. However all other increase or decrease in taxes, duties, octroi, cess, toll etc shall be borne by the contractor till the completion of the work.
- Escalation clause : No escalation shall be payable on any account
- Mobilization Advance : No mobilization advance shall be payable to the contractor. If the contractor does not start construction on the site within 15 days of award of LOI then his contract shall be terminated.

6.0 GENERAL CONDITIONS OF CONTRACT

1. DEFINITIONS

1.0 The contract document consists of the Agreement, the General Conditions of the Contract, Special Terms & Conditions, Specifications and Schedule of Quantities and Rates contained therein including all modifications thereof incorporated in the document before execution and the Contract Drawings prepared by the ARCHITECT from time to time.

1.1 The OWNER
The ARCHITECT
THE CONTRACTOR
ENGINEER-IN-CHARGE

Are those mentioned as such in the Agreement and shall include their legal representatives, assigns or successors. They are treated throughout the Contract Document as if each were of the singular number and masculine gender.

1.2 "The Site" shall mean the site of the contract work including any building and erections thereon and any other land allotted by the OWNER for Contractor's use.

1.3 The term "Sub-Contractor", as employed herein, includes those having a direct contract with the Contractor and it includes one who furnished material worked to a special design according to the plans or specifications of this work but does not include one who merely furnished material not so worked.

Anyone doing work on a piece rate basis shall be deemed to be a Sub-contractor.

1.4 "Written notice" shall be deemed to have been duly served if delivered in person to the individual or to a member of the firm to an office of the corporation for whom it is intended, or if delivered at or sent by registered mail to the last business address known to him who gives the notice.

1.5 The term "Work" of the Contractor or Sub-contractor includes labour or material or both.

1.6 All time limits stated in the Contract Document are the essence of the Contract.

1.7 The law of the place of work shall govern construction under contract.

1.8 The date, of virtual: completion, of a work or specified area of a work is the date when construction is sufficiently: completed, in accordance with the Contract Documents as modified by any change or variation orders agreed to by the parties, so that the OWNER can occupy the works for the use it was intended.

2. CONTRACT DOCUMENT

The following documents shall constitute the contract document:

- i) Articles of Agreement
- ii) General Conditions of the Contract
- iii) Special Terms & Conditions
- iv) Specifications
- v) Schedule of Quantities
- vi) Drawings

All parts of the Contract document are complementary, what is called *for* in anyone shall be binding, as if called for ball.

The Contract Document shall remain in the custody of the OWNER so as to be available at all reasonable times for the inspection of the ARCHITECT or of the Contractor Immediately after the execution of the contract one copy of the Contract Document and two copies of the Contract Drawings shall without charge be supplied by the ARCHITECT to the Contractor and one copy of the Contract Document retained with him. Original contract documents and two sets of contract drawings will be sent to the OWNER.

So soon as is possible after the execution of the contract two copies of the Specifications, descriptive schedule or other like document necessary for use in carrying the work shall without charge be supplied by the ARCHITECT to the Contractor.

Provided that nothing contained in the said Specification. Descriptive schedules or other documents shall impose any obligation beyond those imposed by the Contract Document namely by the contract Drawings, the Contract Bills, the Articles of Agreement and these conditions.

After the award of the Contract the Contractor shall without charge be supplied with all such other drawings and details as may be prepared by the ARCHITECT and his CONSULTANT, from time to time as the work proceeds as are reasonably necessary either to explain or amplify the Contract drawings to enable the Contractor to carry out and complete the work in accordance with these conditions of the contract and all such drawings shall be a reasonable development of the work described in the Contract documents.

The Contractor shall keep one copy of the Specifications, Descriptive schedule or other like documents referred to in this clause and one copy of the contract. Drawings and such other drawings and documents supplied to him from time to time and referred to in this clause and written instructions referred to clause and sub-clauses 9,16.1, 16.2 and 29 shall be kept upon the site so as to be available to the ARCHITECT or his representative at reasonable times.

None of the documents herein before mentioned shall be used by the CONTRACTOR for any purpose other than this contract and neither the OWNER nor the ARCHITECT shall divulge or use except for the purpose of this contract any of the prices in the contract bills.

Upon final payment under clause 30.6 of these conditions the Contractor shall if so requested by the ARCHITECT forthwith return to the ARCHITECT forthwith return to the ARCHITECT all Drawings, Details, Specifications, Described Schedule and other Documents of like nature which bears his name or that of the CONSULTANT.

3. TYPE OF CONTRACT

The Contract shall be an item rate contract. The contractor shall be paid for the actual quantity of work done; as measured at site, at the rates quoted by him in the "Contract Bills" and accepted by OWNER.

4. SCHEDULE OF QUANTITIES

The Schedule of Quantities given in the "Contract Bill" are provisional and are meant to indicate the intent of the work and to provide a uniform basis for tendering. The OWNER reserves the right to increase or decrease any of the quantities upto any extent or to totally omit any item of work and the Contractor shall not claim any extras or damages on these grounds.

Any error in description or in quantity or omission of items from the "Contract Bill" shall not vitiate this Contract but shall be treated as a variation.

5. CONTRACT DRAWINGS

5.1 In general the Drawings shall indicate dimensions, position and type of construction the Specifications shall indicate the qualities and the methods; and the Schedule of Quantities shall indicate the quantum and the rate for each Item of work. Any work indicated on the Drawings and not mentioned in the Specification or vice versa shall be furnished as though fully set forth in both. Work not specifically detailed marked or specified shall be the same as similar parts that are detailed, marked or specified.

5.2 The Contractor's work shall not deviate from the Drawings and Specification. The OWNER & ARCHITECT interpretation of these documents shall be final.

5.3 Errors or inconsistencies discovered in the Drawings and Specification shall be promptly brought to the attention of the ARCHITECT, through the ENGINEER-IN-CHARGE, for interpretation or correction. Local conditions which may affect the work shall likewise be brought to the ARCHITECT attention. If at any time it is discovered that the work is being done which is not in accordance with the Contract Drawings and specifications, the Contractor shall correct the work immediately. Corrections of defective work shall not be a basis for any claim for extension of time or for any additional sum (s). The Contractor shall not carry on work except with the knowledge of the ENGINEER-IN-CHARGE.

5.3 Figured dimensions on the Scale Drawings and large size details shall govern. Large details shall take precedence over small 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, by the Contractor without expense to the OWNER. The general conditions apply with equal force to all the work including authorised extra works.

5.4 All drawings, Schedule of Quantities and Specifications and copies thereof furnished by the ARCHITECT are his property. They shall not be used on any other work and shall be returned to the ARCHITECT at his request on completion or termination of the Contract.

5.5 Reinforcing steel bar bending schedules shall be submitted to, the Engineer-in-charge at least, fifteen days prior to the fabrication of the reinforcement.

6. CONTRACT SUM

The "Contract Sum" shall not be adjusted or altered in any way whatsoever otherwise than in accordance with express provisions; of these conditions, and subject to clause 5.2 of these conditions any error whether of Arithmetic or in the computation of the Contract Sum shall be deemed to have been accepted by the parties hereto.

7. CONTRACT BILLS

Monthly Payments : Based on joint measurements recorded by Engineer-in-charge and contractor's representative, the Contractor will submit his bill in quadruplicate in approved proforma monthly for payment. All such payments shall be considered as advance payment against Final bill. Payment will be made to the contractor @ 75% of the billed amount within 10 days duly certified by Engineer-in-charge and balance within 20 days from the date of

submission of bill. The contractor shall raise a bill only as per provisions of the special conditions of the contract.

8. SCOPE AND INTENT

8.1 Scope: The general character and the scope of the work is illustrated and defined by the Specifications and the Schedule of Quantities herewith attached and by the signed Drawings. If the Contractor finds any discrepancy in or divergence between the "Contract Drawing" and or the "Contract Bills" he shall immediately give to the ARCHITECT a written notice specifying the discrepancy or divergence and the ARCHITECT shall issue instruction in regard thereto.

8.2 Extent: The Contractor shall carry out and complete the work in every respect in accordance with the contract and with the directions of and to the reasonable satisfaction of the ARCHITECT. The OWNER/ ARCHITECT may in his absolute discretion and from time to time issue further drawings, details and/or written instructions, written directions and written explanations all of which are collectively referred to as ARCHITECT instructions All such drawings and instructions shall be consistent with the Contract Document, true development thereof and reasonably inferable there from.

8.3 Intent: The intention of the documents is to include all labour and materials equipment and transportation necessary for the proper execution of the work. Materials of work described in word which so applied have a well known technical or trade meaning shall be held to refer to such recognized standard.

9. ARCHITECT'S INSTRUCTIONS

9.1 The Contractor shall forthwith comply with and duly execute any work comprised in such instructions issued to him by the ARCHITECT in regard to any matter in respect of which the ARCHITECT is expressly empowered by these conditions to issue instructions, provided always that verbal instructions, directions and explanations given to the Contractor or his work - representative by the ARCHITECT shall, if involving a variation, be confirmed in writing.

If within seven days after receipt of a written notice from the ARCHITECT requiring compliance with an instruction the Contractor does not comply herewith, then he may employ and pay other persons to execute work whatsoever which may be necessary to give effect to such instructions, and all cost incurred with such employment shall be recoverable from the contractor by the OWNER as a debt, or may be deducted by him from any monies due to the contractor under this contract.

9.2 All instructions issued by the ARCHITECT shall be in writing. Any instruction issued orally shall be of immediate effect but shall be confirmed in writing by the Contractor to the ARCHITECT within seven days and if not dissented in writing by the ARCHITECT to the Contractor within seven days from receipt of the Contractor's confirmation it shall be taken as from the expiration of the latter said seven days.

9.3 Provided Always that if the ARCHITECT within seven days of giving such an oral instruction himself confirms the same in writing, then the Contractor shall not be obliged to confirm as aforesaid, and the shall take effect as from the date of the ARCHITECT confirmations.

10. FACILITIES AND CO-OPERATION

In the case of works indicated on the Drawings but not included in the' contract, the Contractor shall provide necessary facilities and co-operation for any Sub-contractor or supplier who may be approved by the OWNER. The Contractor shall do all cutting, filling or patching of his work that may be required to make its several parts come together properly and fit it to receive or be received by work of other CONTRACTOR shown upon or reasonably implied by the Drawings and Specifications for the completed structure and he shall make good after them as the ARCHITECT may direct. Any cost caused by the defective or ill-timed work shall be borne by party responsible therefore.

The Contractor shall not endanger any work by cutting; excavating or otherwise altering the work and shall nor cut or alter the work of any other Contractor save with the consent of the ARCHITECT.

11. SETTING OUT : The architect/ executive engineer shall determine any lines, levels which may be required for the execution of the work and shall furnish to the Contractor by way of accurately dimensioned drawings such information as shall enable the Contractor to set out the work at ground level.

The Contractor shall set out and laid level the work and shall be responsible for the accuracy of the same. He shall provide all the instruments and attendance required by the ARCHITECT for checking the work. He shall entirely at his own cost amend to the satisfaction of the ARCHITECT/ EXECUTIVE ENGINEER any error found at any stage which may arise through inaccurate setting.

12. SITE

12.1. Visit: Before tendering. the Contractor shall have visited and examined the site and satisfied himself as to the nature of the roads or other means of communication and the character of the soil and of the excavations, the correct dimensions of the work and the facilities for obtaining any special articles, called for in the Contract. Document and shall have obtained generally his own information on all matters affecting the continuation and progress of the works.

No extra charge made in consequence of any misunderstanding or incorrect information on any of these points; or on the grounds of insufficient description, will 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 questions to the ARCHITECT's attention, not later than three days before the last date for submission of the tender.

12.2. Possession: The Contractor shall be allowed admittance to the site on the Date of Commencement stated in. the appendix and he shall there on and forthwith begin the work and shall regularly proceed with and complete the same, on or before the Date of Completion stated .in the-appendix subject nevertheless to the provision for extension of time hereinafter contained.

12.3 Treasures: Any Treasures, Coins or objects of Antiquity, which may be found at site shall be handed over to the OWNER.

Dismantled material and excavated stone to be OWNER's property: All dismantled materials and useful stone obtained during excavation shall be the property of the OWNER. All useful

stone / materials shall be stacked / stored properly and handed over to the ENGINEER-IN-CHARGE against proper receipt. No extra cost will be paid to the Contractor for such operation.

13. SAMPLES AND SHOP DRAWINGS

13.1. After the award' of the Contract, the Contractor shall furnish for the approval of the ARCHITECT, with such promptness as to cause no delay in his work or in that of any other Sub-contractor, samples and shop drawings required by the specifications or by the ARCHITECT. Samples shall be delivered as directed by the ARCHITECT.

13.2. A schedule giving dates for the submission of samples shall be included in the schedule described under clause 14. Unless specifically authorised all samples must be submitted for approval within Ten days of signing the Contract and not less than twenty days before the date the particular work involved, is scheduled to begin.

13.3 The ARCHITECT shall check and approve such samples, with reasonable promptness only for conformity with the design concept of the works and for compliance with the information in the Contract Documents. The work shall be executed in accordance with the approved samples.

14. PROGRESS CHART

The Contractor shall prepare programme/progress charts and submit the same for approval of the ARCHITECT/ EXECUTIVE ENGINEER and for his record within twenty one-day of the award of the Contract. The charts shall indicate the expected date of commencement and completion of each of the items of the work and shall be in a form approved by the ARCHITECT/ EXECUTIVE ENGINEER. The Chart shall also indicate the scheduling of samples, submission of Shop Drawings and approvals.

15. ACCESS FOR OWNER / ARCHITECT TO THE WORKS

The architect/ executive engineer and their representatives shall at all reasonable time have access to works and to the workshop or other places of the contract and when work is to be so being prepared in workshops or other places of a Sub-contractor (whether or not a nominated Sub- contractor as defined in clause 26 of these conditions the contractor shall have a term in the Sub-contract so as to secure a similar right of access to those workshop or places for the ARCHITECT/ EXECUTIVE ENGINEER and his representatives and shall do all things reasonably necessary to make such right effective:

16. ARCHITECT & EXECUTIVE ENGINEER STATUS AND DECISIONS

16.1 The ARCHITECT shall be the OWNER's representative:-The ARCHITECT' may periodically visit the site to familiarize himself generally, with the progress and the quality of the work and to determine in general if the work is proceeding in accordance with the Contract Document. During such 'visits and on the basis; of observations while at the site he shall keep the OWNER informed of the progress of the work, shall; endeavor to guard' the OWNER against defects and deficiencies in the work of the Contractor and he shall condemn work which fails to conform to the Contract Document. He shall have authority to stop the work whenever such stoppage may be necessary in his reasonable opinion to ensure the proper execution of the Contract.

The Architect shall be in the first instance the interpreter of the conditions of the contract and the judge of its performance.

16.2 Decision: The ARCHITECT/ EXECUTIVE ENGINEER shall within a reasonable time take decisions on all claims of the Contractor and all other matters relating to the execution and progress of the work or the interpretation of the Contract Document '

The ARCHITECT may in his absolute discretion and from time to time issue further Drawings. Details and/or written instructions, written directions and written explanations in regards to :

- a) Variation or modification of the design
- b) The quality or quantity of works or the additions or omission or substitution of any work
- c) Any discrepancy in or divergence between the Drawings and / or specifications
- d) The removal and / or re-execution of any works executed by the Contractor.
- e) The dismissal from the works of any persons employed thereon.
- f) The opening up for inspection of any work covered up.
- g) The amending and making good of any defects under Defects Liability Period.
- h) The removal from the site of any materials brought thereon by the Contractor and the substitution of any other material therefore.
- i) Assignment and sub-letting.
- j) Delay and extension of time
- k) The postponement of any work to be executed under the provision of this Contract.

16.3 Dismissal: The Contractor shall on the instructions of the ARCHITECT/ EXECUTIVE ENGINEER immediately dismiss from the works any person employed thereon by him who may in the opinion of the ARCHITECT/ EXECUTIVE ENGINEER be incompetent or misconduct himself and such person shall not be again employed on the work without the permission of the ARCHITECT/ EXECUTIVE ENGINEER.

17. SECURITY DEPOSIT

The person/persons whose tender(s) may be accepted (hereinafter call the Contractor) shall permit OWNER to deduct such sum at the rate of 5 % of the Gross value of the work done from each Running Bill at the time of making any payment to him for work done under the contract, to deduct such sum as along with the sum already deposited as Earnest Money with tender, out of which 80% shall be released after 6 months of virtual completion subject to finalization of bills and rest 20% after defect liability period of 24 months subject to all defects rectified by the Contractor. All compensation of other sums of money payable by the Contractor under the terms of this contract may be deducted from or paid out of his security deposit from or may become due to the Contractor by the OWNER on any account whatsoever and in the event of Security Deposit being reduced by reasons of any such deductions the CONTRACTOR shall within 10 days make good the same in cash. The Security Deposit shall be collected from the running bills of the Contractor at the rate mentioned above and the earnest money deposited at the time of tenders will be treated as part of the Security Deposit and to be adjusted.

18. ENGINEER-IN-CHARGE

18.1 The term "ENGINEER-IN-CHARGE" shall mean the person nominated by the SGPC and appointed and paid by the OWNER and acting under the instructions of the ARCHITECT to inspect the works in the absence of the Executive Engineer. The Contractor shall afford the ENGINEER-IN-CHARGE every facility and assistance for inspecting the works and materials and for checking and measuring the work and the materials. Neither the ENGINEER-IN-CHARGE nor any representative of the ARCHITECT shall have power to set out works or to revoke, alter, enlarge or relax any requirements of the Contract or to sanction any day work, additions, alternations, deviations or omissions, of any extra work whatever except in so far as such authority may be specially conferred by a written order of the ARCHITECT and Secretary SGPC.

The ENGINEER-IN-CHARGE or any representative of the ARCHITECT, shall have power to give notice to the Contractor or to his representative of non-approval of any work or materials and such work shall be suspended or the use of such materials shall be discontinued until the decision of the ARCHITECT, is obtained. The work will from time to time be examined by the ARCHITECT, the ENGINEER-IN-CHARGE or the ARCHITECT's representative but such examination shall not in any way exonerate the Contractor from the obligation to remedy any defects which may be found to exist at any stage of the work or after the same is completed subject to the limitation of this clause, the Contractor shall take instructions only from the ARCHITECT/ EXECUTIVE ENGINEER.

19. CONTRACTOR'S FIELD ORGANISATION AND EQUIPMENT

19.1 Site Engineer : The contractor shall constantly keep on his work during its progress qualified and competent Site engineer who will be responsible for the carrying out of the works to the true meaning of the Drawings, specifications and schedule of the Quantities. ARCHITECT/ EXECUTIVE ENGINEER instructions and directions to the satisfaction of the ARCHITECT/ EXECUTIVE ENGINEER shall be deemed to have been issued to the Contractor attention is called to the importance of requesting instructions 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.

19.2 Equipment: The Contractor shall provide and install all necessary hoists, ladders, scaffolding, tools, tackles, plants, all transport for labour materials and plant necessary for the proper carrying on execution and completion of the work to the satisfaction of the ARCHITECT/ EXECUTIVE ENGINEER.

19.3 Office Accommodation: The contractor shall provide / erect and maintain where directed simple water tight office accommodation for the foreman and the Engineer - in - charge. This accommodation shall be well lighted and ventilated and provided with windows, doors with a lock. The engineer - in charge's office shall be a minimum of 100 sqft and shall have a table, chair and drawers for keeping drawings and tack board for displaying drawings. The accommodation to be demolished when directed by OWNER.

19.4 Watchmen: The Contractor shall make his own security arrangements to guard the site and premises at all times, at his own expense. The security arrangements shall be adequate to maintain strict control on the movement of material and labour. The Contractor shall extend the security arrangement to guard the material stored and / or fixed on the premises by the sub-contractors.

19.5 Storage of materials: The Contractor shall provide; erect and maintain proper sheds for the storage and protection of the materials etc. against fire, theft, rains etc and also for the execution of work which may be required on the site.

19.6 Sanitary conveniences: The contractor shall provide and erect all necessary sanitary convenience for the Engineer-in-charge, site staff and the workmen, maintain in a clean orderly condition and clean and deodorize the ground after removal.

19.7 Scaffolding, staging, guardrails: The contractor shall provide scaffolding, staging, guardrails, temporary stairs, which shall be required during construction. The support for the scaffolding, staging, guardrails and temporary stairs shall be strong, adequate for the particular situation. The temporary access to the various parts of the works under construction shall be rigid and strong enough to avoid and chance of mishaps. The arrangement proposed shall be subject to the approval of the ARCHITECT/ EXECUTIVE ENGINEER.

20 TAXES

The Contractor shall include in his rates the various taxes such as octroi, excise duty, sales tax, turnover/works contract tax and any other tax payable and it shall be assumed that his rates cover for all taxes. Revenues Royalties, Excise duties, Toll Tax, and duties etc. and no claim on this account will be entertained.

21 STATUTORY OBLIGATIONS, NOTICES, FEES AND CHARGES

21.1 The Contractor shall comply with and give all notices required by any government authority, and instrument, rule or order made under any Act of Parliament or any regulation or Bye-law of any local authority relating to the work or with whose system the same is or will be connected. The Contractor before making any variation from the Contract Drawings or Contract Bills necessitated by such compliance shall give to the ARCHITECT a written notice specifying and giving reasons for such variations and the ARCHITECT/ EXECUTIVE ENGINEER may issue instructions in regard thereto. If within 10 days of having given the said written notice the Contractor does not receive any instruction in regard to the matters therein specified, he shall proceed with the work conforming to the Act of parliament instrument, rule-order, regulations or Bye-law in question and any variation thereby necessitated shall be deemed to be a variation required by the ARCHITECT/ EXECUTIVE ENGINEER.

21.2 The Contractor shall pay and indemnify the OWNER against liability in respect of any fees or charges (including any rates and taxes) legally demandable under any Act of Parliament, instrument, rule or order or any -regulation or Bye-law or any local authority in respect of the Work.

22. ROYALTIES AND PATENT RIGHTS

All royalties or other sums payable in respect of supply and use in carrying out the work as desired by or referred to in the Contract Bills of any patented articles, process or inventions shall be deemed to have been included in the Contract Sum, and the Contractor shall indemnify the OWNER from and against all claims, proceedings, damages, costs and expenses which may be brought or made against the OWNER or to which he may be put by reason of the Contractor infringing or being held to have infringed any patent rights in relation to any such articles, processes and inventions.

23. LICENSES & PERMITS FOR MATERIALS UNDER GOVERNMENT CONTROL

Licenses and permit for all: materials: under Government control shall be obtained by the Contractor through the collaboration and 'help of OWNER, The contractor shall include in his tender all transport charges and other expenses likely to be incurred to bring materials to the site.

24. WATER & ELECTRICITY FOR CONSTRUCTION

Water & electricity will be arranged by the CONTRACTOR himself. CONTRACTOR will make his own arrangement for storage of water and further distribution etc. No responsibilities lies with the OWNER. The water to be used should be suitable for construction purposes and should be got tested from approved laboratory by the CONTRACTOR at his own cost before start of the work and periodically during construction. The CONTRACTOR shall also make his own arrangement for temporary electric connection and shall deposit required payment to the concerned authorities. In case of power failure, he should make arrangement for DG Sets required.

25 ASSIGNMENT OR SUB-LETTING

The Contractor shall not without the written consent of the OWNER assign or sub-let this Contract.

26 SUB-CONTRACTOR;

As soon as practicable and before awarding any sub-contract, the Contractor shall notify the ARCHITECT/EXECUTIVE ENGINEER in writing the names of the Sub-contractor proposed for the principal parts of the work and for such other parts as the ARCHITECT/ EXECUTIVE ENGINEER may direct, and shall not employ any agency to whom the OWNER may have an objection.

The ARCHITECT/ EXECUTIVE ENGINEER however, shall have power to obtain estimate and select other agencies to carry-out any of the work as described in this Contract Document.

27 ARTISTS AND TRADESMEN

The CONTRACTOR shall permit the execution of work not forming part of this contract by artists, tradesmen, or others engaged by the OWNER Every such person shall for the purposes of clause 43 of these conditions be deemed to be a person for whom the OWNER is responsible and not be Sub-contractor.

28 SEPARATE CONTRACT

The OWNER reserves the right to let other CONTRACTORS work at site in connection with this work. The Contractor shall afford other Contractor reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly co- ordinate his work with theirs. If any part of Contractor's or Sub-Contractor' s work depends for proper execution or results upon the work of any other Contractor, or Sub-Contractor, the Contractor shall inspect and promptly report to the ARCHITECT/ EXECUTIVE ENGINEER any defects in such work that render it unsuitable for such proper execution and results. Failure of the CONTRACTOR to so inspect and report shall constitute an acceptance of the other Contractor's

work as fit and proper for the rejection his work, except as to defects which may develop in the other Contractor's or Sub-contractor's work after the execution of the work, to ensure the proper execution of his subsequent work the Contractor shall measure work already in place and shall at once report to the ARCHITECT any discrepancy between the executed work and the Drawings.

29 VARIATIONS

Alteration in Specifications and Orders etc.: The ARCHITECT shall have power to make any alterations or omissions, additions, substitution for the original specifications, drawings, design and instructions, that may appear to him to be necessary during the progress of the work. The contractor shall carry out the work in accordance with any instruction which may be given to him in writing signed by the ARCHITECT and such alterations, omissions, additions to substitution shall not invalidate the contract and orders etc. Any altered additions or substituted work which the Contractor may be directed to do in the manner above specified as part of the work shall be carried out by the Contractor on the same conditions in all respect on which he agreed to do the main work.

i) If the rates for the additions, altered or substituted work are specified in the contract for the work the Contractor is bound to carry out the additional, altered or substituted work at the same rates as are specified in the contract for the work.

ii) If the rates for additional, altered or substituted work are not specifically provided in the contract for the work the rates shall be derived from the rates for a similar class of work as are specified in the contract for the work.

iii) If the altered additional or substituted work includes any work for which no rates is specified in the contract for the work and cannot be derived from the similar class of work in the contract, then such work shall be carried out at the rates entered in Schedule of Rates of CSR for Civil Works with premium list dated 23-10-2009 at PAR i.e. CSR+C.P.

iv) If the altered additional or substituted work includes any work for which no rates is specified in the contract for the work and cannot be derived from the similar class of work in the contract or from Punjab CSR, then such work shall be carried out at the rates entered in CPWD Schedule of Rates of Delhi 2007 for Civil Works with 20% premium i.e. DSR 2007 basic rate + 20% premium.

iv) If the rates for the altered, additional or substituted work cannot be determined in the manner specified in sub-clauses (i) to (iii) above, then the contractor shall within 7 days of the date of receipt of order to carry out the work inform the ARCHITECT/ EXECUTIVE ENGINEER the rates which he intends to charge for such class of work supported by analysis of the rate or rates claimed and the ARCHITECT/ EXECUTIVE ENGINEER shall determine the rate or rates on the basis of prevailing market rates through the ENGINEER - IN - CHARGE if required and pay the contractor accordingly. However, the architect/ executive engineer by notice in writing will be at liberty to cancel his order to carry out such class of work and arrange to carry it out in such manner as he may consider advisable. **But under no circumstances shall the contractor suspend the works on the plea of non-settlement of rates of extra or such item during currency of the works till completion certificate issued by the ARCHITECT & Executive Engineer. The rate for extra and substituted items shall be determined on the basis of actual cost of materials and labour etc. (for this contractor shall produce the sufficient proof) plus 10% to cover contractor's all over-heads and profits, water, electricity and works contract tax etc.**

29.2 The rates of material / labour in the extra items as forwarded by the Contractor shall be checked / verified by the ENGINEER - IN - CHARGE before forwarding to the ARCHITECT.

29.3 The rates for all above items will be finally approved by the OWNER. However the Engineer - in - charge may allow the provisional rates for such items claimed by the Contractor pending approval of final rates by the OWNER.

30 CERTIFICATES AND PAYMENTS

30.1 At the period of Interim Certificate named in the appendix to these conditions the Executive Engineer shall issue a certificate stating the amount due to the Contractor from the OWNER, and the contractor shall be entitled to payment thereof within the period for honouring certificate named in the appendix to these conditions and interim valuation shall be made whenever the ARCHITECT/ EXECUTIVE ENGINEER considers them to necessary for the purposes of ascertaining the amount to be stated as due in an interim certificate.

30.2 The amount stated as due in an interim certificate shall subject to any agreement between the parties as to stage payments, be the total value of work properly executed and of the materials and goods delivered to or adjacent to the work for use thereon upto and including a date not more than seven days before the date of the said certificate less any amount; which may be retained by the OWNER (as provided in sub-clause (3) of this condition) and less any installments previously paid under this condition provided that such certificate shall only include the value of the said materials and goods as and from such time as they are reasonably, properly and not prematurely brought to or placed adjacent to the work and then only if adequately protected against weather or other casualties.

30.3 The OWNER may retain the percentage of the total value of the work, materials and goods referred to in sub-clause (2) of this condition which is named in the appendix to these conditions as Security Deposit. Provided always that when the sum of the amounts so retained equals the amount named in the said appendix as limit of Security Deposit or that amount, no further amount shall be retained by virtue of this sub-clause.

30.4 The amounts retained by virtue of sub-clause(3) of this conditions shall be subject to the following rules:-

30.4a The OWNER'S interest in any amounts so retained shall be fiduciary as trustee for the contractor (but without obligation to invest), and the contractor's beneficial interest therein shall be subject only to the right of the OWNER to have recourse thereto from time to time for payment of any amount which he is entitled under the provisions of this contract to deduct from any sum due or to become due to the contract.

30.5 The measurements and valuation of the work shall be completed within the period of final measurements and valuation as stated in the appendix to these conditions, and the contractor shall be supplied with a copy of the priced bills of variation not later than the end of the said period and before the issue of the Final Certificate under sub-clause (6) of this condition. Either before or within a reasonable time after Virtual completion of the work the contractor shall send to the ARCHITECT/ EXECUTIVE ENGINEER all documents necessary for the purpose of the computations required by these conditions.

30.6 As soon as is practicable but before the expiration of the period the length of which is stated in the appendix to these conditions or from the end of the "defects liabilities period" also

sated in the said appendix or from completion of making good defects under Clause 40 of these conditions or from receipt by the Executive Engineer of the document referred to sub-clause(5) of this condition, whichever is the latest, the ARCHITECT/ EXECUTIVE ENGINEER shall issue the Final Certificate. The Final Certificate shall state :-

30.6a The sum of the amount paid to the contractor under Interim Certificate and the amount named in the said appendix as limit of Security Deposit, and

30.6b The contract sum adjusted as necessary in accordance with the terms of these conditions, and the difference (if any) between the two sums shall be expressed in the said certificate as a balance due to the CONTACTOR from the OWNER or to the OWNER from the CONTRACTOR as the case may be, and subject to any deductions authorized by these conditions, the said balance shall as from fourteenth day from the issue of the paid certificate be a debt payable as the case may be by the OWNER to the CONTRACTOR or by the CONTRACTOR to the OWNER.

30.7 No certificate of the ARCHITECT/ EXECUTIVE ENGINEER shall of itself be conclusive evidence that any works materials or goods to which it relates are in accordance with this contract documents.

31. CLAIM FOR EXTRA

31.1 When any instruction or decision given at site involve an extra or whereby the contractor may plan to claim an extra, it shall be the responsibility of the Contractor to inform the ARCHITECT/ EXECUTIVE ENGINEER the extra amount and get written authorization from the ARCHITECT & SECRETARY SGPC before proceeding with the work involved.

31.2 Any modification carried out for expanding or simplifying work at the request of the Contractor or his representatives shall not be taken as the basis for claiming an extra. However, if such modification shall also involve an extra the rate for such modification shall be settled in advance and written authorization obtained by the CONTRACTOR from the EXECUTIVE ENGINEER before proceeding with the work involved. If no such information is given by the Contractor in writing to the ARCHITECT & SECRETARY SGPC such modification shall not be accepted as the basis for extra charge.

32. DEDUCTION FOR UNCORRECTED WORK

The EXECUTIVE ENGINEER deems it independent to correct work damaged or not done in accordance with the contract, an equitable deduction from the contract price shall be made therefore.

33. FLUCTUATION

The rates quoted by the CONTRACTOR shall remain firm for entire period of construction including authorized extension of time. No escalation shall be payable for this period including authorized extension of time.

34. UNFIXED GOODS AND MATERIALS

Unfixed materials and goods intended for, delivered and placed on or adjacent to the work shall not be removed except for use upon the work unless the ARCHITECT has consented in writing to such removal which consent shall not be unreasonably withheld. Where the value

of any such materials or goods has in accordance with clause 30 of these conditions been included in any Interim Certificate under the Contract for which the Contractor has received payment, such materials and goods shall become the property of the OWNER, but the CONTRACTOR shall remain responsible for loss or damage to the same.

35. MATERIALS AND WORKMANSHIP

35.1 All materials and workmanship shall be as laid down in para 1 of special terms and conditions of this contract and of approved quality and make and the contractor shall immediately remove from the works any material and / or workmanship which in the opinion of the ARCHITECT/ EXECUTIVE ENGINEER are defective or unsuitable and shall substitute proper material and or workmanship at his own cost. The term approval used in connection with this contract shall mean the approval of the ARCHITECT/ EXECUTIVE ENGINEER.

35.2 The contractor shall if required submit satisfactory evidence as to the kind and quality of material.

35.3 All material shall be delivered so as to ensure a speedy and uninterrupted progress of the work. Such material shall be stored so as to cause no obstruction and so as to prevent overloading of any portion of the structure, and the CONTRACTOR shall be entirely responsible for damage or loss by weather or other cause.

35.4 Within 15 days after signing the contract, the CONTRACTOR shall submit for approval of the ARCHITECT a complete list of all materials which he and his sub-contractors propose to use in the work of the particular brand of any article where more than one is specified as a standard. He shall also list out items not specifically mentioned in the specifications but which are reasonably inferred necessary for the completion of the work.

35.5 **Inspection** : All materials and workmanship shall be subject to inspection, examination and test by the ARCHITECT/ EXECUTIVE ENGINEER at any and all times during manufacture and / or construction. The ARCHITECT/ EXECUTIVE ENGINEER shall have the right to reject defective material and workmanship or require its correction. Rejected workmanship shall satisfactorily replaced with proper material without additional charge therefore and CONTRACTOR shall promptly segregate and remove the rejected material for the works. If the CONTRACTOR fails to proceed at once with the replacement of rejected materials and / or the correction of defective workmanship, the ARCHITECT/ EXECUTIVE ENGINEER may by contract or otherwise replace such materials and / or correct such workmanship and charge 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 additionally charge all reasonable facilities, labour and materials necessary for the safe and convenient inspection and the test that may be required by the OWNER.

35.6 ACCOUNTABILITY OF CEMENT & STEEL

a) Variation in the consumption of cement : After the completion of the work, the theoretical quantity of cement used in the work shall be calculated on the basis of cement consumption statement given in the Punjab PWD Specifications. For the item of work not provided in this statement, the consumption shall be worked out on actual observation basis and the EXECUTIVE ENGINEER decision in this regard shall be final. Over this theoretical quantity of cement, a variation of 2% plus or minus shall be allowed. If it is discovered that the quantity of

cement used is less than the theoretical consumption (allowing variation on minus side), the cost of quantity of cement not so used shall be recovered from the Contractor at twice the market rate. However if the quality of cement used is more than the theoretical consumption (allowing variation on plus side), the cost of cement used in excess shall be recovered from the Contractor at twice the issue rate.

b) Variation in consumption of Steel: After the completion of work, and also at any intermediate stage the theoretical quantity of steel used in the work shall be calculated on the basis of the measurements recorded with cross sectional weights as per Punjab PWD Specifications CSR. 3% wastage shall be allowed due to cutting small pieces. Over this theoretical quantity, a variation of 2% plus or minus shall be allowed as variation due to wastage being more or less. The difference between quantity of steel actually issued and the theoretical required shall be recovered at twice the market rate. If it is discovered that the quantity of steel used is less than the theoretical consumption, such quantity shall be recovered "from the CONTRACTOR: at twice market rate. The steel reinforcement shall be paid as per cross sectional weights mentioned in the Punjab PWD specifications. The Contractor shall procure and submit vouchers in support of total quantum of steel brought by him at site and will also get the total weight of steel verified from Engineer -in-Charge at his cost. Engineer -in-charge will maintain steel received at site diameter wise. No sale/removal of scrap shall be allowed from the site during the currency of the contract.

35.7 Secured Advance on Materials: The OWNER may allow in the running bills payment against non-perishable materials brought to the site of work for incorporation in the works to a maximum of 75% of the value of materials. The Contractor on signing an indenture on proper stamp paper in the form to be specified by the OWNER may be entitled to be paid during progress of the execution of the work a secured advance up to 75% of the estimated value of any materials which are in the opinion of the ARCHITECT/ EXECUTIVE ENGINEER non-perishable and are in accordance with the contract and which have been brought on the site for bonafide incorporation in the work and are protected against damage by weather or other causes, but which have not at the time of advance been incorporated in the works. When materials on account of which an advance has been made under this sub-clause are incorporated in the work, the amount of such advance shall be deducted from the next payment made under any of the clauses of the contract. The contractor shall make arrangements for lockable storage at his cost for materials against which he intends to get secured advance. Under no circumstances shall the contractor remove/modify/replace any material from the site for which he has claimed or been paid secured advance. All items for which secured advance has been paid shall remain in the custody of the owners.

36. DEFECTS

36.1 The Contractor shall: make good at his own cost and to the: satisfaction-of the ARCHITECT/ EXECUTIVE ENGINEER, all defects, shrinkages or small faults, arising in the opinion of the ARCHITECT/ EXECUTIVE ENGINEER from work or materials not being in accordance-with the-drawing or Specifications or, Schedule of Quantities or the instructions of the OWNER which may appear within "Defect Liability Period" referred to in the appendix.

36.2 Such defects, shrinkage's shall upon directions in writing of the OWNER and within such reasonable time as shall be specified therein be amended and made good by the Contractor, at his own cost and in case of default the OWNER may employ and pay other Contractor to amend and make good such defects, shrinkage, settlements or other faults and all damages, loss and expense consequent thereon or incidental thereto shall be made good and borne by the contractor and such damage, loss or expense shall be recoverable from him by the OWNER 'or

may become due to. the Contractor or the OWNER may, in lieu of such amending and making good by the sum to be determined by the ARCHITECT/ EXECUTIVE ENGINEER as equivalent to the cost of amending such work and in the event of the Security Deposit being insufficient recover the balance from the Contractor, together with any expenses the OWNER may have incurred in connection therewith.

37. POSSESSION, COMPLETION AND POSTPONEMENT

37.1 On the date for commencement stated in the appendix to these conditions possession of the site shall be given to the contractor who shall there upon begin the works and regularly and diligently proceed with the same, and who will complete the same on or before the date for completion stated in the said, appendix subject nevertheless to the provisions for extension of time contained in clause 39 of these conditions.

The ARCHITECT may issue instructions in regard to the postponement of any work to be executed under provisions of this Contract.

38 POSSESSION BEFORE VIRTUAL COMPLETION

If at any time or times before *Virtual* Completion of the work the OWNER with the consent of the Contractor shall take possession of any part or parts of same for handing over to the Finishing Contractor or other agency, then notwithstanding anything ex-pressed or implied elsewhere in this Contract:

38.1 Such part or parts shall not be deemed to be Virtually Complete.

38.2 Virtual Completion of such part or parts would occur on the completion of the last Part of the structure under this Contract.

38.3 The Contractor shall not claim that part or parts are complete and request for refund of Security Deposit in lieu thereof.

39. EXTENSION

Upon it becoming reasonably apparent that the progress of the work is delayed, the Contractor shall forthwith give written notice of the cause of the delay to the EXECUTIVE ENGINEER, ARCHITECT & SECRETARY SGPC and if in tile opinion of the OWNER the completion of the work is likely to be or has been delayed beyond the date (or completion stated in the appendix to these conditions or beyond any extended time previously fixed under this clause.

39.1 By Force majeure. Or

39.2 By reason of any exceptionally inclement weather, or

39.3 By reason of civil commotion, local combination; of workmen strike or lockout; affecting any of the trades' employed upon the works or any of the trades engaged in the preparation, manufacture or transportation of any of the goods or-materials required for the work, or

39.4 By reason of the Contractor not having-received in due time necessary instructions, drawings details or levels from the ARCHITECT for which he had specifically applied in writing on a date which having regard to the date for completion stated in the appendix to these

conditions or to any extension of time then fixed under this clause was neither unreasonably distant from nor unreasonably close to the date on, which it was necessary for him to receive the same.

39.5 By delay on the part of artists, tradesman or others-engaged by the OWNER executing work not forming part of this Contract, or

39.7 By reason of the opening up for inspection of any work covered up or of the testing of any of the work, materials or goods (including making good in consequence of such opening up or testing) unless the inspection of test showed that the work, materials or goods were not in accordance with this contract or

Then the ARCHITECT/ EXECUTIVE ENGINEER shall as soon as he is able to estimate the length of the delay beyond the date or time aforesaid make in writing a fair reasonable extension of time for completion of the works. Provided always that the Contractor shall use constantly his best endeavors to prevent delay and shall do all that may reasonably be required to the satisfaction of the SGPC/ARCHITECT to proceed with the work.

40.0 DAMAGE FOR NON-COMPLETION

If the Contractor fails to complete the works by the date specified in these conditions or within any extended time fixed under clause 39 of these conditions and the EXECUTIVE ENGINEER certifies in writing that in his opinion the same ought reasonably so to have been completed, the Contractor shall pay or allow to the OWNER a sum calculated at the rate stated in the appendix as agreed Liquidated Damages for the period during which the said work shall so remain or have remained incomplete, the OWNER may deduct such damages from any monies otherwise payable to the Contractor under this Contract.

41. COMPLETION AND DEFECTS LIABILITY PERIOD

41.1 When in the opinion of the ARCHITECT/ EXECUTIVE ENGINEER the works are practically completed, he shall forthwith issue a certificate to that effect and Virtual Completion of the works shall be deemed for all the purpose of this Contract to have taken place on the day named in such certificate.

41.2 Any defects, shrinkage or other faults which shall appear within the "Defects Liability Period" stated in the appendix to these conditions and which are due to materials and workmanship not in accordance with this Contract shall be specified by the ARCHITECT/ EXECUTIVE ENGINEER in a Schedule of Defects which he shall deliver to the Contractor not later than 14 days after the expiration of the said Defects Liability Period and within a reasonable time after receipt of such schedule the Defects, Shrinkage's and other faults therein specified shall be made good by the Contractor and (unless the OWNER shall otherwise instruct in which case the contract sum shall be adjusted accordingly) entirely at his own cost.

41.3 Notwithstanding sub-clause (2) of this condition the ARCHITECT/ EXECUTIVE ENGINEER may whenever he considers it necessary to do so, issue instructions requiring any defects, shrinkages or other fault which shall appear within the Defects Liability Period named in the appendix to these conditions and which is due to materials and workmanship not in accordance with this contract to be made good and the Contractor shall within a reasonable time after receipt of such instructions comply with the same entirely at his own cost, provided that no such instruction shall be issued after 14 day from the expiration of the said defect liability period.

41.4 When in the opinion of the ARCHITECT/ EXECUTIVE ENGINEER any defect, shrinkages or other defaults which he may have required to be made good under sub-clause (2) and (3) of this condition shall have been made good he shall issue a certificate to that effect and completion of making good defects shall be deemed for the all the purposes of this contract to have taken place on the day named in such certificates.

42. PAYMENT WITH HELD

The OWNER may withhold or on account of a subsequently discovered evidence nullify the whole or part of any certificate to such extent as may be necessary in his reasonable opinion to protect the OWNER from loss on account of:

42.1 Defective work not remedied.

42.2 Failure of the Contractor to make payment properly to Sub-Contractor or for materials or labour.

42.3 A reasonable doubt that the Contract can be completed for the balance then unpaid.

42.4 Damage to another Contractor or Sub-contractor.

42.5 Claims filed on reasonable evidence indicating probable filling of claims.

When the above grounds are removed, payment shall be made for amounts withheld because of them.

43. INJURY TO PERSONS AND PROPERTY OWNER

43.1 The Contractor shall be liable for and shall indemnify the OWNER against any liability, loss, claim or proceedings whatsoever arising under any statute or at common law in respect of personal injury to or the death of any person whomsoever arising out of or in the course of or caused by the carrying out of the work, unless due to any act or neglect of the OWNER or of any person for whom the OWNER is responsible.

43.2 Except for such loss or damage as at the risk of the OWNER under clause 45 of these conditions (if applicable) the Contractor shall be liable for and shall indemnify the OWNER against any expense, liability, loss, claim or proceedings in respect of any injury or damage whatsoever to any property real or personal in so far as such injury or damage arises out of or in the course of or by reason of the carrying out of the works, and provided always that the same is due to any negligence omission or default of the Contractor, his servants or agents or of any Sub-Contractor, his servants or agents.

44. INSURANCE AGAINST INJURY TO PERSONS AND PROPERTY

44.1 Without the prejudice to his liability to indemnify the OWNER under clause 43 of these conditions the Contractor shall maintain and shall cause any Sub-Contractor to maintain.

44.1a Such insurance as are necessary to cover the liability of the Contractor or as the case may be of Sub-Contractor in respect of personal injuries or death arising out of or in the course of or caused by the carrying out of the work.

44.1b Such insurance as may be specifically required by the Contract Bills in respect of injury or damage to property real or personal arising out of or in the course of or by reason of the carrying out of the work, and caused by any negligence, omission or default of the Contractor, his servants or agents or, as the case may be of such sub-contractor, his servants or agents. The Contractor shall produce or cause any Sub-Contractor to produce for inspection the relevant policy or policies of insurance together with the receipts in respect of premiums paid under such policy or policies as and when required to do so by the ARCHITECT/ EXECUTIVE ENGINEER provided always that as and when may be reasonably required by the OWNER the production by either the Contractor or any sub-Contractor of a current certificate of insurance from the company or firm which shall have issued the policy or policies aforesaid shall be a good discharge of the Contractor's obligation to produce or to cause the production of the policy/policies and the receipts in respect of premium paid.

44.2a The Contractor shall maintain in the joint names of the OWNER and Contractor such insurance as may be required in respect of any expense, liability, loss, claim or proceedings which the OWNER may incur or sustain by reason of injury or damage to property real or personal arising out of or in the course of or by reason of the carrying out the work, and caused otherwise than by the negligence, omission or default of the Contractor, his servants, his servants or agents.

44.2b Any such insurance as is referred to in the immediately preceding paragraph shall be placed with insurers to be approved by the ARCHITECT/ EXECUTIVE ENGINEER and the CONTRACTOR shall have to deposit with him the policy or policies and the receipt in respect premiums paid.

44.3 Should the Contractor or any sub-Contractor make default in insuring or in continuing to insure as provided in sub-clause (1) and (2) of this condition the OWNER may himself insure against any risk with respect to which the default shall have occurred and may deduct a sum equivalent to the amount paid in respect of premiums from any monies due to or become due to the Contractor.

45 INSURANCE OF THE WORKS AGAINST FIRE, ETC.

45.1 The Contractor shall in the joint names of the OWNER and Contractor insure against by taking all risk policy from a Govt. approved Insurance Company against any defects, loss or damage by fire, storm, tempest, lighting, flood, earthquake, aircraft or anything dropped there from, aerial objects, riot and civil commotion for the full value thereof, all work executed and all unfixed materials and goods intended for, delivered to and placed on or adjacent to the work, but excluding, temporary building plant, tools and equipment owned or hired by the Contractor or any Sub-Contractor and shall keep such work materials and goods so insured until Virtual Completion of the work. Such insurance shall be approved by the ARCHITECT/ EXECUTIVE ENGINEER and the Contractor shall deposit with the ARCHITECT/ EXECUTIVE ENGINEER the policy or policies and the receipts in respect of premiums paid and should the Contractor make default in insuring or continuing to insure as aforesaid the OWNER may himself insure against any risk with respect of which the default shall have occurred and deduct a sum equivalent to the amount paid by him in respect of premium from any monies due to or to become due to the contractor. Provided always that if the insurance which covers (internal) the said work, materials and goods against the aforesaid contingencies to the full value thereof, then the maintenance by the contractor of such policy shall if the Owner's interest is endorsed thereon, be a discharge of the CONTRACTOR'S obligation to insure in the joint names of the OWNER and Contractor and the production by the Contractor as and when may reasonably be required by the ARCHITECT/ EXECUTIVE ENGINEER of a current certificate of insurance from

the company or firm which shall have issued the said policy shall be a discharge of the Contractor's obligation to deposit with the ARCHITECT/ EXECUTIVE ENGINEER policy or policies and the receipts in respect of premium paid.

45.1 Upon settlement of any claim under the insurance aforesaid, the Contractor with due diligence shall restore work damage, replace or repair unfixed materials or goods which have been destroyed or injured, remove or dispose of any debris and proceed with the carrying out and completion of the work. All monies received from such insurance shall be paid to the Contractor by installment under certificates of the ARCHITECT/ EXECUTIVE ENGINEER issued at the period of interim certificates named in the appendix to these conditions. The Contractor shall not be entitled to payment in respect of the restoration of work damaged, the replacement and repair of any unfixed materials or goods and the removal and disposal and debris other than the monies received under the said insurance.

45.2 All work executed and all unfixed materials and goods intended for, delivered to and placed on or adjacent to work (except temporary buildings, plant, tools and equipment owned or hired by the Contractor or any Sub-Contractor) shall be at the sole risk of the Contractor as regards loss or damage by fire, storm, tempest, lightning, flood, earthquake, aircraft or anything dropped therefrom, aerial objects, riot and civil commotion. If any loss or damage affecting the work or any part thereof or such unfixed materials or goods is occasioned by anyone or more of the said contingencies, then.

45.2(a) The occurrence of such loss or damage shall be disregarded in computing any amounts payable to the Contractor under or by virtue of this contract.

45.2(b) The Contractor with due diligence shall restore work damage, replace or repair any unfixed materials or goods which have been destroyed or injured, remove and dispose off any debris and proceed with carrying out and completion of the work. The restoration of work damaged, the replacement and repair of unfixed material and goods and the removal and disposal of debris shall be done by the Contractor at his cost.

45.3 If the Contractor fails to take insurance of the work against fire etc the OWNER can take such insurance at the cost of the contractor or recover from the Contractor the premium that he would have paid for such insurance.

45.4 All insurance policies shall be valid upto Date of expiry of Defect Liability Period.

46. DETERMINATION BY OWNER

46.1 Default: If the Contractor makes default in any one or more of the following respects, that is say.

46.1(a) If he without reasonable cause suspends the carrying out of the works before completion thereof or

46.1(b) If he fails to proceed regularly and diligently with the works or

46.1(c) If he refuses or persistently neglects to comply with a written notice from the ARCHITECT/ EXECUTIVE ENGINEER requiring him to remove defective work or improper materials or goods and by such refusal or neglect the work is materially affected, then the ARCHITECT/ EXECUTIVE ENGINEER may give him the notice by registered post or recorded delivery specifying the default, and if the Contractor either continues such a default for 14 days

after receipt of such a notice and shall at any time thereafter repeat such a default (whether previously repeated or not) then the OWNER without prejudice to any other rights or remedies may within 10 days after such continuance or repetition of notice by registered post or recorded delivery forthwith determine the employment of the Contractor under this Contract.

46.2 Bankruptcy of Contractor: In the event of the Contractor becoming bankrupt or making a composition or arrangement with his creditors or being a company having a winding up order made or (except for purposes of reconstruction) a resolution for voluntary winding up passed or a receiver or manager of his business or undertaking duly appointed or possession taken by or on behalf of the holder of any debentures secured by a floating charge, of any property comprised in or subject to the floating charge, the employment of the Contractor under this Contract shall be forthwith automatically determined but the said employment may be reinstated and continued if the OWNER and the Contractor, his trustee in bankruptcy liquidate, receiver or manager as the case may be shall so agree.

46.3 The OWNER shall be entitled to determine the employment of the Contractor under this Contract if the Contractor has offered or given or agreed to given to any person any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any action in relation to the obtaining or execution of this contract with the OWNER, or for showing or forbearing to show favour or disfavor to any person in relation to this Contract or any other Contract with OWNER, or if the like acts have been done by any person employed by the Contractor or action on his behalf (whether with or without the knowledge of the contractor), or if in relation to this Contract or any other Contract with the OWNER, the Contractor or any person employed by him or acting on his behalf has committed any offence under the prevention of corruption act, or has given any fee or reward, the receipt of which is an offence under the Local Government Act.

46.4 In the event of the employment of the Contractor being determined as aforesaid and so long as it has not been reinstated and continued, the following shall be the respective rights and duties of the OWNER and Contractor.

46.4a. The OWNER may employ and pay other persons to carry out and complete the works and he or they may enter upon the works use all temporary buildings, plant, machinery, appliances, goods and materials intended for, delivered to and placed on or adjacent to the works and may purchase all materials and goods necessary for the carrying out and completion of the works.

46.4b. The Contractor shall if so required by the OWNER within 14 days of the date of determination assign to the OWNER without payment the benefit of any Agreement for the supply of materials or goods and or for the execution of any works for the purposes of this Contract but on the terms that a supplier or Sub-Contractor shall not be entitled to make any reasonable objection any further assignment thereof by the OWNER.

46.4c. The Contractor shall as and when required in writing by the ARCHITECT/ EXECUTIVE ENGINEER to do so (but not before) remove from the works and temporary buildings, plant, tool, equipments, goods and materials belonging to or hired by him. If within a reasonable time after any such requirements has been made, the Contractor has not complied therewith, then the OWNER may (but without being responsible for any loss or damage) remove and sell any such property of the Contractor, holing the proceeds less all cost incurred to the credit of the Contractor.

46.4 The Contractor shall allow or pay to the OWNER in the manner hereinafter appearing the amount of any direct loss and/or damage caused to the OWNER by the determination. Until after completion of the works under paragraph (a) of this Sub-Clause that OWNER shall not be bound by any provisions of this Contract to make any further payment to the Contractor, but upon such completion and the verification within a reasonable time of the accounts therefore the ARCHITECT/ EXECUTIVE ENGINEER shall certify the amount of expense properly incurred by the OWNER and the amount of any direct loss and/ or damage caused to the OWNER by the determination and if such amount when added to the monies paid to the Contractor before the date of determination exceed the total amount which would have been payable on due completion in accordance with this Contract, the differences shall be a debt payable to the owner by the Contractor, and if the said amount when added to the said monies be less than the said total amount, the difference shall be a debt payable by the OWNER to the Contractor.

47. CO-ORDINATION OF WORK

At the commencement of work, and from time to time, the Contractor shall confer with the Sub-contractors, persons engaged on separate contracts in connection with the work, and with the ARCHITECT/ EXECUTIVE ENGINEER for the purpose of the co-ordination and execution of the various phases of the work. The Contractor shall ascertain the Sub-contractor, persons engaged on separate contracts in connection with the works, the extent of all chasing, cuttings and forming of all openings, holes, grooves, etc, as may be required to accommodate the various services, the Contractor shall ascertain the routes of all services, and the positions of all Light Points, Junctions Boxes etc, In connection with the installation of plant and services and arrange for the Construction of work accordingly. The breaking and cutting of completed work must be avoided.

48. LABOUR

The Contractor shall employ no child labour under 14 years of age on the work. If female labours engaged, the Contractor shall make necessary provision for safeguarding small children and keeping them clear of the site of operations. No labourer shall reside within the compound except authorised guards.

49. PROTECTION OF TREES AND SHRUBS

Trees and Shrubs designated by the ARCHITECT/ EXECUTIVE ENGINEER shall be protected from damage during the course of the work and the earth level shall not be changed within three feet of such tree. Where necessary such trees and shrubs shall be protected by means of temporary fencing.

50. GUARANTEE

50.1 Besides guarantees required elsewhere, the Contractor shall guarantee the work in general for one year as noted under clause of the Conditions.

50.2 All required guarantees shall be submitted to the EXECUTIVE ENGINEER by the Contractor when requesting certification of accounts for payment by the OWNER.

51. ANTIQUITIES

51.1 All fossils, antiquities, and other objects of interest or value which may be found on the site or in excavating the same during the progress of the work shall become the property of the OWNER. The Contractor shall carefully take out and preserve all such objects and shall immediately or as soon as conveniently may be after the discovery of such articles deliver the same into the possession of the ARCHITECT or of the ENGINEER-IN-CHARGE unlearned and as excavated.

51.2 If in the opinion of the ARCHITECT/ EXECUTIVE ENGINEER compliance with the provisions of the proceeding sub-clause has involved the contractor in direct loss and / or expense for which he would not be reimbursed by a payment made under any other provision in this contract, then the ARCHITECT/ EXECUTIVE ENGINEER shall ascertain the amount of such loss and / or expense, any amount from time to time so ascertained shall be added to the Contract sum, and if an Interim Certificate is issued after the date of ascertainment any such amount shall be added to the amount which would otherwise be stated as due in such certificates.

52. ARBITRATION

Except where otherwise provided in the contract all questions and disputes relating to the meaning of the specifications designs, drawings and instructions herein before mentioned and as to the quality or workmanship or materials used on the work or as to any other question, claim, right, matter or thing whatsoever in any way arising out of or relating to the contract, designs, drawings, specifications, estimates, instructions, orders or these conditions or otherwise concerning the works, or the execution or failure to execute the same whether arising during the progress of the work or after the completion of, abandonment thereof shall be referred to the sole arbitration of the person appointed by the President, SGPC. The arbitrator to whom the matter is originally referred being transferred or vacating his office or being unable to act for any reason then the PRESIDENT, SGPC, Sri amritsar at the time of such transfer, vacation of office or inability to act, shall appoint another person to act as Arbitrator in accordance with the terms of the contract. Such person shall be entitled to proceed with the reference from the stage at which his predecessor left it.

Subject as aforesaid the provisions of the latest Arbitration Act or any statutory modification or re-enactment thereof and the rules made thereunder and for the time being in force shall apply to the arbitration proceeding under this clause. It is also a term of the contract that the party invoking arbitration shall specify the dispute or disputes to be referred to arbitration under this clause together with the amount or amounts claimed in respect of each such dispute.

It is also a term of the contract that if the Contractor (s) do / does not make any demand for arbitration in respect of any claim(s) in writing within 90 days of receiving the intimation from the OWNER that the final bill is ready for payment the claim of the Contractor (s) will be deemed to have been waived and absolutely barred and the Director shall be discharged and released of all liabilities under the contract in respect of these claims. The Arbitrator shall give a reasoned award if the amount of award is more than Rs. 50,000/-.

53. PROTECTION AND CLEANING

53.1 The Contractor shall protect and preserve the work from all damages or accidents by providing necessary protections / temporary works etc. or other constructions as required by the

ARCHITECT/ EXECUTIVE ENGINEER. This protection shall be provided for all property adjacent to the site as well as on the site.

53.2 The Contractor shall properly clean the work as it progresses and shall remove all rubbish and debris from the site from time to time as is necessary and as directed. On completion the contractor shall ensure that the premises and / or site are cleaned of surplus materials debris, shed etc. areas under floors cleared of rubbish, gutters and drains cleaned, doors and windows and sashes eased, locks and fastenings oiled. Keys clearly labeled and handed over to the ENGINEER-IN-CHARGE so that the whole work is left fit for immediate occupation or use and to the satisfaction of the ARCHITECT/ EXECUTIVE ENGINEER.

54. 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 finishing elements such as concrete copings, railings, gates, cladding, washed grit finishes 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.

In case of separate contract, the contractor whose work does not conform to dimensions called for, shall be liable for all the expenses which may have to be incurred for rectification or replacement as may be required by the ARCHITECT/ EXECUTIVE ENGINEER for the proper installation of the finishing elements. The ARCHITECT/ EXECUTIVE ENGINEER decision in this respect shall be final and binding on the parties concerned.

7.00 SPECIAL CONDITIONS OF CONTRACT

1. GENERAL

i. The entire work shall be done as per Punjab PWD Specifications (with upto date correction slips) and CPWD Schedule of rates

However, in case of any discrepancy in description of any items as given in the Schedule of Quantities appended with the tender and the specification relating to the relevant item as per Punjab PWD specifications, the former shall prevail. If the specifications for any items are not available in the Punjab PWD specifications referred above, relevant ISI specifications shall be followed. In case ISI specifications are also not available the decision of the OWNER / ARCHITECT shall be final.

Wherever any reference to any Indian standard Specifications occurs in the document referring to this contract, the same shall be inclusive of all the amendments issued thereto or revisions there of, if any, upto the date of receipt of tenders.

ii. Samples of all building materials required for execution of the work shall be got approved from the ARCHITECT. Articles manufactured by firms of repute and approved by the ARCHITECT shall only be used. Articles classified as first quality by the manufacturer shall be used unless otherwise specified.

Preference shall be given to those articles, which bear ISI certification mark. In case articles bearing ISI certification mark are not available the quality of samples brought by the Contractor shall be judged by the standards laid down in the relevant ISI specifications. All materials and articles brought by the Contractor to the site for use shall conform to the sample approved which shall be preserved till the completion of the work.

iii. The work shall be carried out in the manner complying in all respects with requirements of relevant bye laws of the local body under jurisdiction of which the work is to be executed as directed by the ARCHITECT/ EXECUTIVE ENGINEER and nothing extra shall be paid on this account.

iv. The work will be carried out in accordance with the ARCHITECT drawings and structural drawings. The structural and Architectural drawings shall at all times have to be properly co-related before executing the work. ARCHITECT's requirement shall have to be fully satisfied. For finishing items samples shall be prepared for prior approval of the ARCHITECT before starting the particular items of work.

v. The Contractor shall carry out performance tests for the entire installations as per standard specifications before the work is finally accepted and nothing whatsoever shall be payable to the contractor without such tests.

vi. The contractor shall carry out all tests required and pay all charges in connection therewith including fee for testing as may be specified to be conducted by an approved testing authority by the ARCHITECT/ EXECUTIVE ENGINEER. Unless otherwise specified. In all such cases cost of samples and to and for carriage shall be borne by the Contractor. Nothing extra shall be payable to the Contractor on account of above testing charges.

vii. The ENGINEER-IN-CHARGE / Contractor should maintain the Register for cement, steel, paints, etc. and other registers required by the ARCHITECT and these should be signed by the Contractor or his authorized agent and the ENGINEER-IN-CHARGE of the work.

viii. The rates of all items of work shall be considered as inclusive of pumping out or bailing out water if required for which no extra payment will be made. This will include water available from any source such as rains, floods, sub-soil water table being high up or due to any other cause whatsoever.

ix. The CONTRACTOR shall be responsible to arrange at his own cost all necessary tools and plants required for the execution of work.

x. The CONTRACTOR shall provide suitable weighing, measuring and levelling arrangement at site for checking the weight, dimensions, and levels as may be necessary for execution of work.

xi. The CONTRACTOR shall have such openings etc. as may be required for the electric and sanitary works and nothing extra shall be paid on this account.

xii. The work of electrification, horticulture and other internal and external services may be carried out simultaneously by other agencies. The CONTRACTOR shall afford necessary facilities for the same. No claim in the matter shall be entertained and nothing extra over the agreement rates shall be paid for fixing, laying / burying in the work pipes, cables, conduits, clamps, junction boxes, etc.

xiii. The rates for items of work included in the Schedule of Quantities shall be applicable for all heights and depths except for items where specified otherwise.

xiv. Nothing extra whatsoever shall be payable to the CONTRACTOR for executing the work as per specification and conditions referred in all the above paras.

1(B) SPECIAL CONDITIONS

i. Contractor will submit the running bills on the basis of joint measurements recorded by Engineer-in-Charge and Contractor in quadruplicate with one copy to the OWNER, two copies to Engineer-in-charge. 75% payment will be released to CONTRACTOR within 7 days of submission of bill. The engineer-in-charge after certifying the bill forward one copy of bill to Executive Engineer for certification of scrutiny and approval of balance payment against the bill Executive Engineer will certify the quality of work and work adhering to specification and drawings.

ii. Contractor shall follow all the relevant laws including labour / provident fund / ESI / local authorities as applicable in the state or notified from time to time and will be responsible for any liability accrued on this account and keep the University indemnified of any liability, whatsoever in connection with the execution of this work.

iii. Work contract tax shall be deducted from Contractors bill.

iv. Necessary insurance of labour under Workman Compensation Act and the building including any injuries to labour or damage to building on any account shall be got done by Contractor and the copy of the same sent to OWNER.

v. Contractor shall make his own arrangement for water and electricity for the construction at his own cost by and the generator of suitable capacity to finish the job in time.

vi. Quantities of items are approximate and liable to change to any extent on either side. Any variation in quantities shall not vitiate the contract.

vii. Contractor shall not sub let the work to any other Contractor or Agency without written consent of the owner.

viii. The owner has right to withdraw any item of work from the contract or add / delete or change the same. Contractor shall make no extra claim for the same.

ix. The work shall be completed within the time as per appendix to General Condition of Contract Timely completion is essence of this order and Contractor shall pay liquidated damages @ 0.2% on the Contract sum of the work per day for each day of delay.

After a period of two weeks, the contract will come to end and the owner shall be at liberty to withdraw the work and get it executed from any other agency at Contractor risk and cost and the site shall be vacated by Contractor immediately.

x. No escalation in prices shall be allowed as this is a short term contract.

xi. No mobilization advance will be payable.

xii. Ready mix concrete used for RCC work should be of approved manufacturers on the approval of ENGINEER-IN-CHARGE / ARCHITECT.

xiii. Minimum amount of running bill would be as per appendix to General condition of Contract.

xiv. Tender should be unconditioned as conditional tenders are liable to be rejected.

xv. In addition to mandatory tests as specified the Contractor will get tests conducted on other materials as per instructions of the Owner / Architect/ engineer in charge. The cost of all these tests shall be borne by the Contractor.

xvi. Engineer-in-charge will work under the instructions of ARCHITECT.

The contractor shall be responsible to obtain all connections i.e. Water connection, electric connection etc. from the Concerned Authorities. The Contractor shall get all approval from concerned authorities, to obtain completion certificate and supplying 3 sets of as built - up drawings of all modifications carried out at site.

All govt. charges shall however to be reimbursed to Contractor on production of original deposit receipts.

2. R.C.C. WORK

2.1 In respect of projected balconies and projected verandahs, the payment for the RCC work shall be made under the items of RCC work (RCC slabs). The payment for centering shuttering shall similarly be made under the items of centering and shuttering for RCC slabs. Nothing extra shall be paid for the side shuttering at the edges of slabs, projected balconies and projected verandahs. All the exposed edges shall however be finished as per specifications and nothing extra shall be paid.

2.2 In the item of RCC walls the Railings as per ARCHITECT's design of any thickness, holes, slits etc. nothing extra shall be paid for these provisions. The finished railing should be perfectly straight and in one plane.

2.3 The centering and shuttering for all the RCC and RB work shall be of steel or ply of approved quality and thickness.

2.4 Precast RCC

For the work of providing and fixing RCC lintels shelves etc. the form work shall be of wooden planking with steel sheet lining or of steel plates stiffened by steel angles as per Punjab PWD Specifications.

The compaction of the concrete shall be done by mechanical vibrating tables or external vibrators as approved by the Engineer-in-charge and as per clause 5.4.3.2 of specification for works at Delhi 1996. The rates quoted for the item shall include for both the form work and mechanical vibrators.

3. BRICK WORK

3.1 Where fractions of half bricks occur due to Architectural or other reason the work shall be measured as follows:

a. If as per drawings, the use of fraction of half bricks, is required, the measurements shall be made for half brick.

b. If the thickness of the walls is required to be increased upto 2cm (3/4") beyond the structural thickness of half brick multiples, the same shall be made up in mortar and paid for the specified thickness.

c. Brick work in steps / treads of stairs, pillars (square or rectangular) shall be payable under respective item no. 4.01 or 4.02 of the Schedule of Quantities (Volume - II) and nothing extra shall be payable on any account whatsoever, it may be

All sunken floors of toilet shall be provide with brick coba water proofing treatment after giving proper slope. All CI pipes shall be covered with cement concrete 1:2:4 around. In the sunken toilet lean concrete shall be filled. One spout of 1.5" dia pipe provided over the water proofing treatment for draining.

4. WOOD WORK

4.1 Joinery : The CONTRACTOR shall take in hand joinery work immediately after the award of work. The frames and shutters shall not be painted or otherwise treated and fixed in position before these are approved by the ARCHITECT / ENGINEER - IN - CHARGE in writing.

4.2 Timber required for all wood work shall be kiln seasoned to the satisfaction of the ENGINEER - IN - CHARGE / ARCHITECT and moisture content shall be as per Punjab PWD Specifications.

4.3 The timber shall be brought well in advance after getting it seasoned in kilns and stacked at site in such a way that air circulates well in the stacks. A certificate of kiln seasoning shall be produced with each lot of timber brought at site.

4.4 Secured advance shall be given on timber brought at site @ 75% of market value of timber after the timber is got insured against fire and theft.

4.5 The quality of the timber to be used in the work shall be got tested in the Laboratory as per the instructions of ARCHITECT/ EXECUTIVE ENGINEER. The entire cost of testing including the cost of shutters and or samples of the materials shall be borne by the CONTRACTOR.

5. SPECIFICATIONS FOR ANODIZED ALUMINIUM WORK

5.1 General

The work shall be carried out as per approved ARCHITECTURAL drawings as per instructions of ENGINEER-IN-CHARGE. Special dimensions or directions in these specifications / nomenclature of the items shall supersede all else.

5.2 Material

5.2.1 Inspection of Material and Works : All materials brought to the site CONTRACTOR, for use in the work as well as fabricated work shall be on inspection and approval by ENGINEER-IN-CHARGE. The CONTRACTOR is directed by ENGINEER-IN-CHARGE, get necessary tests carried out on material work at his own cost from laboratories / test houses approved by OWNERS.

5.2.2 Removal of rejected material / works: In case any material / works are rejected by the ENGINEER - IN - CHARGE the same shall be removed from the site within 48 days failing which the same may be removed by the ENGINEER - IN - CHARGE at the risk of the cost of the CONTRACTOR.

5.2.3 Manufacturer's Test Certificate: The CONTRACTOR shall, if required by ENGINEER-IN-CHARGE, produce manufacturer's test certificate for any material of particular batch of material supplied by him. The test(s) carried out shall be as per relevant specifications / Indian Standard Code.

5.2.4 Approval of Samples: The CONTRACTOR shall submit to the ENGINEER-IN-CHARGE shop drawing of all doors / windows / ventilators/glazing etc. alongwith samples of all the materials for approval and no work shall commence before such samples are approved. Samples of unanodised as well as anodized sections, PVC / Neoprene / EPDM gaskets, hardware fittings and fixtures, glass, screws, etc. any other material / work shall be supplied and samples will be retained as standards of materials and workmanship. The cost of the shop drawings and samples shall be borne by the CONTRACTOR.

5.3 ALUMINIUM SECTIONS

5.3.1 The aluminum sections shall confirm to IS designation HE 9 WP / HV 9 WP alloy with chemical composition and technical properties as per IS 733 and IS 1285. The aluminium section shall confirm to the following parameters also.

- a) The minimum tensile strength shall be 19 kg f/ mm.
- b) The maximum allowable deviation in length from a straight line shall be 0.5mm / metre.
- c) The maximum allowable deviation from straight shall be one degree.
- d) The maximum permissible twist shall be 0.5mm / metre.
- e) The maximum variation in flatness shall be not more than 0.125 x 25 width.

5.3.2 Aluminium sections manufactures by reputed companies like HINDALCO / Jindal shall be used but the unit weight of the section should be not less than the unit weight of various components as specified in the drawings or in the nomenclature of item of works. For any excess weight of section used nothing extra shall be paid. However, weights of finished anodized sections shall be considered for payment.

5.4 FABRICATION

5.4.1 All joints shall be accurately fabricated and be have like in appearance. The finished surface shall be free from visible defects.

5.4.2 All hardwares used shall conform to the relevant ISI a specifications and sanction shall be got approved from the Engineer - in - charge before actual use. Each open window and ventilators shall have an Anodized Aluminium handle and a stay at door shall have handles, tower bolts, six lever brass mortise lock 70mm size with one side key arrangement and to be fixed counter sunk machine screws. Handles, tower bolts etc. to be fixed with necessary nickle plated self tapping hardened steel screws.

5.4.3 All aluminium works shall be deemed to include in various items complete works including making arrangements for all fittings, fixtures etc. as directed and approved by the Engineer - in - Charge.

5.4.4 All doors, glazings etc. shall be made completely leak proof against water and air and for which no extra payment shall be made.

5.4.5 Frames shall be square and flat, the corners of the frames being fabricated to be true right angle. Joints can be preferably mitred. all members shall be accurately machine mitred and fitted to form hairline joints.

5.4.6 All aluminium works should provide for replacing damaged / broken glass pane without having to remove or damage any member of interior finishing materials.

5.5 ANODIZING

5.5.1 All aluminium sections shall be anodized as per IS 7085. anodizing to conform to IS 1868 and shall be AC 15 grade with minimum thickness of 15 microns when measured as per IS 6012.

5.5.2 The CONTRACTOR should satisfy himself by 100% checking in the factory that the thickness of the anodic coating is found to be minimum 15 microns. Testing shall be done for thickness at CONTRACTOR's cost. If any material is found sub-standard this shall be rejected by the ENGINEER - IN - CHARGE.

5.5.3 The anodized aluminium works shall conform to relevant IS codes relating to materials, workmanship, fabrication, finishing, erection, installation etc. In this connection relevant IS Codes including Nos. 1868, IS 733, IS 1948, IS 7085, IS 6012, 1285, IS 740 are considered applicable by the ENGINEER - IN - CHARGE and shall be followed.

5.5.4 Protective paper tape shall be applied on the anodized sections before they are brought on site. Then protective paper tape shall be removed after installation is complete.

5.6 GLAZING

5.6.1 All glass panes shall be retained within aluminium framing by use of exterior grade PVC / neoprene / EPDM gaskets. No water leakage shall occur on the interior even if water penetrates exterior neoprene gaskets. Glass edges shall be clean cut into exact size. Glass with chipped or damaged edge shall be rejected.

5.6.2 For doors, glass of 5.5 mm thickness conforming to classification 'A' quality or selected quality of IS 2835, shall be used.

5.7 FIXING

The screws used for fixing aluminium member shall be of nickle plated hardened steel (Nettle fold or equivalent) threads of machine screws used shall conform to requirement of IS 4218.

5.8 PROTECTION AND CLEANING

After the work is completed Aluminium works including glass panes shall be washed with a suitable thinner and water to remove all marks and blemishes etc. in order to give a uniform clear appearance.

6 ROOFING – As per NIT.

7.0 KOTA STONE WATER PROOFING TREATMENT

7.1 On Base Surface

a) Operation I : A layer of cement slurry mixed with approved specialized Acrylic Chemical shall be done on RCC slab after proper cleaning.

b) Operation II : A layer of 25mm thick acrylic based cement mortar in 1:3 (1 cement : 3 coarse sand) with approved Acrylic Chemical shall be done & finished smooth with stone chips 10mm and down are embedded in the mortar.

c) Operation III: A layer of rough Kota stone 20mm thick with 15mm joints sealed with neat cement slurry mixed with acrylic chemical shall be laid over the cement mortar layer.

d) Operation IV: The joints between the stone slabs are raked and cleaned. Acrylic chemical and cement grout is filled in the joints.

e) Operation V: A layer of 25mm thick cement mortar 1:3 (1 cement : 3 coarse sand) mixed with acrylic chemical shall be applied and finished smooth. Stone chips 10mm down size are embedded in the mortar.

7.2 On walls (Vertical)

a) Operation I: 20mm thick Kota stone slab fixed with cement paste on wall with a gap of about 15 to 20mm gap grouted between the stone and wall with neat cement slurry mixed with Acrylic Chemical.

b) Operation-II : A layer of 20mm thick cement plaster 1:4 (1 cement : 4 coarse sand) mixed with Acrylic Chemical on external face of rough stone shall be done and finished smooth.

8. MAINTENANCE

The CONTRACTOR shall maintain in good condition all work executed till the completion of entire work allotted to the CONTRACTOR.

9. TAXES

Royalty, octroi / terminal taxes, sales tax, excise duty, turn over tax, works contract tax etc. at prevalent rates shall have to be paid and borne by the CONTRACTOR on all the boulder, metal, shingle, stone, sand earth, bajri and all other material etc. collected by him for the execution of the work to the revenue authorities of states government etc. and on work / sub works executed.

10. SAFETY

The CONTRACTOR must take all safety measures and precautions to avoid accidents by exhibiting day and night necessary caution boards, speed limit boards, red flags and red lights and by providing attended barriers, railings etc. The CONTRACTOR shall be responsible for all damages and accidents caused due to negligence of his part of his labour or his SUB-CONTRACTOR. No hindrance shall be caused to traffic during execution of work.

11. CLEANING SITE

CONTRACTOR shall clean the site thoroughly of all rubbish etc. left out waste debris and his materials periodically, dress the site to be free from filth, mosquitoes, flies and unhygienic conditions like stagnant water.

12. STORAGE

The CONTRACTOR shall consult the ARCHITECT/ EXECUTIVE ENGINEER regarding place for storage stacking of material required for the work. He should not stack any material in any other than those approved by the ARCHITECT / ENGINEER - IN - CHARGE.

13. DAMAGES

Any damage done by the CONTRACTOR to the building work etc. or ground surface, drains, sewerage, existing available drainage system, pipe line etc. will be made good by the CONTRACTOR at his own cost. No compensation shall be paid to the contractor for any damage caused by rain, wind, storm or floods to the work or the material collected for the execution of the work. He will make good all such damages at his cost and no claim on this account will be entertained.

The CONTRACTOR will indemnify the OWNER against all structural damages caused by his negligence, non-conforming use of partially completed structures, non compliance of specification, like removing the shuttering prior to due date or use of faulty material or work. Under such circumstances the CONTRACTOR under written order of ARCHITECT / Engineer-in-charge shall rectify and break all the damaged work at his own cost and rectify the same for which no extra payment will be made. The ARCHITECT/ EXECUTIVE ENGINEER may deduct reasonable amount from the interim bill or final bill or security deposit or any amount due to the CONTRACTOR till it is rectified or get rectified after 7 days notice through other agency and recover the cost there of from the bills of the CONTRACTOR.

14. FACILITIES

The CONTRACTOR will give all facilities at his own cost to the ARCHITECT/ EXECUTIVE ENGINEER and OWNER, their engineers and representative for proper execution of the contract including access to the site works, inspection of all materials and works measurements of quantities etc. and shall work to their entire satisfaction and shall provide, sign board, proper site office with necessary lighting, toilets, furniture (table & chair & drawings racks etc.) at site of work at his own cost.

15. INSTRUCTIONS OF ARCHITECT

All verbal instructions given by the ARCHITECT will be considered as acted upon but the contractor should confirm the same in writing within 7 days from the date of such instruction falling which architect/ executive engineer may not account for items of work arising out of such instructions in the approved bills of the work.

16 INCOME TAX/ WORKS CONTRACT TAX

The Income Tax / W.C.T. as applicable shall be deducted by the OWNER as per Govt. notification / regulation from the bills of payments to the Government.

17 Occupancy

The OWNER shall have the right to occupy the works in parts as and when such parts are completed and declared fit for occupation by the ARCHITECT/ EXECUTIVE ENGINEER. Occupation certificate for the work shall be given by the ARCHITECT/ EXECUTIVE ENGINEER as per conditions for contracts before such occupation.

18. QUOTED RATES/ UNITS

Units of rates as shown in the Schedule of Quantities should be carefully scrutinized and once given by the CONTRACTOR shall remain unchanged and no excuse on this account will be entertained, after the tenders are opened.

19. SITE ORDER BOOK

A site order book will be kept at the site for the work in which instruction shall be recorded by Owner / Architect / Engineer – In- Charge and their representatives. The CONTRACTOR or his authorised agent shall sign the site order book to acknowledge the instruction in all event and their compliance.

20. Specifications Applicable

The CONTRACTORS are expected to have read the relevant specification and I.S. code which will be applicable to the work and with upto date correction slips & the conditions which are mentioned in these contract documents.

21. Samples

Samples of items of work to be executed should be prepared and got approved from the ARCHITECT before execution of such items of work is taken up. If the materials of approved make are not used, the items of work of such materials shall be out rightly rejected and not paid for at all. Sample of each finishing items and others as desired shall also be prepared for approval of the architect before the execution and no extra cost shall be paid towards preparation of sample.

22. WATER & POWER DISTRIBUTION

The CONTRACTOR, shall have to make their own arrangement for pumping and distribution of water and electricity. The CONTRACTOR will make adequate provision by spreading G.I. pipe lines and cables at site for ensuring proper curing etc. as directed by the ARCHITECT/ EXECUTIVE ENGINEER at no extra cost payable to CONTRACTOR.

23. EXTRA WORKS

Any extra item beyond the tender item shall not be executed without the written approval of the ARCHITECT/ EXECUTIVE ENGINEER. (In spite of its being mentioned in the drawings/ verbal instructions)

24. SITE VISIT

The TENDERERS are advised to see the site of the work and they will be deemed to have familiarised themselves with the scope of work, local conditions, drawings, specification conditions of contract, etc before submitting their tenders.

25. DEPUTING REPRESENTATIVE

On acceptance of the tender, the name of the accredited representative of the CONTRACTOR, who would be responsible for taking instruction from the ARCHITECT/ OWNER should be communicated in writing to the OWNER.

26. THE DEVIATION LIMITS :

The quantities of any items hence forth mentioned in schedule of quantities are liable to vary (increase of decrease) upto any extent and can even be deleted or substituted as per scope of work or as per ARCHITECT/ EXECUTIVE ENGINEER'S instructions. The CONTRACTOR shall not have any claim whatsoever on these varied quantities. This condition shall supersede all other clauses regarding the deviation limit.

27. Reinforcement cutting & Bending Schedule

The CONTRACTOR will have to prepare bar bending schedule of reinforcement in triplicate and the same forwarded to Engineer-in-charge and architect for approval. Reinforcement will have to be placed strictly in accordance with approved schedule only.

28 REQUEST FOR DRAWINGS

The drawing will be supplied by the ARCHITECT to the CONTRACTOR. At any stage he will have no excuse to delay the work on this account & would ask well in advance within 15 days, in writing to architect with copy to OWNER.

29 WORKING LATE HOURS

No work shall be done at night (6PM to 8AM) and on National Holiday without the instructions in writing of the ARCHITECT/ Engineer-in-charge.

30. MIXING OF CEMENT CONCRETE OR CEMENT MORTARS

The mixing of cement concrete, cement mortars shall be done in mechanical mixer operated by diesel or by power, Mixer and vibrators would be kept at site all the time.

31. Tests

All mandatory tests shall be carried out as per Punjab PWD specifications The Contractor shall establish a laboratory at site. He shall have all sievers weighting balance measuring glass cylinders etc. Whenever desired by Owners Architect/ executive engineer he shall get the tests conducted in PWD / Sri Ram Test Laboratory. No charges shall be paid to the contractor for carrying the samples & testing the samples from the laboratory.

32 Final Bill

Final bill as based on joint measurements of the work executed and duly accepted by the CONTRACTOR shall be submitted by him within 90 days of the completion of work. The final bill shall then be verified and checked by the ENGINEER IN CHARGE and returned to the OWNER for payment. Should the CONTRACTOR fail to take appropriate action as above, within the period prescribed, the ENGINEER-IN-CHARGE shall take the measurements jointly with the Executive Engineer's representative and prepare final bill which will be final and binding on the CONTRACTOR and the CONTRACTOR shall have no right to dispute the same.

33 CLAIM FOR INTEREST

No claim for interest will be entertained by the OWNER with respect to any earnest money, Security Deposit or balance payments etc. owing to a dispute between owner and the CONTRACTOR or with respect to any delay on the part of the OWNER in making interim of final payment or otherwise.

34 SITE -ENGINEER

The contractor shall appoint full time experienced Graduate Engineers at site, who will be responsible for quality and measurement of the work. In case contractor does not appoint such Engineer Rs. 15,000/- p.m. per person shall be deducted from his bill for the period he has not employed.

35. REJECTION OF BAD WORK

The Architect/ executive engineer shall have full power to accept or reject any work due to bad quality, poor workmanship or poor quality of materials used. No payment will be made for the rejected work.

36. MEETINGS

Pre-fixed weekly meeting will be held which should be attended by the contractor or his authorised representative. In case no desired results are achieved ARCHITECT/ OWNER will be terminate the contract.

37. OWNER SUPPLIED MATERIALS

The Steel to be used at site shall be provided by the OWNER. The contractor shall give in writing the requirement of steel in detail of size in diameter & quantity required for each diameter no less than 15 days before the requirement at site. The contractor shall not give any requirement of less than 50 metric tons at any given time. The contractor shall not get any extension in the completion time on account of delay in supply of steel.

38. Safe Storage

38.1 The contractor shall make all arrangements for storage and safe custody of materials issued by owner or arranged by himself. The contractor shall construct suitable godown at the site of work for storing materials safe against damage due to sun, rain, dampness, fire, theft etc. He should also employ necessary watch & ward establishment for purpose.

38.2 Cement bags shall be stored in separate godown with weather proof roofs and walls. Each godown shall be provided with single door with two locks. The key of one lock shall remain with ENGINEER-IN-CHARGE and that of other lock with the authorized agent of the CONTRACTOR at the site of work so that the cement is removed from the godown according the daily requirement with the knowledge of both the parties. The cement bags shall be stacked on proper floors consisting of two layers of dry bricks laid on well consolidated earth at a level at least one foot above ground level. These stacks shall be in rows of 2 and 10 high with a minimum of 2 feet space clear all around.

38.3 All materials shall be used by the CONTRACTOR from his own stocks.

38.4 All material supplied by the OWNER to the CONTRACTOR shall remain the absolute property of the OWNER and shall not be removed by the CONTRACTOR from the site of the work on any account. The CONTRACTOR shall not be entitled to sell, mortgage, loan or dispose off the material in any other way except to use the same in the construction of works. Any material remaining unused and in perfectly good condition at the time of the completion of the contract shall have to be returned to the OWNER in good condition.

39.0 VIOLATION OF CONDITIONS

In case the CONTRACTOR breaks any of the above stipulated conditions, he shall, in addition to throw away himself open to action for contravention of the terms of the Contract and criminal breach of trust he will be liable to pay to the OWNER the cost of such materials at double the market rate.

40 STORAGE OF CEMENT & STEEL

a) Cement shall be arranged by the Contractor himself.

b) **Safe Storage**

- i) The CONTRACTOR shall at his own cost, make all arrangements for storage and safe custody of material. The CONTRACTOR shall construct suitable godown at the site of work for storing material safe against damage due to sun, rain, dampness, fire theft etc. He should also employ necessary watch and ward establishment for purpose.
- ii) Cement bags shall be stored in separate godown with weather proof roofs and walls. Each godown shall be provided with single door with two locks. The key of one lock shall remain with Engineer-in-charge and that the cement is removed from the godown according to the daily requirement with the knowledge of both the parties. The cement bags shall be stacked on proper floors consisting of two layers of dry bricks laid on well consolidated earth at a level at least one foot above ground level. These stacks shall be in rows of 2 and 10 high with a minimum of 2 feet space clear all around.
- iii) The day to day receipt and issue accounts of cement shall be maintained by the Engineer-in-charge and signed daily by the Contractor or his authorized agent. The proforma is given below :-
 1. Date of receipt
 2. particulars of receipt quantity received
 3. progressive total
 4. Date of issue
 5. Quantity issued
 6. Item of work for which issued
 7. Quantity returned at the end of day
 8. Total issue
 9. Progressive total of issues
 10. Daily balance in hand
 11. Contractor's initial
 12. Engineer-in-charge's initial
 13. Apart from the above receipt and issue bills to the site shall also be kept by the contractor & duly signed by the Engineer in Charge & maybe scrutinized by the owner at any time.
- iv) No material shall be removed by the contractor from the site of the work on any account without the knowledge of engineer - in - charge. The contractor shall not be entitled to sell mortgage, loan or dispose off the material in any other way except to use the same in the construction of works. Any material remaining unused at the time of the completion of the contract shall be removed by contractor with the knowledge of Engineer - in - charge.

Dated :

Signature of tenderer

TECHNICAL SPECIFICATIONS FOR
LIFTS

SGPC VARIOUS BUILDINGS
AT
FATEHGARH SAHIB & AMRITSAR

SPECIAL CONDITIONS

1. GENERAL STANDARDS

These standards are intended to describe a quality elevator system using all new equipment, parts, materials, components installation, and service techniques.

1.1 Standards and Design Criteria1

The following elevator standards and design criteria are for the guidance of the elevator system contractor in understanding features and facilities, and the quality of after sales services required for the Projects.

The elevator contractor shall regard these standards and specifications describing a complete, functioning system with necessary intelligence, flexibility and riding comfort provided herein. Nothing in these specifications shall be taken to state or imply "work by others" except where specifically so mentioned. The contractor shall, at the time of tender, clearly indicate features and facilities which he is unable to provide or modifications or any alternate system he wants to offer. Such features & facilities shall be clearly identified at the time of submitting his offer. The cost of such items of materials, equipment, and labour shall also be identified separately.

2. GOVERNING CODES AND PERMITS

2.1 Code (Imported Equipment)

Elevator equipment shall be furnished and installed in accordance with A.N.S.I. / A.S.M.E. A17.1/ CENEN 81-1 Japanese Codes including latest supplement. The Elevator Contractor shall inform the owning Company of any intended or required departures from the code requirements described above.

No degradation of ANSI/ASME/CENEN 81-1 requirements is acceptable simply on the basis of the local code requirement. It is acceptable only when the ANSI/ASME/CENEN 81-1 code is in direct conflict with local code requirements and where the latter is more stringent than the former.

2.2 Site Conditions

Location : Amritsar (India)

Ambient Temperature (Dry Bulb)

Maximum : 49.0 deg. C
Minimum : 1 deg. C

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

3. PROJECT EXECUTION AND MANAGEMENT

General Outline of Works

This section includes the design, manufacture, delivery at site, installation, testing and commissioning of Lift Cars, associated motors and lifting gear in accordance with the materials specified herein and including the requirements as described in Specification and the associated Contract Drawings. The scope of work shall also involve certain related work items as identified and set out elsewhere, which shall apply to all lifts.

The lift Contractor shall be responsible for ensuring the installation carried out is in accordance with the code requirements and for providing all necessary warranties and guarantees on the date of taking over by the Employer.

The lift contractor is responsible for the complete installation and performance of the works within the confines of the lift shaft, pit, lift cab enclosure and machine room.

Specifications, covers the engineering, design, fabrication, manufacture, shipment, installation, inspection and testing of the elevating devices broken down as in technical data sheets.

The Contractor shall ensure that senior planning and erection personnel from his organisation are assigned exclusively for this project. They shall have minimum 10 years experience in this type of installation. The Contractor shall appoint one erection engineer and one senior supervisor posted at site on full time basis.

For quality control and monitoring 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 installation.

Supply all labour, materials, manufacturing plant, equipment, design services, engineering, field labour, testing and inspection services, plus undertake all adjustments, tuning, set up and carry out all operations and procedures as required to complete electric traction lifts, and service lift works as shown on contract.

The contractor shall arrange to have mechanised and modern facilities of transporting material to place of installation for speedy execution of work.

The terms “left hand” and “right hand” when used in these specification, shall be based upon the following operations

Standing in the lift shaft, looking towards the lift lobby landing standing at the bottom landing of the escalator and looking towards the top landing.

4. GUARANTEE, MAINTENANCE

4.1 Guarantee

The elevator contractor shall guarantee all equipment parts, materials and workmanship furnished for the installation. The elevator contractor warrants for a period of 24 months from the date of acceptance to replace all failed part or parts exhibiting unusual wear and tear during guarantee period and shall be replaced without any cost to the Owner, such replacement shall be factory approved new, equal or better than original. All labour, tools, materials, transportation, insurance, etc. required in performance of guarantee shall be at the elevator contractor's expense.

4.2 Maintenance

The elevator contractor shall maintain the elevator system in a first class and safe manner during guarantee period. Such maintenance shall be for the entire elevator system except when failure occurs due to work performed by others. Responsibility entails daily inspection by the supervisor / technician and unlimited call back service including nights, weekends and holidays.

Apart from the above this maintenance shall include 1 visit by Engineer per week for the first 6 months from the date of acceptance of the elevator system. Call back service shall be provided for emergencies, and responded within 2 Hrs.

Engineer's Visits for the next 18 months shall be not less than 1 per fortnight with visit timings adjusted so as not to coincide with the busiest usage period. Call back service shall be responded within 2 Hours and service involving more than one stalled or erratic elevator shall be immediately provided regardless of the time of day or night. Emergency call back service for trapped passengers shall be responded to within 10 minutes. There shall be no compensation for call back service regardless of the hour/ day, etc.

The elevator contractor shall maintain the elevator system in a professional, first class manner and keep and maintain elevator machine room and equipment in a neat workman like order.

The contractor shall anticipate demand on supplies and parts and keep an inventory of a reasonable number of spare parts, at his own cost, on site in a self provided lockable metal cabinet.

5. PAINTING

All exposed metal work furnished under these specifications, unless otherwise specified, shall be shop primed and properly painted. Shop coats of paint that have become marred during shipment or erection, shall be cleaned off with mineral sprits, wire brushed and spot painted over the affected areas, then coated with enamel paint to match the finish over the adjoining shop painted surface.

6. IMPORT LICENSE

Should any import license be required for import of any component, the contractor shall make his own arrangement for the same. The Owners shall not undertake any responsibility for import of components and all payments shall be made in Indian rupees only.

7. DEVIATIONS

Contractor shall stipulate the deviations, if any, from these Technical Specifications, and reason thereof

8. STRUCTURAL REQUIREMENTS

Contractor shall clearly indicate the structural and electrical requirements for the installation of elevators. Machine room, shaft and pit shall be provided by the Owners through other agency. Other preparation work and all items of supply and installation in the hoistway shall be the responsibility of the contractor.

9. EXCLUSIONS

Any items excluded from the offer, but functionally required, shall be clearly defined and listed by the tenderers, giving description of the items, quantity and estimated cost and the reason for excluding the items.

10. TOOLS AND TACKLES

All tools, tackles, supports, scaffolding and staging etc. required for erection and assembly of the equipment and installation covered by the contract shall be provided by the Contractor himself. In addition, all other materials such as foundation bolts, nuts etc. required for the installation of the equipment shall also be provided by the contractor at his cost.

11. TESTING AND HANDING OVER

- i. The Contractor shall carry out test run of the installation in the presence of representatives of the Owner, to establish satisfactory functioning of the installation.
- ii. The Installations shall be handed over to the Owner's site representative after satisfactory testing along with six sets of completion documents each consisting of :
 - a. Detailed equipments data and catalogues.
 - b. Manufacturer's maintenance chart including check chart and Lubrication chart.
 - c. Set of "AS INSTALLED DRAWINGS" showing layouts, equipments details, electrical power & control wiring diagrams etc.

- d. Test Certificates for major equipments.
 - e. Certificates of approval from Statutory and/or Local Authorities for the operating and maintenance of the installation and equipment, wherever such approval or certification is required. (Lift inspector's certificate/ license).
 - f. Certificate from the Engineer that the contractor has cleared the site of all debris and litter caused by him during the Construction.
 - g. Measurement details of vibrations with recently calibrated accelero meter.
- iii. Submission of the above documents shall form a precondition for the final acceptance of the installation and final payment.
 - iv. Upon handing over, the Owner's site representative shall issue to the contractor the necessary certificate of acceptance.

12. PERFORMANCE REQUIREMENT

The contractor shall maintain the following performance requirements of the Equipment, as applicable, and as designated in the Annexure to the Conditions of Contract

- a. Floor-to floor times are measured from the time the doors start to close, including a typical one – floor travel and until the lift is stopped level with the next successive floor, either up or down, and the doors 3/4 open.
- b. Door opening times are measured from the start of the car doors opening until the doors are in the fully open position.
- c. Door closing times are measured from the start of the car doors closing until doors are in the fully closed position.
- d. Stopping accuracy shall be measured under all load conditions.
- e. Variance from rated speed, regardless of load, shall not exceed $\pm 3\%$ for electric traction lifts and $\pm 5\%$ for electric hydraulic lifts and escalators.
- f. Motion and Vibration Control: Lift ride quality shall be maintained and adjusted to meet the performance requirements of the following parameters where these values are set out.
 - i. Horizontal acceleration measured in the centre of the lift car floor in the side to side and front to back directions during all riding conditions shall not exceed specified amounts.
 - ii. Vertical acceleration and deceleration shall be constant and not exceed the specified amount.
 - iii. Sustained jerk shall not exceed 2.0 m/sec^3 .

It shall be the contractors responsibility to ensure continued lift guide rail alignment and that all parts relative to ride quality are maintained and adjusted to take normal building movement.

- g. Noise Control.

Lifts: Measured noise levels at the centre of the car caused by the lift's operation, 1m above the car floor, in a moving car outside the leveling zone shall not exceed the amount stated, and under any condition including ventilation blower on highest speed. Noise levels during door operation shall not exceed the amount stated.

Escalators: Measured noise level at any point within 1 m of the unit shall not exceed the amount stated.

- h. Downtime and Hall Call Response Times.

Where applicable additional performance parameters concerned with “Downtime” and “hall call response times” are given. Any penalties pertaining to non-accomplishment of these parameters are also stated.

- i. Escalators:

All Equipment shall be maintained to meet the requirements of ASME a.17 and associated inspectors manual as appropriate.

In accomplishing the above requirements, the Contractors shall maintain a comfortable ride with smooth acceleration, retardation and a soft stop. Door operation shall be quiet and positive with smooth checking at the extremes of travel. Performance requirements indicated are minimum standards and are not the sole criteria for judging the Contractor’s performance.

13. LIFT RIDE QUALITY

The Contractor shall at no additional cost measure lift car ride quality annually for all lifts indicated, with specified ride quality parameters and forwarded printed results to the Owner’s representative. These tests shall determine the level of horizontal and vertical acceleration together with the noise level within each lift as defined.

14. 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.

15. WORK BY OTHER AGENCIES

The following associated civil and electrical work is being carried out by Owners through other Agencies:

- a. **Machine Room** : Machine room shall be kept ready 4 months ahead of completion date of lift. The machine room shall be properly lighted and ventilated and shall be fire resistant. Walls and ceiling shall be treated and painted to avoid dust accumulation and circulation. The floor will be finished and treated after the machine and other equipments have been taken in and placed in position by lift contractor. The machine room slab as well as the secondary slab (if required) shall have trap doors as per the size and location given by lift contractor. The machine room shall also be provided with access door, ladder and guards.

- b. **Hoist Way** : Hoist way shall be made properly framed and enclosed, including a pit of proper depth with drainage provision and water proofing. The hoist way and pit walls shall be duly treated and painted. Support for buffer spring by M.S. channel shall also be provided.

Smooth, vertical & painted/whitewash hoistway shall be provided by the civil contractor.

- c. **Hoist way Guard** : Provision shall be made during construction for proper guarding and protection of hoist way and temporary barricading of hoist way en-trances.

- d. **Power and Light** : Power /light shall be provided :-

- i. Power in the machine room for the lift machine with one isolating switch including common earth for entire system.
- ii. Proper lighting and air conditioning of machine room.
- iii. Lighting of the lift shaft (Bulk head at every floor level, power point (16 A) at every floor and in the lift pit.

- e. **Fire Extinguisher** : Fire extinguisher in the machine room shall be provided.

- f. If required, Interior decoration of cabins shall be done by others.

Except for items of exclusion mentioned above, all items/materials/equipments required for completion and functioning of the installation in all respect are deemed to be included in the scope of this work whether specifically mentioned or not.

16. MISCELLANEOUS

The following shall be in the scope of the successful elevator contractor and it shall be his responsibility to arrange all the items in order to complete the installation.

- i. Scaffolding
- ii. All minor builder works such as chipping of surfaces, cutting and finishing of walls/floors/partitions etc shall be responsibility of elevator contractor.
- iii. All steel items included except architraves foundation & support and lifting beam in the machine room
- iv. Stainless Steel Jamb Panel & sill Angles.

17. QUALITY ASSURANCE PROGRAM & TEST PROCEDURE FOR ACCEPTANCE

Following test procedures shall be carried out prior to acceptance of elevator system.

- a. Test to determine that the insulation resistance between power and control lines and earth is as per specified IS codes.
- b. Test to determine that the earthing of all conduit, switch, casings and similar metal works is continuous and of low resistance.
- c. Test to determine that the motor, brake, control equipment and door locking devices and limit switches function correctly.
- d. Brake to be tested to check whether it can sustain a car at rest with 25% of contract load.
- e. Test to determine that the lift car rises and lowers smoothly at the rated load.
- f. Test to determine that the lift car achieves the specified speed.
- g. Test to determine that the safety gear stops the car with the rated load.
- h. Test for rated power against actual power consumption under full load.
- i. Check for current drawn by each elevator during starting and full load operation.
- j. Sound level check for motors.
- k. Visual inspection for all components.
- l. The contractor shall guarantee the smooth and noiseless performance of the elevators System as per IS-1860 --1980 & IS-6620-1972 (Reaffirmed 1991).

Besides the above, contractor shall submit his standard quality assurance programme and test acceptance procedures for reference of Owner's site representative / Consultant.

18. ALL INCLUSIVE MAINTENANCE CONTRACT

- a. 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.
- b. 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 two hours of reporting.
- c. 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.
- d. Shut Downs
- i. Routine shut downs shall be permitted only with prior permission.
 - ii. Contractor shall be at liberty to carry out routine maintenance as and when required but with prior permission of the Owner.
- e. Payment Terms
- i. Quarterly payment at the beginning of each quarter on pro-rata basis for 5 years.

APPENDIX - II

GUARANTEE PROFORMA

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

Building:

Location:

For a period of Two year from the date of 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 authorise 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 ensure that all units are functioning satisfactorily.

SIGNATURE OF CONTRACTOR
for **ELEVATORS INSTALLATION**

DATE :

SEAL

APPENDIX - III
LIST OF APPROVED MAKES FOR EQUIPMENT & MATERIALS

S. No.	Details of Materials / Equipment	Manufacturer's Name
1.	Moulded Case Circuit Breaker (MCCB)	ABB (Tmax) Larsen & Toubro (D-Sine) Schneider Electric (MG Compact NS) Siemens (3VL)
2.	Miniature Circuit Breaker (MCB)	ABB Hager (L&T) Legrand Schneider Electric (MG) Siemens
3.	Residual Current Circuit Breaker (RCCB)	ABB Hager (L&T) Legrand Schneider Electric (MG) Siemens
4.	Power/Aux. Contactor	ABB Larsen & Toubro Schneider Electric (Telemecanique) Siemens
5.	PVC insulated XLPE aluminium \ copper conductor armoured / unarmoured MV Cables upto 1100 V grade	Ravin Cables Nicco Universal Skytone
6.	Cable Glands Double Compression with earthing links	Baliga Comet
7.	Bimettalic Cable Lug	Comet Cosmos Dowell's (Biller India Pvt. Ltd.) Hax Brass (Copper Alloy India Ltd.)
8.	PVC insulated copper conductor stranded flexible wires (FRLS)	Finolex R R Kabel Lapp Bonton
9.	Mettalic Conduit (ISI approved)	AKG BEC NIC
10.	Fastners	Hilti, Wurth, Fischer
11.	Welding Rods	Advani
12.	Paints	ICI Asian Shalimar

A P P E N D I X – I V

LIST OF INDIAN STANDARDS

1. Code of Practice for installation, operation and maintenance of electric passenger & goods lifts. : IS-14665 (Part 2) Sec-1 : 2000
2. Code of practice for installation, operation and maintenance of electric service lift. : IS-14665 (Part 2) Sec-2 : 2000
3. Safety Rules Section-1 Passenger and Good lifts : IS-14665 (Part 3) Sec-1 : 2000
4. Safety Rules Section-2 – Service Lifts : IS-14665 (Part 3) Sec-2 : 2000
5. Outline dimension for electric lifts. : IS-14665 (Part-1) : 2000
6. Inspection Manual for Electric Lifts : IS-14665 (Part 5) : 1999
7. Electric Traction Lifts – Components : IS-14665 (Part 4) Sec-1 to 9 : 2001
8. Specification for lifts cables. : IS-4289 (Par-1) : 1984
Reaffirmed 1991
9. Specification for hot rolled and slit steel tee bars. : IS-1173-1978
Reaffirmed 1987
10. Method of loading rating of worm gear. : IS-7443-1974
Reaffirmed 1991
11. Code of practice for selection of standard worn and helical gear box. : IS-7403-1974
Reaffirmed 1991
12. Isometrics screw threads. : IS-4218-(Part-II)1976
Reaffirmed 1996
13. Degree of protection provided by enclosure for low voltage switchgear and control gear. : IS-2147-1962
14. Classification of insulating materials for electrical machinery and apparatus in relation to their thermal stability in service. : IS-1271-1985
Reaffirmed 1990
15. Code of practice for earthing. : IS-3043-1987
16. Electrical installation Fire Safety of Building. : IS-1646-1997
17. PVC insulated electric cable for working voltage upto and including 1100 volts. : IS-694-1990
18. Code of practice for electrical wiring and installation : IS-732-1989
19. PVC insulated (Heavy Duty) electric cables for working voltage upto and including 1100 volts. : IS-1554-1988 (Part-1)
20. Flexible steel conduits for electrical wiring : IS-3480-1966
21. Accessories for rigidsteel conduit for electrical wiring : IS-3837-1976

22. Boxes for the enclosure of electrical accessories : IS-5133-1969 (Part 1)
23. Guide for safety procedures and practices in electrical work. : IS-5216-1982 (Part-1)
24. Conductors for insulated electric cables and flexible cordes : IS-8130-1984
25. Miniature Circuit Breakers : IS-8828-1996
26. Rigid steel conduits for electrical wiring (Second revisions) : IS-9537-1981
27. Methods of test for cables : IS-10810-1998
28. Earth Leakage Circuit Breakers. : IS-12640-1988
29. Moulded Case Circuit Breakers : IS-13947-1993
30. General requirement for switchgear and control gear for voltage not exceeding 1000 volts. : IS-13947-1993

APPENDIX - V

LIST OF ACT / BYE LAWS

The lift installations shall also be governed by the following Acts/Bye-laws/Codes as amended upto date in addition to the codes specified in the tender:

1. National Building Code of India - 2005
2. Indian Electricity Act - 1910
3. Indian Electricity Rule - 1956
4. Local Lift Act
5. Building Bye-Laws
6. Local Fire Prevention and Fire Safety Rule

A P P E N D I X – VI

SAFETY ASPECTS & PROCEDURES

1. Since lift installation consists of a number of electrical and mechanical components having linear / rotary motions, utmost caution should be exercised while working and all safety precautions shall be rigorously followed.
2. Only authorised persons shall be allowed to work on lift installations and officer (s) empowered for such authorisation shall keep proper record thereof during the tests; inspection and maintenance.
3. If during erection any safety or protection device is inoperative, special care must be taken to avoid accidents on this account
4. Supply at main incoming circuit breaker shall be switched off before examining any part of the equipment. Whether during periodical inspection, or while carrying out any work on the equipments (including using the winding handle at times of mains failures) unless power is particularly required for particular operation or tests on the lifts, the breaker shall be locked in OFF position.
5. Whenever the car needs to be moved by use of winding handle in the machine room;
 - a. Power at incoming shall be switched off before applying the handle.
 - b. Power shall be restored only after this handle is removed from winding shaft and brakes are applied.
6. The landing and car buttons shall be kept out of circuit by switching on the 'Maintenance Switch' located on the top of the lift car during maintenance operators. Whenever maintenance switch is not provided emergency stop switch inside car and or attendant control switch should be used.
7. Before carrying out any repair work it shall be ensured that none of the electro-mechanical door locks are short circuited either from the controller or at the landings.
8. As a general precaution, fascia plate between the door header and the corresponding upper landing sill on each floor must be provided.

TECHNICAL SPECIFICATIONS

1. PASSENGER & SERVICE ELEVATORS

Elevators shall include all elements conforming to specifications or as amended herein. Elevators covered by this specification shall be provided, installed, tested, commissioned, certified and approved as per statutory requirements by Lift Inspectorate.

Notes:

- a. *One Fireman's switch for each set of elevator shall be provided.*
- b. *Elevator shall be provided with short duration emergency lighting in each cab which shall be through local dry cell rechargeable battery with necessary changeover relays. Light output shall be minimum 50 LUX at floor level.*
- c. *Provision of additional weight for interior finishes shall be kept for passenger elevator as specified in the Datasheet. In case interior finishing materials in cab exceeds this provision, then the elevator contractor shall clearly identify the loss of carrying capacity, if any. Recess in platform of 25 - 30 mm shall be provided in floor for receiving stone flooring in the passenger elevator as specified in the Datasheet.*

2. HOIST GEAR

Hoisting machines for passenger elevators shall be of gearless type operating at speed as per Datasheets

3. EMERGENCY CRANKING

The hoisting machines shall be provided with a set of special tools including a hand crank to allow release of hoist brake and provide for manual movement of the car in case of emergency. These tools shall be hung up on a tool board fitted to a wall in the elevator machine room, with instructions for their use clearly written on the board both in English and the local language. The elevator system supplier shall qualify his bid with respect to manual cranking. An automatic switch shall be provided to interrupt power to the elevator mains. Upon withdrawal of crank and manual resetting of power monitor switch, power shall be restored.

4. BRAKE

Brakes with non asbestos lining shall be spring loaded and shall close and open electrically. Brake shall be applied using variable input frequency to insure smooth stopping.

5. AUTOMATIC SELF-LEVELING

The elevator shall be provided with automatic self-leveling feature that shall bring the elevator car level to within ± 3 mm for passenger / service elevators and ± 5 mm for freight elevator of the landing floor regardless of load or direction of travel. The automatic self-leveling feature shall compensate for over travel and rope stretch.

6. HOISTWAY MATERIALS

Hoist way materials shall be non-flammable except traveling cable which shall be flame resistant. All other electrical cables shall also be flame resistant and housed in metal conduit or other metal enclosures.

7. HOISTWAY ENTRANCES & CAR DOOR

All landing hoistway entrance door shall have center opening horizontal sliding type doors suitable for a clear opening as indicated in Technical Data for each type of elevator and shall include flush doors of hollow metal construction, extruded aluminium sill with anti slip grooving and hanger supports and hanger cover shall be provided. Exposed surfaces of doors and frames shall be finished as directed by the Interior Designer.

Sheave type two point suspension ball bearing door hangers and tracks shall be furnished for each hoistway opening. Sheaves shall not be less than 58 mm diameter and adjustable ball bearing rollers shall take the up thrust of the doors.

Each car and hoistway door leaf shall be fitted with minimum two nos. teflon or nylon gibes as bottom door stabilizers.

8. CAR AND HOISTWAY DOOR OPERATOR

For each elevator door, an electric VVVF door operator or PWM DC door operator shall be furnished to simultaneously open the car and hoistway doors when the car is at a landing. The doors shall be closed simultaneously by motor power. Emergency key provision shall be made to open doors at all landing from outside of the hoistway.

In the event of interruption of electric power or failure of the door operator, it shall not be possible to open the car door manually from within the car.

An electric contact for the car door shall be provided which shall prevent elevator movement away from the landing unless the door is in the closed position. Each hoistway door shall be equipped with a positive electromechanical interlock and auxiliary door closing device so that the elevator can be operated only after the interlock circuit is established.

The doors shall open automatically while the car is leveling at the respective landing. The doors shall automatically close after a predetermined time interval has elapsed, but the momentary pressure of the "door open" button provided in the car shall reverse the motion and reopen the doors and reset the time interval unless overridden by the electronic door monitor.

9. PHOTO ELECTRIC DOOR MONITORS

An Electronic Door Monitor device shall be installed on each passenger elevator. This device shall monitor traffic across the threshold of the door and shall initiate door closing 2 seconds after interruption, thus overriding door open period. There shall be no dead zone in the entire opening which is not monitored by the device.

10. DOORS

Doors, threshold and door hangers shall be, as a system, fire rated for not less than 1.0 hours.

11. DOOR OPEN CLEARANCE

Clear door opening on passenger service/freight elevators shall be as indicated in technical data. Any other dimension requires Owners approval. Finishes shall be as specified under finishes or approved by architect.

12. CAR TOP STATION

A car top operating station shall comprise of key operated switch and constant pressure up/down buttons which shall be provided on each elevator. Car shall respond to up/down command at inspection speed. The elevator contractor shall provide electrical fixture of 28 watt enclosed fluorescent or enclosed 2 x 18 Watt compact fluorescent or equivalent lub LED fixtures switched from car top station.

13. SHEAVES

Sheaves shall be machined, balanced and shall maintain cable/ sheave ratio well within requirements. Lubrication points shall be extended to a location that is easily accessible.

14. CARFRAME AND SAFETY

A car-frame fabricated from formed or structural steel members shall be provided with adequate bracing to support the platform and car enclosures. The car safety shall be integral with car-frame or shall be mounted on the bottom members of the car-frame, and shall be of the flexible guide clamp type designed to stop and hold a fully loaded car which exceeds descending speed. Safeties shall conform to ANSI/ASME/CENEN-81 or local codes if more stringent.

15. SPEED GOVERNOR

The car safety shall be operated by a mechanical centrifugal speed governor located in the machine room at the top of the hoistway. The governor shall actuate a switch when excessive descending speed occurs, disconnecting power to the hoist motor and applying the brake prior to deployment of the safeties. Governor sheave in elevator pit shall be enclosed in a wire cage to a height of 2.40 m.

16. WIRING

All wiring and electrical interconnections shall comply with governing codes. Wiring shall be PVC insulated 1100 volt grade flame retardant and shall run in metal conduit, tubing or approved electrical raceways. Travelling cables shall be flexible and suspended to relieve strain on individual conductors. A minimum of 10% spare conductors shall be provided in travelling cable.

17. VOLTAGE FLUCTUATIONS

All electrical equipments supplied by the lift contractor shall withstand an incoming supply voltage fluctuations of +10% - 10%.

18. HOISTWAY OPERATING DEVICES

Redundant series wired terminal stopping devices shall be provided to slow down and stop the car automatically at the terminal landings. Resetting a tripped device shall be done manually only.

19. PIT SWITCH

An emergency stop switch shall be located in the pit which when operated shall stop the car regardless of position in the hoistway.

20. BUFFERS

Buffers shall be provided in the pit in compliance with ANSI/ASME/CENEN-81 or local code if more stringent. Clearance from underside of car resting on a fully compressed buffer shall be not less than 1.20m. Buffer shall be designed for design speed + 15%. Oil buffers shall be provided for the passenger elevators for speeds of more than 1.7 mps and spring buffers for lower speeds or in case of specifically asked for in technical data. The oil buffers shall be self resetting type and shall be provided with means for determining the oil level.

21. GUIDE RAILS

Steel guide rails shall be installed to guide the car and counterweight, erected plumb and securely fastened to the building structure, fitted to ensure smooth joints. The guide rail shall be minimum 16 mm, tongued and grooved type.

22. GUIDES

Rubber encased coil spring tension adjusted roller guides shall be provided for passenger elevators with speed of 1.75 mps or greater, mounted on top and bottom of the car frame, and on top and bottom of the counterweight frame to engage their respective guide rails. Service elevators and low speed elevators can have sliding guides on car and counterweights.

23. CABLE ANCHOR

Cable shall conform to ANSI/ASME/CENEN-81 and shall anchor to the frame by means of an equalizing device to insure uniform cable loading. Cable safety shall conform to ANSI/ASME/CENEN-81 or governing code if available.

24. TRAVELLING CABLE

Travelling cable shall be secured to the cars underside. Cable shall be clear of all obstructions while car is in motion. Cable jacket shall be suitable for immersion in water, salt water and oil. Jacket shall minimize strain on conductor. Travelling cable shall have 4 cores spare after providing for music, car access control, phone, TV, etc

25. INTERLOCKS

Hoistway openings shall be provided with electro-mechanical locks.

26. COMPENSATING ROPE

Compensating ropes shall be furnished and installed for all elevators with speed over 2.0 m/sec, and travel in excess of 30 m, to compensate for the shifting weight of the hoist ropes. A device shall be provided to tie the car and counterweight together to limit the jump of the car or counterweight. Compensating chain where provided shall be enclosed in a plastic flame resistant jacket to minimize noise.

27. COUNTERWEIGHT

A structural steel frame with cast iron or steel plate filler weights shall be furnished to provide proper counterbalance for smooth operation.

28. COUNTERWEIGHT GUARD

A metal counterweight guard shall be furnished and installed at the bottom of the hoistway, and shall wrap around counterweight rails for a height of no less than 1.80 m in order to protect accidental contact.

29. ROPES

Hoist ropes shall be traction steel of size, construction and number to insure proper operation of the elevator and give satisfactory and safety assurance. Governor ropes shall be steel. All ropes shall consist of at least eight strands wound about a hemp core center. All ropes shall conform to ANSI/ASME/EN-81 or more governing codes or regulations. The minimum factor of safety for ropes shall be 10.

30. PLATFORM

The car platform shall be of Aluminium/ Stainless steel plate as asked for in Annexure I. The entire platform shall rest on rubber pads, so designed to form an isolating cushion between the car and carframe. Platform deflection shall be limited to maximum 3 mm under maximum normal operating conditions. Platform shall conform to ANSI/ASME/EN-81 or more stringent local codes.

31. HEAVY LOADING PLATFORM (SERVICE ELEVATOR)

The platform shall be provided with slip resistant Aluminium/Stainless Steel chequered plate flooring. The platform shall be arranged to accommodate one piece load of mechanical / electrical equipment, etc.

32. OVER-LOAD FEATURE

Elevators shall be fitted with the load weighing feature to illuminate "Over-Load" and defeat the car's operating circuits when car load reaches 110% or more of rated load. Car platform may require stiffening to minimize margin of error resulting from excessive deflection. Overload feature and / or circuit defeat for elevators shall conform to governing code.

33. CAR SPEED

Car speed shall be based on the travel distance and number of floors. This has been specified in Schedule of Quantities.

34. SYSTEM PERFORMANCE

The bidder shall do the traffic analysis and submit the same with his tender. The study shall confirm that under normal operating conditions, maximum waiting time at any landing shall not exceed 35 seconds, if not possible contractor shall propose most economical modification to achieve that.

35. ACCELERATION / DECELERATION

Acceleration / Deceleration shall be linear and smooth. Stops shall be without cable oscillations. Acceleration & Deceleration shall be site adjustable.

36. NOISE LEVELS (PASSENGER ELEVATOR)

Noise from moving equipment including door operation, car motion, fan, etc. shall not intrude into adjoining spaces by more than 20 dB and adjoining occupied areas by not more than 10 dB. (All octave bands).

Noise level inside the car shall not exceed 50 dB. without car cabin fan running.

Noise level inside the car shall not exceed 55 dB. in case of door opening / closing. The noise level shall be measured at 'Zero Activity'.

37. LATERAL QUAKING & VERTICAL VIBRATIONS

Lateral quaking and vertical vibrations should not exceed 20 gal and 85 dB respectively. Contractor to demonstrate these parameters at site with performance analyzer.

38. EMERGENCY CAR LIGHTING & INTERCOM

Provision shall be made in the car for lighting, low speed and low noise fan, status indication and communication. Wiring cabling for the above facilities shall be provided along with travelling cable. Elevator contractor shall provide and install hand free communication unit above the car operation panel. Other units shall be installed in the control room and the machine room. Fan shall be low noise and shall be approved by the Architect / Consultant. Speaker shall be provided for emergency announcement and background music.

39. CAR POSITION INDICATOR (PASSENGER CARS)

Scrolling alpha numeric car position indicator shall be installed above each operating panel. The position of the car in the hoistway shall be shown by illuminating the corresponding landing at which the car is stopped or passing.

40. LIGHTING

The cab manufacturer shall make all provisions for installation of lighting fixtures specified by interior designer, including integration of emergency lighting fixtures.

41. HALL BUTTONS (ALL CARS)

For elevators hall buttons shall be provided at each terminal landing. A single micro movement push button shall be provided at top most and the lowest floor landing, two micro movement buttons on a single plate shall be provided at each intermediate floor. When a hall call is registered by momentary pressure on a landing button, that button shall become illuminated and remain illuminated until the call is answered.

42. CALL BUTTON

Selection for call button for passenger car shall be as per Architect selection. Freight elevator call buttons shall be as per manufacturer's standard product. The catalogues of the buttons offered shall be submitted along with the tenders.

43. FIXTURE FINISHES

The metal faceplates of the signal and operating fixtures in the cars and at the landings, along with the metal accessories in the cars, shall be hair line stainless steel or as selected by the Architect. Push button fixtures at the landings shall be of design approved by the Architect. All fixtures, form and finishes, etc. shall be subject to the Architect's and interior designer's approval.

44. CAB CLADDING AND FINISHES

a. Freight/Services

Flooring shall be of 20 mm granite on 5 mm thick Aluminium\steel chequered plate as specified in the datasheet with all seams for liquid tightness. Walls shall be of stainless steel sheet. Interior finishes shall be brushed stainless steel to full height.

b. Passenger Elevator

Flooring shall be of 20 mm granite on 5 mm thick Aluminium\steel chequered plate as specified in the data sheet with all seams for liquid tightness. Walls shall be of stainless steel sheet. Interior finishes shall be brushed stainless steel to full height. .

45. AUTOMATIC ELEVATOR RETRIEVAL SYSTEM (FIRE PHASE- I)

All elevators shall be equipped with automatic elevator retrieval system which shall, upon signal from the central fire alarm system or manually operated key switch, cause all elevators to be dispatched automatically to the ground floor. Elevators shall, open their doors and remain at the ground floor. All floor and car buttons shall be rendered ineffective until the system is manually reset. A smoke detector shall be placed in close proximity to each elevator bank on the ground floor. If this device senses smoke, system shall land elevators at a preselected, alternate, landing floor. A key operated switch shall be provided at the ground floor to activate and reset the retrieval system manually.

a. Emergency operation shall return the elevator/s to a designated floor, most commonly, the Lobby, by means of a signal from the automatic fire alarm system.

b. On initiation from the fire alarm system, control panel, all elevators travelling away from the lobby floors shall stop and reverse without opening their doors indicating fire mode-operation to passengers, ignoring all car and hall calls and express to the lobby or assigned floor.

c. Cars travelling toward lobby shall express to lobby ignoring all car and hall calls. Cars parked on intermediate floors shall close their doors and express to lobby. Cars parked at lobby shall open their doors ignoring car and hall calls. All hall and car buttons shall extinguish and shall accept no further hall or car registration.

- d. All elevators shall, in addition and where allowed by code, be provided with a key operated switch for use by in-house fire brigade.
- e. The elevator contractor shall coordinate and cooperate with the fire detection & alarm system supplier / installer for his system interfacing responsibilities.

Fireman Emergency – Phase - II

Actuation of fire mode shall put all car functions as described here under fireman control by means of a key switch.

- a. Hall button giving car call indication shall cause the doors to close.
- b. Applying constant pressure to the door open button shall cause door to begin to open. Releasing the button before door is fully open shall cause the door to close.
- c. Hall buttons shall be rendered inoperative.
- d. Car position indicator shall indicate floor when car is within door operating range, and if in motion it shall indicate nearest floor by flashing. When a car is within operating zone, the position indicator shall light uninterrupted.
- e. All electrical door safety locks shall remain effective.
- f. Car position, direction of travel and floor conditions shall be displayed on the car position monitor in the lobby, and at elevator system monitor in engineering room.
- g. Returning the car to the designated landing floor, deactivating the lobby switch shall render the car to original pre fire mode condition.
- h. Resetting the Fire Alarm contacts in the car monitoring panel shall restore the system to normal condition.

46. INSPECTION OPERATION - ALL ELEVATORS

A switch shall be provided in the car to permit operation of the elevator from top of the car for inspection purposes, with car and hall buttons inoperative. Car shall travel at inspection speed not exceeding 0.5 m/sec. Motion of car shall require constant pressure to directional button.

47. INDEPENDENT SERVICE (ALL CARS)

A key operated switch shall be provided in the car operating station which, when actuated, shall disconnect the elevator from the hall buttons and permit operation from the car buttons only.

48. HOIST GEAR

The hoisting machine shall be gearless type for speed 1.5 m / sec with motor, brake and traction drive sheave compactly mounted on a continuous bed-plate and set on steel beams. Sound isolating pads shall be installed beneath the machine bed-plate to reduce vibration or air borne noise.

The hoisting machine shall be single worm geared traction type with motor, brake, gearing and driving sheave assembled on a steel base plate. The motor shall be reversible type particularly designed for elevator service with high starting torque and low starting current. Sound reducing material shall be installed under machine.

The machine shall be located directly above the hoistway. Foundation bolts shall be provided by the elevator contractor for building into the foundation furnished by others. Suitable beams shall be furnished for mounting deflector pulleys, if required by the elevator contractor.

Requirements for permanent lifting hooks hoisting beams and access hatches shall be indicated on the drawings by the elevator system, supplier / installer.

49. PASSENGER ELEVATORS

Passenger elevators shall conform to all details in these standards stipulated, unless otherwise differently arranged hereunder.

49.1 **Elevator Cab**

Cab dimensions shall be as detailed under technical data of this tender. The car sill shall be flush with finished floor. Sill to sill space shall be as per manufacturer's standard and not exceeding 25 mm. Cab height shall be as per technical data indicated in the tender.

49.2 **Car Platform**

Shall conform to ANSI/ASME/CENEN-81 specifications. To suppress the noise and drumming effects, the floor must be stiffened and preferably lined with fire retarded plywood or other material which will suit the proposed finish. All finishing materials shall be fireproof or fire resistant conforming to applicable codes.

The platform shall be mounted on rubber pads supported on an auxiliary steel frame fastened to the car frame. This arrangement shall form an isolating cushion between the car and frame for vibration and load weighing transducers.

49.3 **Car Doors**

Car doors shall, unless specifically stated, be center parting, automatic power operated, variable frequency door operator or PWM DC door operator and electronic door detector. Infrared light beams shall be provided to act as a safety curtain across the door entrance to monitor the door closing and function as a safety edge infra red light system to initiate door closure about 2 seconds after last light beam interruption. Light sensor shall override designated "door open period" on top and intermediate floors and shall on the lower level be inactive until the car has been designated as "next up" and given signal to close its doors.

Car doors shall be hung plumb and even, to within 1 mm. with minimum number of 4 gibbs per leaf. Floor gibbs shall be well fitted so as to prevent popping noise as a car passes structural members, or car in motion in a shared shaft, etc. Hoistway doors shall be hung plumb and show a maximum of 6 mm joint at sides, top and bottom and 2 mm at centre joint. Narrow door frame or jamb panel shall be supplied by elevator contractor. A soft chime shall ring prior to doors closing and opening.

49.4 **Door Operation.**

Upon the car reaching landing in response to a hall or car call, a soft chime in the car shall sound. Door opening shall commence when the car is 25 mm from the levelling. Door open period shall be adjustable to within a range of + 1 second. Door-open-period on all floors except lobby floor shall be shortened to the extent that door closure will commence 2 seconds (field adjustable) following the sensor beam interruption by the last boarding or disembarking passenger. This period shall be adjustable to 1.5 seconds \pm 1.0 seconds. Normal door-open-period at lobby floor shall be monitored by the car's CPU. Door closure shall override "door-open-period" where car loading has reached by pass limit, or when another car approaches the lobby floor.

- a. Doors shall be arranged to remain open for a time period sufficient to meet handicapped requirements. (Optional).
- b. The time interval for which the elevator doors remain open when a car stops at a landing shall be independently adjustable for response to car calls and response to hall calls.
- c. An approved positive interlock shall be provided for each hoistway entrance which shall prevent operation of the elevator unless all doors for that elevator are secured and shall maintain the doors in their closed position while the elevator is away from the landing. Emergency access to the hoistway as required by governing codes shall be provided.

49.5 **Monitor Door Operation**

Stopping in response to hall or car call, doors shall be normally kept open for a predetermined period of time. With Monitor operation, the door closing period is automatically shortened to

approximately 1.0 seconds. Time open period feature must be field adjustable. Door open period shall be increased when the light ray senses a passenger leaving or entering the car.

50. CAR OPERATING PANEL

The car operating panel shall contain a bank of micro movement illuminated buttons marked to correspond to the landings serviced. It shall include a series of push buttons corresponding to the floors served, along with an emergency stop and switches required. Operating panel shall incorporate the following : floor buttons, door open/close, emergency stop/alarm, up/down in manual mode, man/auto key switch and seismic operation.

The emergency alarm button shall be connected to the 12 volt rechargeable battery circuit. A locked compartment integral with operating panel shall contain :

- a. Auto/manual/inspection key operated switch.
- b. Up/down button.
- c. Fan switches
- d. Synthesized voice announcements

On sounding of general fire alarm, the elevator shall if in motion, express to the ground floor. If stopped, the elevator shall open its doors and remain there until reset. Emergency talk-back system shall be provided, installed in integral cabinet and connected to the EPABX by the low tension contractor.

All Passenger Elevators of 13 passenger capacity and above shall be provided **with 2 No. Car operating panels and service elevator with 1 No. Car Operating Panel.**

51. AUTOMATIC LOAD BYPASS

Transducers in the car platform shall monitor passenger load which shall override “pre-programmed door open period” and despatch the loaded car from the low terminal. The load weighing device shall also function in the same manner on all intermediate and top floors and in addition shall express to the next car call and ignore all hall calls. Hall calls which are bypassed shall not be canceled. The automatic load bypass device shall be field adjusted for 50% - 75% of rated load.

51.1 Operation – One Car Simplex (Passenger or Service)

- a. Operation shall be automatic by means of the car and landing buttons. Stops registered by the momentary actuation of the car or landing buttons shall be made in order in which the landings are reached in each direction of travel after the buttons have been actuated. All stops shall be subject to the respective car or landing button being actuated sufficiently in advance of the arrival of the car at that landing to enable the stop to be made. The direction of travel for an idle car shall be established by the first car or hall button actuated.
- b. “UP” landing calls shall be answered while the car is travelling in the up direction and “DOWN” landing calls shall be answered while the car is travelling down. The car shall reverse after the uppermost or lowermost car or landing call has been answered, and proceed to answer calls and landing calls registered in the opposite direction
- c. If a car without registered car calls arrive at a floor where both up and down hall calls have registered, it shall initially respond to the hall call in the direction that the car was travelling. If no car call or hall call is registered for further travel in that direction, the car shall close its doors and immediately reopen them in response to the hall call in the opposite direction . Direction lanterns shall indicate the changed direction and initiate gong when the doors reopen.

51.2 Operation

Group Control for Passenger Elevators

- a. The building shall be divided into three (3) zones with one car assigned to the “Lower” zone and the other car assigned to the top zone. Each car shall park in its assigned zone when there are no unanswered calls.

- b. The lower zone shall include the lobby, lower levels, and adjacent floors immediately above the lobby. The remainder of the floors shall be divided between the top zone and the middle zone. Either car may answer calls in the middle zone, but neither car shall park in that zone.
- c. The first car entering a parking zone without hall or car calls shall be assigned to that zone. The car in the lobby zone shall park at the lobby or other pre-designated floor. The car entering the top zone with no calls registered shall stop at the lowest floor in that zone.
- d. Optimized response to hall calls shall be achieved by computing a relative system response (RSR) time for each registered hall call. The computation of each car's RSR time to a call shall be based on, but not limited to, such relevant factors as distance, service to previously assigned car and hall calls, car load, direction, door and car motion status, and coincidence of car and hall calls. The car with the least RSR shall have such a call assigned to it.
- e. RSR computations for each hall call shall be repeated several times a second and the hall call assignment might be changed if a more suitable car is found available.
- f. A car arriving at a floor to park shall not open its doors. Cars shall open their doors only when stopping in response to a car or hall call.
- g. If for any reason the doors are prevented from closing and the car is unable to respond to a call, it shall lose its zone assignment and the call shall be transferred to the other car.
- h. When a car is filled to a predetermined load setting, it shall no longer stop for hall calls. Any registered hall call shall remain registered for the next elevator to respond.
- j. When the independent service switch in the car operation station is actuated, that elevator shall be disconnected from the hall button riser/s and operate independently from car buttons only.

52. EXPANDED LOBBY ZONE ARRANGEMENT FOR HEAVY DOWN PERIOD

The group supervisory control system shall be arranged to include a number of consecutive floors above the main floor as part of the lowest zone. Upon completion of travel within the expanded lobby zone, the car assigned to that zone shall return to a predesignated floor.

52.1 Car to Lobby Operation

Provide a key operated switch for each elevator at the main floor which, when actuated, shall cause the corresponding elevator to make a trip to the lobby as soon as the car is available for response to the special call.

52.2 Next Car Up

“Next Car Up” shall be indicated by flashing of lantern for the car so designated at the lobby. Other cars shall remain parked with doors closed until each car, in turn, is assigned as “Next Car Up”.

52.3 Express Feature

Express feature shall be extended to hall call of 30 seconds or longer due to bypassed floors.

52.4 Express Priority Service (Optional)

- a. A key switch and signal light shall be provided at each selected landing for the purpose of providing an express priority service to each such landing. The control system shall compute the relative response times (RST) of all available designated elevators to service the call, based on the position and direction of the elevator relative to the priority floor, and also based on its door status, and select the car which has the shortest predictable response time (SPRT). Each car may be assigned to only one priority call at a time, and all cars which are designated to provide express priority service which are in service, and which have not already been selected and assigned to a call, may be selected

simultaneously. The cars which are to provide express priority service shall be designated by contract.

- b. Should the selected car fail to respond to its assigned priority call within an allowable time interval (due to unpredictable circumstances, such as the failure of its doors to close), selection shall automatically be passed on to another car, based on the aforementioned computations.
- c. Each selected car shall cancel all registered car calls and bypass all hall call on its way to its assigned priority landing. When the car arrives at the priority landing, it shall remain with doors open for a predetermined period of time. If not placed in service the doors shall close, and the car shall automatically return to normal operation.
- d. The signal lights shall be illuminated while a car is responding to a priority call, and shall be extinguished when the car has opened its doors at its assigned priority landing.

53. DISPATCH SYSTEM

The dispatch system shall be micro processor based. The system's main computer shall communicate with each car's computer. Microprocessor shall be intelligent in that it learns traffic patterns and applies best solution to each traffic condition, as determined by shortest predictable response. The CPU shall monitor demand on the system and shall execute the most economical assignment of cars.

54. ELEVATOR CAB

Car shall be detailed by the Architect or Interior Designer.

The cab manufacturer shall make provisions for ventilation inlets at the bottom of the cab (concealed from Passenger's view) and exhaust fan (concealed) at ceiling.

The car sill shall be flushed with finished floor. Sill to sill space shall not exceed 25 mm. Cab height, conditions permitting, shall be as per specification. The elevator contractor shall coordinate with electrical contractor to provide normal and emergency power and lighting to each elevator.

55. BUILDING AUTOMATION SYSTEM REQUIREMENTS

The Elevator Panel should have the following Provisions

- a. It shall be able to accept signal from the Fire Alarm Panel in case of fire and automatically ground the elevator on receipt of this signal.
- b. Potential free contact to indicate elevator trip status.
- c. Potential free contact to indicate elevator alarm status.
- d. Potential free contact to indicate Emergency Activation Switch status.

FAS contractor shall provide necessary cabling up to Elevator Panel and termination shall be done by Elevator contractor.

Software Interface.

The Lift microprocessor panel should be compatible with BAS and should be able to communicate with the BAS in any of the following standard protocol like MODBUS, LONWORKS, BACNET etc. In case of multiple lifts having individual microprocessor panels it should be possible to network all microprocessors panels and be connected to a master controller. BAS communication cable can be integrated directly to the master controller or in case master controller is not available it should be possible to integrate each Microprocessor controller to the BAS system. It should be possible to monitor the following data points through software integration.

- a. Elevator car position.

- b. Fire Emergency signal monitoring.
- c. Elevator Attendant Mode.
- d. Elevator Alarm Mode.

In case of fire it should be possible to control the lift through software interface. All necessary hardware including interface card and accessories necessary for integration with the BAS system has to be provided by BAS contractor.

56. ADDITIONAL INFORMATION

Tenderer shall enclose with their offer the following additional information:

- a. List of installation of 1.5 mps & above installation completed by the tenderer during the last 5 years.
- b. Details of “In-House” facilities for testing and inspection of elevator materials.
- c. Details of service facilities in India.
- d. Confirm that elevator may be operated on DG sets and provide power characteristic to design the generator capacity.

Tenderers shall submit details / samples / photographs / catalogues for following. These shall be relevant to the project and the contractor shall indicate which of these are being offered in the bid.

- a. Hall Lantern
- b. Car Operating Panel.
- c. Hall Buttons
- d. Group Indication panel.
- e. Option for stainless steel finishes

ANNEXURE I : TECHNICAL DATA SHEET FOR ELEVATOR SYSTEM

S. NO.	DESCRIPTION	P. Lift -1
1	Type of Elevator	Passenger
2	Operation	Single Car selective collective
3	Control	AC-VVVF
4	Operation W/WO Attendant	W/WO
5	Capacity	
	a. Rated Load (KG)	As per schedule of quantities
	b. Weight of Material for Interior of the Car	150 kg
	c. No. of Persons	As per schedule of quantities
6	Machine	Gearless
7	Speed (MPS) Rated	1
8	Travel	As per schedule of quantities
9	Rise in Meters	As per schedule of quantities
10	Required Car Size in (MM) (inside dimensions)	As per manufacturer's
11	Available Hoist Way Size (mm) (W x D) Inside Dimensions)	As per schedule of quantities
12	Door Operation	Automatic with ACVVVF Motor Door operator with electronic / infrared sensor door detector
13	Car And Hoistway Entrance (mm)	1100 x 2100
14	Height of Lift Car	2300
15	Machine Room Less	MRL
16	Required Pit Depth	
17	Required Overhead	4800
18	Noise Level in Cabin (Running Car)	55 db (A)

19	Cabin Ceiling	S01 (Standard ceiling)
20	Cabin Walls	SUS(H)
21	Cabin doors(finish)	SUS (all levels) ,SUS(H) with glass on rear second door of ground floor
22	Flooring	Granite
23	Cabin sills & landing sills	Extruded Hard aluminium
24	Car operating panel and car position indicator face plates finish	Standard with stainless steel face plate finish
25	Landing doors (finish)	SUS(H), SUS(H) with glass on rear second door of ground floor
26	Cooling in Elevator	Blower mounted on roof with two side ducts.
27	Signals	
	a. Micromotion Hall Button with Dot Led Illumination	Yes
	b. Car Operating Panel	1 COP
	c. Electro Luminescent display in the Car where it shall Act as per assignment, indicator, car position & direction indicator.	Yes
	d. Digital Hall Position indicators at all Floors	Yes
	e. Battery Operated Alarm Bell & Emergency Light	Yes
	f. Overload Warning Indicator in Car	Yes
	g. Built-In Intercom for Two Way Communication	Yes
	h. Fireman's Switch on Ground Floor	Yes
	j. ARD / Emergency Landing	Yes
	k. Access Control	Yes
	l. TV Screen	No
	m. Music System (Cable to be provided only)	Yes
	n. Car Management System (hookup with BAS system)	Yes
	o. Car Ceiling	Design to be got approved from architect
	p. Lighting	Wiring only (250 watt / car) lights by Interior Designer
28	Power supply for traction	415 V, 3 phase, 50 Hz

29	Power supply for cabin lighting	240 V, 1 phase, 50 Hz
30	Motor KW – To be confirmed by Vendor	

OPERATIONAL & SAFETY FEATURES

DC Alarm Bell	Required
Multi beam sensor	Required
Safety landing operation	Required
Next landing operation	Required
Independent operation	Required
Hand winding operation for safety emergency purpose	Required
Hand operation (slow speed maintenance operation)	Required
Emergency stop button	Required
Emergency cabin lighting	Required
Emergency interphone system incorporated on cabin operating panel	Required
Re-open with hall call button operation	Required
Automatic door open time adjustment operation	Required
AC-VVVF inverter controlled door operation	Required
Car call registered light	Required
Hall call registered light	Required
Emergency exit & ventilation fan	Required
Handrail	Required
Overload Indicator	Required
Fireman emergency operation	Required
Emergency landing device	Required