

ACHARYA NAGARJUNA UNIVERSITY
Nagarjunanagar-522 510, Guntur, A.P.

OFFICE OF THE REGISTRAR
ARCHRYA NAGARJUNA UNIVERSITY
NAGARJUNANAGAR-522 510, A.P

TENDER SCHEDULE

No.ANU/Engg./ Tender Notice/ Civil Work/Lift Facility/2018-19,
dated: 17.04.2018

NAME OF WORK: **Civil works for Lift facility at B.R. Ambedkar
memorial Library in ANU Campus**

Tender schedule issued to:

**ACHARYA NAGARJUNA UNIVERSITY
NAGARJUNA NAGAR**

For Office Use Only

Issued to..... Contractor

NAME OF WORK: Civil works for Lift facility at B.R. Ambedkar
memorial Library in ANU Campus

Estimated contract value (E.C.V): Rs. 8, 95,189.00

1. EARNEST MONEY DEPOSIT (E.M.D.) payable : Rs. 9,000.00
At the time of Application to tender schedules
2. BALANCE EARNEST MONEY DEPOSIT (E.M.D) AND ADDITIONAL SECURITY DEPOSIT.

IF ANY. PAYABLE:

At the time of agreement:

Refer to

Tender Notice

----- for REGISTRAR

Date of Opening to Tender : 02.05.2018 at 03.00 PM.

Whether received in proper form :

If paid, amount, D.D. No. & Date : Rs. -----

Whether E.M.D. paid : YES/No

Name of Bank and Branch :

Opened by :

Signature :

Name :

Designation :

ACHARYA NAGARJUNA UNIVERSITY : : NAGARJUNA NAGAR
TERMS & CONDITIONS

**NAME OF WORK: CIVIL WORKS FOR LIFT FACILITY AT B.R. AMBEDKAR
MEMORIAL LIBRARY IN ANU CAMPUS**

General Terms & Conditions

1. a. Tenders should be in the prescribed form and the tender schedule can be obtained from the Office of the University Engineer, ANU Campus on all working days with crossed Demand Draft for Rs.1145/- towards cost of Tender Schedule.
- b. The tenderer who download the Tender Schedule through University web site www.anu.ac.in he/she should enclose the DD for Rs.1, 145/- drawn in favor of the 'Registrar, Acharya Nagarjuna University, Nagarjuna Nagar', and submitted along with Cover A at the time of submission of Tender, towards cost of Tender Schedule, failing which the Tender will be summarily rejected.
2. The dates stipulated in the tender schedule are final. Under no circumstances can they be relaxed. However the University reserves the right to extend the time if circumstances warrant it.
3. The Cost of the tender schedule once remitted will not be refunded under any circumstances.
4. EMD of 1% on ECV i.e. Rs. 9,000.00 for the above work shall be paid through D.D drawn in favor of Registrar, Acharya Nagarjuna University and enclosed to the tender, failing which the tender will be rejected.
5. The EMD will be refunded to all the unsuccessful tenderers soon after deciding the tenders or on expiry of tender validity period i.e., 90 days whichever is earlier and the EMD amount will not carry any interest.
6. The Registrar, Acharya Nagarjuna University, Nagarjuna Nagar, reserves the right to reject any or all Tenders without assigning any reasons therefore.
7. The Tenderer who withdrawn his offer within the validity period mentioned in the schedules will forgo his E.M.D.
8. All construction materials such as steel, cement, bricks, metal and all other required materials specified in Schedule 'A' required for work shall be procured by the contractor.
9. The contractor shall procure required all construction materials from the manufacturers/authorized dealers/distributors to suit the specification mentioned in the Tender schedule.
10. Tenders with a 5% and above excess percentage over the estimated contract value shall be summarily rejected. Negotiations will not be entertained at any level. The percentage quoted will be treated as final.
11. Tenders upto 25% less than the estimated contract value will also be accepted. But for Tenders less than 25% the estimate contract value, a bank guarantee or demand draft for the difference between the tendered amount and 75% of the estimate contract value have to be produced while concluding of agreement as additional security deposit.
12. The Tenderers will not be required to quote rates item wise in schedule 'A'. They should indicate their willingness to do the work either at the estimate value of the work or at a percentage in excess of the estimated value of the work or at a percentage in less than the estimated value of the work in the Financial Bid. The overall percentage should be written both in words and figures and shall be restricted to two decimal only. In case of discrepancy between the overall tender percentage quoted in words and figures the overall percentage quoted in words will prevail.
13. If due to any reasons the office happens to remain closed on the last date of receipt of tenders as specified in the tender will be received on the next working day at the same time and venue and tenders will be opened on the next working day to the day specified.
14. To qualify for consideration of the contract each tenderer should fulfill the following criteria.

1. The tenderer should further demonstrate.
 - a) Availability of the key technical personnel with adequate experience of five years- one Graduate Engineer.
 - b) EMD shall be in the shape of DD in favour of the Registrar, Acharya Nagarjuna University.
2. The tenderer is subject to be disqualified, if he is found to have mislead or furnished false information in the forms/ statements / certificates submitted in proof of qualification requirements or record of performance such as abandoning of work, not properly completed in earlier contracts, in-ordinate delays in completion of the works, litigation history and or financial failure and or participated in the previous tendering for the same work and had quoted unreasonable high bid prices.
3. Even while during the execution of the work, if it is found that the contractor had produced false/fake certificates of experience, he will be blacklisted and the contract will be terminated.
4. The E.M.D. shall be paid through crossed demand draft drawn in favour of the Registrar, Acharya Nagarjuna University.

TENDER NOTICE

Sealed tenders will be received by the Registrar, Acharya Nagarjuna University, Nagarjuna Nagar from the registered firms / contractors, of appropriate class V and above issued by the R&B, Panchayat Raj, Irrigation of A.P., through website www.anu.ac.in on any day **from 18.04.2018 at 11:30 AM to 02-05.2018 up to 1.00P.M.** for the work of CIVIL WORKS FOR LIFT FACILITY AT B.R. AMBEDKAR MEMORIAL LIBRARY IN ANU CAMPUS

The Tender schedule can be downloaded from www.anu.ac.in from **from 18.04.2018 at 11:30 AM to 02.05.2018 up to 1.00 p.m. and last date and time for receipt of bids upto 02.05.2018 at 2.00 PM** and tenders will be opened by the Registrar or any Officer authorized by the Registrar, the Tenders will be opened on **02.05.2018 at 03.00 PM** in his Office in the presence of the tenderers or their authorized agents, who are present, at the time of opening the tenders. The tender opening authority will not be responsible to consider any tender received after the expiry date and time fixed for receipt of tenders.

1. Procedure for submission of tenders

1.1 The Contractors have to put their tenders in the tender box placed in the Registrar's room on the last date for submission of tenders prescribed in the tender notice. Tenders submitted through post shall be rejected.

1.2 Tenders may be submitted by the Contractor either in person or through an agent.

1.3 The payment of EMD is not exempted to any society/voluntary organization/ institution/community, etc.

1.4 The Tenderer should submit the tender in two parts in two different sealed covers. Cover–A and Cover–B. The cover A shall contain the certificates mentioned at along with Eligibility Criteria of Tender Schedule. The cover B shall contain the financial bid of Tender Schedule for the work with over all tender percentage. The cover A and cover B will be sealed and kept in another sealed envelope (cover-C).

a. The cover C will be opened in the presence of the tenderers or their authorized representatives and other officials concerned on the specified date and time and also to verified whether the cover –A and cover-B are properly sealed and minutes be recorded to this effect then and there only. Incase the Cover –A & B or any one of them found unsealed, such tenders will not be opened and summarily rejected.

b. Cover –A contain Technical Bid will be opened in the presence of the tenderers or their authorized representatives and other officials concerned on the specified date and time. After scrutiny of the Technical Bid, the Financial Bid of those tenderers who are determined as qualified as per eligibility criteria will be opened on the date specified in the tender notice, and the Cover –B of the unqualified tenderers will not be opened and kept in the safe custody till the tenders are finalized and there after shall be returned to them along with EMD.

- c. The University will finalize the tenders as per the lowest tender percentage (Excess/Less on ECV) quoted by the tenderers in the Financial Bid. If two or more tenderers quoted same percentage in the Financial Bid, those tenders will be finalized on lottery system.**

1.5 The tenderer who withdraws an offer within the validity period mentioned in the schedule will **forgo** the EMD.

1.6 If due to any reason the office remains closed on the last date of receipt of tenders specified in the tender notice, the tenders will be received on the next working day at the same time and venue and the tenders will be opened on such next working day at the prescribed time.

1.7 The tenderer is liable to be disqualified if the contractor is found to have misled or furnished false information in the forms/statements/certificates submitted. Even after award of tender if it is found that contractor had produced false, fake certificate of experience, the contract will be terminated.

1.8 Eligibility Criteria:

A. The tenderer should submit the self attested Xerox copies of the following certificates along with the tender schedule through sealed cover A is mandatory.

- a. Registration Certificate for Class V or above issued by the R&B/Panchayat Raj/ Irrigation Govt. of A.P. The certificate should be in force for the entire period of contract.
- b. PAN Card & Copies of the Income Tax returns filed for the past five years i.e.2013-14, 2014-15, 2015-16, 2016-17 & 2017-18.
- c. **GST** Registration Certificate.
- d. DD of EMD @ 1% on ECV. i.e. Rs. 9, 000.00 from any nationalized bank.

B. The Tender should submit the Financial Bid through separate sealed cover B.

1.9 The cover -A of Tender Schedule contains without any one of the certificates mentioned above, the cover-B of financial bid is liable to be rejected without any intimation.

1.10 In case the EMD paid by the tenderer is less than what is stipulated in the tender notice or if EMD is paid by means other than the method prescribed by the University, the tender will be rejected besides forfeiting the EMD.

1.11 The University is not responsible if the finalization of tenders is held up due to litigation in honorable Courts or for any other administrative reasons.

1.12 Tenders once submitted shall not be permitted to be withdrawn and are not transferable.

1.13 The interested parties may inspect the premises of the contract area before submitting the tender.

1.14 The tender form duly filled in along with the enclosures and demand draft in original towards EMD @ 1% on the ECV should be submitted together with the terms and conditions duly signed on each page. The tenderer should quote tender percentage on ECV should be written in both figures and words clearly and the tender along with supporting certificates shall be kept in sealed cover. In case of any correction in the percentage on the ECV quoted the same should be attested by the tenderer, otherwise the

tender will be rejected. The name and address of the tenderer including contact phone numbers should be indicated on the sealed cover.

- 1.15** The sealed tender should be placed in the tender box kept open in the office of the Registrar, Acharya Nagarjuna University, Nagarjuna Nagar. The tenders received after stipulated date and time will not be accepted. Tenders will be opened on the same day by the tender committee.
- 1.16** Tender forms not accompanied by the demand draft in original towards the required EMD/cost of tender schedule, incomplete tender forms, tender not signed and tender without enclosing necessary documents including terms and conditions will be rejected.
- 1.17** Tender submitted with any preconditions or additional conditions other than the conditions prescribed will be summarily rejected.
- 1.18** The University reserves the right to reject any or all the tenders without assigning any reasons.
- 1.19** If the successful tenderer fails to take up the work within the period specified, the EMD and additional security deposit will be forfeited.
- 1.20** The successful tenderer will be required to enter into the agreement with the University on Rs.100/- Non-Judicial Stamp paper along with the payment of EMD balance 1.50% towards due fulfillment of 2.50% EMD.
- 1.21** The contractor should execute the work on war foot basis with the stipulated time, failing which the Contractor will be block listed.
- 1.22** In addition to the normal inspection by the regular University Engineer and other staff in charge of the work, the work will also be inspected by the authorized representatives/nominees of the Registrar, Acharya Nagarjuna University and also **R&B Dept., Quality Control Wing** during the execution of work and during defects liability period, if any sub-standard work or materials or excess payments are noticed with reference to the measurement books etc., during inspection, recovery will be ordered based on their observations and these will be affected by the Deputy Executive Engineer from the bills of the Contractor. **Test reports shall be submitted by the contractor to the University as well as R&B at his own cost. Intermediate/final bill will be paid to the contractor only after receipt of the report from the Quality Control Wing of R&B.**

2.0 BLANK

3.0 Payment of E.M.D. and Security Deposit:-

- 3.1 Each tenderer shall pay the E.M.D. a sum of **Rs.9,000.00 (Rupees Nine thousand) drawn in favour of the Registrar, Nagarjuna University** on any branch of a Scheduled Bank in the shape of crossed Demand Draft payable at State Bank of India, Nagarjuna University Campus, and upload and attached to the tender in e-procurement market place.
- 3.2 The tenderer should pay the balance E.M.D. (i.e. E.M.D. Calculated @ 2.5% (Of E.C.V. or Tender amount whichever is higher) less the E.M.D. (paid at the time of filing the tender) at the time of signing the agreement in the shape of crossed Demand draft or an un-conditional Bank Guaranty from any Nationalized Bank in favour of the Registrar, Acharya Nagarjuna University, payable at Nagarjuna Nagar.
- 3.3 Further an amount @ 7.5% according to Clause 68 of the standard preliminary specifications of the A.P.S.S. shall be retained as security for the due fulfillment of this contract while paying intermediate bills for the work done.

4.0 Validity of Tenders:-

- 4.1 The tenders received will be decided within a period of **THREE MONTHS** from the last date prescribed for the receipt of the tender and decision regarding acceptance of tender will be intimated within the said period.
- 4.2 During the above mentioned period no plea by the tenderer for any sort of modification of the tender based upon or arising out of any alleged misunderstanding or mistake or any other reason will be entertained.
- 4.3 When the tender is under consideration the earnest money deposited by the tenderer will be forfeited to the Acharya Nagarjuna University, in the event of such tenderer either modifying or withdrawing his tender at his instance within the said validity period.

5.0 Signing of Agreement:-

- 5.1 When the tender is under consideration the tenderer whose tender is under consideration shall attend the Registrar's Office on the date intimated to him in writing. He shall also, upon an intimation given to him by the Registrar, Acharya Nagarjuna University, of acceptance of his tender make payment of the balance E.M.D. as in clause 3.2 above and the Additional Security Deposits. (If any), and sign an agreement in the proper departmental form, for the due fulfillment of this contract. Failure to attend the Registrar's Office by the date fixed in the written intimation and or to enter into the required agreement shall entail forfeiture of E.M.D.
- 5.2 The written agreement to be entered into between the Contractor and the Acharya Nagarjuna University shall be the foundation of the rights of both the parties and contract shall not be deemed to be completed until the agreement has first been signed by the Contractor and then by the proper officer authorized to enter into the contract on behalf of the Acharya Nagarjuna University.

6.0 Return of E.M.D. to unsuccessful tenderer (s):-

- 6.1 On requisition, the earnest money deposit will be refunded to the unsuccessful tenderer (s) by registered post at the expiry of the period of validity of tender, or after entering into an agreement with the successful tenderer whichever is earlier.

7.0 Contractor to sign the A.P.S.S.:-

- 7.1 The tenderer shall examine closely the Andhra Pradesh Standard Specifications and also the Standard preliminary specifications contained therein and sign the Acharya Nagarjuna University, University Engineer's Office copy of the Andhra Pradesh Standard Specification and its addenda volume in token of such study **before submitting** his tender. Unit rates which shall be for finished work at site. He shall also carefully study the drawings and additional specifications and all documents which form part of the agreement to be entered into by the accepted tenderer. The A.P.S.S. and other documents connected with the tender, such specifications, plans, descriptive specification sheet regarding materials etc., can be seen at any time during working hours on all working days in the Office of the Registrar, Acharya Nagarjuna University.
- 7.2 The tenderer's attention is directed to the requirements for material under the clause "Materials and Workmanship" in "Preliminary specification" of A.P.S.S. Material conforming to the Bureau of Indian Standard Specifications shall be used on the work and the tenderers.

8.0 Inspection of site and quarries by the Tenderer:-

Every tenderer is expected before filing his tender to inspect the site of the proposed work. The best class of materials are to be obtained from the quarries of his choice confirming to specifications mentioned in the Tender Schedules. In every case, the materials must comply with the relevant standard laboratory tests. Samples of materials called for in standard specifications or as required by the University Engineer in any case shall be submitted for University Engineer's approval before supply to site of work begins.

9.0 Defects liability period and other clauses of A.P.S.S.:-

- 9.1 The tenderer's particular attention is drawn in the section and clauses in the Standard preliminary specification dealing with:
1. Test, Inspection and rejection of defective materials and
 2. Carriage
 3. Construction Plant
 4. Water and Lighting
 5. Cleaning up during progress and for delivery
 6. Accidents
 7. Delays
 8. Particulars of payment
 9. Defects Liability
 10. Standard preliminary specifications regarding payment of seigniorage charges, royalties and tolls etc.

- 9.2 The defect liability period is two years from the date of completion of work.

10.0 Schedule of Quantities:-

The Schedule 'A' part – I will contain the quantities, estimate rates and amount for each item and the total value of contract. The tenderer, will not be required to quote item wise. He should indicate his willingness to do the work either at the estimated contract value or at a percentage less than the estimated contract value of the work or a percentage less than the 5.00 % excess of the ECV.

11.0 Conditional Tender:-

Tender not submitted in proper form or in due time will be rejected. Alterations which are made by the tenderer, in the tender schedule, the conditions of the contract, the drawings, specifications accompanying the same, will not be entertained and if any such alterations are made, the tender will be rejected.

12.0 Subletting works by Contractors:-

12.1 No part of the contract shall be sublet. However, if it becomes necessary such permission for subletting shall limited only to the following items of work:-

- i). Labour contract
- ii). Material contract
- iii). Transport contract and
- iv). Engaging specialists for special items of work as enjoined in A.P.S.S.

12.2 The contractor shall not transfer by power of attorney authorizing others to receive payment on the contractor's behalf without written permission of the Registrar, Acharya Nagarjuna University

13.0 Further information, if any:-

13.1 If further necessary information is required, the University Engineer will furnish such information. But it must be clearly understood that the tenders must be received in order and according to instructions.

14.0 Right of rejection of Tender:-

14.1 Tenders with an excess of 5% (Five per cent) above over the E.C.V. shall be summarily rejected. However, the Registrar, Acharya Nagarjuna University reserves the right to reject any or all the tenders without assigning any reason whatsoever.

14.2 The contract is liable for cancellation, if either the contractor himself or any of his employees is found to be a Gazetted Officer who retired from Government and any officer from Acharya Nagarjuna University and had not obtained permission from the Government/ Acharya Nagarjuna University for taking up contract employment within a period of two years from the date of retirement.

14.3 A contractor shall not be eligible to tender in Acharya Nagarjuna University for works where any of his relatives are employed in the rank of Assistant Engineer or Assistant Executive Engineer and above on the Engineering side and a divisional Accounts Officer/Supdt. and Asst. Registrar or above in the Administrative side and

Members of teaching faculty and also Member of the tender recommending or by approving body in Acharya Nagarjuna University. The tenderer shall intimate the names of persons who are working in the Acharya Nagarjuna University in any capacity or who are subsequently employed. He shall also furnish a list of employees and other persons of Acharya Nagarjuna University related to him. Failure to furnish such information shall render his contract liable for cancellation.

List of near Relatives:-

1. Sons, Stepsons, Daughters & Step Daughters
2. Sons-in-law and Daughters-in-law
3. Brothers-in-law and Sisters-in-law
4. Brothers and Sisters
5. Father and Mother
6. Wife and Husband
7. Father-in-law and Mother-in-law
8. Nephews, Nieces, Uncles and Aunts
9. Cousins
10. Any person (s) residing with the Contractor

15.0 Right to omit one or more items:-

The Department shall have the right to omit one or more items put in the tender either before or after an agreement for the work is entered into.

16.0 Contractor rates inclusive of Royalties:-

It shall be understood and agreed that contractor's offer is to include all royalties and costs arising from patent, trade marks and copy rights in any way involved in the work. Whenever the contractor requires to use any design, device, materials of process covered by letter of patent or copy right, tenderer shall indemnify and save Acharya Nagarjuna University from any and all claims for the infringement by reason of the use of any such patent, design, device, material or process to be performed under the contract and indemnify the Acharya Nagarjuna University for any costs, expenses and damages which the Department may be obliged to pay by reason of any such infringement at any time during the execution or after the completion of the work.

17.0 Personnel of Contractor :-

- 17.1 The successful tenderer shall have to employ the following technical staff on full time basis to be available at site:-
- One Graduate Engineer and
 - One Diploma Holder
- 17.2 Even if the contractor himself is a technically qualified person, he shall employ technical staff on the scale prescribed for supervising works when more than one work is undertaken and if they are beyond a radius of 5kms. One or more works within a radius of 5kms. shall be treated as a single work for purpose of employment of technical staff.
- 17.3 The appointment of technical staff shall be on full time basis and they shall be available at work site whenever required by the University Engineer or concerned

Deputy Executive Engineer/ Assistant Executive Engineer/ Assistant Engineer of the work to take instructions.

- 17.4 On production of copies of appointment orders, payment vouchers and other records if any required, and fulfill the requirements mentioned at special conditions to the satisfaction of the University Engineer. Failing to comply with the above, suitable penalty as given below shall be imposed for not engaging the technical personnel required and also the department shall engage the technical personnel required at the cost of the Contractor duly deducting the amount from the Contractor's bills.
- 17.5 In case of failure of the Contractor to employ the technical staff as above, recovery shall be made as a penalty Rs.500/- (Rupees Five hundred Only) per day for Diploma holder and Rs.670/- (Rupees Six Hundred and Seventy only) for Graduate Engineer from his bills for such periods as the staff is not actually present as assessed by the University Engineer.
- 17.6 The University Engineer is the sole judge
- to decide whether qualified technical staff is actually supervising the work, and
 - to decide the actual period of absence of such staff which requires the above recovery to be enforced and his decision is final and binding on the Contractor.

18.0 Time for completion:-

- 18.1 The attention of the tenderer is directed to the contract requirements as to the time of beginning the work, the rates of progress and dates for the completion of the whole work and its several parts. Time is the essence of contract.
- 18.2 The following rate of progress will be required to be maintained by the Contractor as a minimum. **The date of commencement of this work will be the date of signing the agreement but not the date of handing over the site.** Contractor may give a separate time schedule for the completion of the whole work and the consideration will be given to accelerate the programme. It is imperative that the work progresses well ahead of the rate of progress given below:

Percentages of work to be completed based on the contract Lumpsum amount, within a period of 3 (Three) months is as follows:-

Period in months after date of commencement	Percentage of work to be carried Out
By the end of One Month	30% of the Value of work
By the end of Two Months	60% of the Value of work
By the end of Three Months	100% of the Value of work

- 18.3 Detailed program in terms of collection of required material and labour and in terms of finished items of work to continuation of the above rate of progress shall be prepared and got approved by the University Engineer, Acharya Nagarjuna University concerned, which shall be strictly adhered to.
- 18.4 The work entrusted should be completed in every respect and handed over to Registrar, Acharya Nagarjuna University in the time period specified from the date of entering agreement with the Acharya Nagarjuna University.

- 18.5 If the contractor fails to complete the whole of the works or any part thereof or section of the works within the specified periods of individual mile stones (including nay bonafide extensions allowed by the competent authority levying liquidated damages), the University Engineer may without prejudice to any other method of recovery will deduct one tenth of one percent of contract value per calendar day or part of the day for the period of delays subject to a maximum of 10% of the contract value not as a penalty from any monies in his hands due or which may become due to contractor.

The payment or deductions of such damages shall not relieve the contractor from this obligation to complete the works or from any other of his obligations and liabilities under the contract.

The maximum amount of liquidated damages for the whole of the work is 10% of final contract price.

Rs.

For Milestone 1

For Milestone 2

For Milestone 3

The maximum amount of liquidated damages for the whole of the works is ten percent of final contract price.

The milestones will be filled at the time of agreement after obtaining a program of the work.

- 18.6 The University also reserves the right of imposing suitable fines for slackness in the rate of progress of work specified in Tender Schedules.

19.0 VAT/GST :-

19.1 In case, the Contractor opts for the scheme under Section 5 (g) of the A.P.G.S.T. Act, for a tax deduction of 5.00% at source on the total value of the work done, the University will deduct @ 5.00% (Five per cent) of the total value of work done from the bills of the Contractor and will not insist for production of clearance certificate and no assessment of tax will be needed. The amount so recovered will be paid through a crossed cheque/D.D. drawn in favour of the assessing authority having jurisdiction and issue a certificate in Form XX to the Contractor from whom the deductions are made by the Finance Section of Acharya Nagarjuna University

19.2 The contractor has to pay the VAT/ GST on items wherever payable and no separate payment on this account shall be made by the Department. The rates for various items of works shall remain unaffected by any change in the VAT/ GST that may be made from time to time.

20.0 Income Tax

20.1 The tenderer shall produce at the time of final payment income tax clearance certificate failing which final payment will be withheld.

20.2 During the course of contract period, deduction of Income tax at the rate of 2.00% shall be made from the gross payment of each bill of the contract, where the contract value is more than Rs.10,000/- For deduction of Income Tax at lower rates than 2.00%, procedure stipulated under Section 104-c (4) of Indian Income Tax Act, 1961 or prevailing at the time of payment shall be followed.

21.0 Discount Tenders:

21.1 In the event of discount tenders, where discount is above 25% on Estimated Contract Value, the tenderer should pay an Additional Security Deposit in the form of crossed D.D. in favour of the Registrar, Acharya Nagarjuna University or an unconditional Bank

Guarantee on any Scheduled Bank for the difference between the tendered amount and 75% of Estimated Contract value at the time of agreement.

22.0 Conditions on Roof Slabs and Stripping time:-

22.1 The R.C.C. slab laid should be leak proof. After observing for one rainy season, if the roof or floor is found to be perfectly leak proof and no moisture or dampness is seen underneath at ceiling of the slab, the contractor can ask for refund of E.M.D. or Security deposit or Additional security Deposit (if any) from the department. If there are any defects noticed after laying of roof, they must be attended to by the contractor at his own cost. Further the contractor must arrange to get the structure treated as per clause 21 of ISI/BIS Code No.456/1964 at his own cost on the instructions of the Department.

When R.C.C. slab is laid, the following tests may be carried out by the Contractor at his own cost to prove that the slab is impervious.

- a). After the centering is removed and curing period is over the slab shall be put to test by pouring water 15 cms depth and watched carefully for a period of not less than a week.
- b). If leakage is observed immediate action should be taken to rectify it by the contractor at his own cost and again tested to see that there are no leakages.
- c). The officer observing the leakage test shall issue a certificate to this effect before final bill is made.
- d). The variation of thickness of RCC roof slab due to varying spans or special covering materials should not effect the general roof bed which should be uniform unless otherwise shown on drawing or instructed.
- e). For roof slab to be laid MS hooks have to be provided as directed by the department for fixing fans and lights. G.I./PVC pipes of various diameters supplied by the University or by himself at site, have to be provided in the masonry walls or concrete at the specified places as directed by the department for making electrical wiring. No payment will be made to the contractor for these sundry items of work.
- f). For Roof slabs water has to be stagnated for 15 cms depth for one week to test the leakage's if any, If there are any leakages, the contractor has to rectify the same, as directed by the department at the cost of the contractor. No payment can be made to the contractor on this account either for testing or for rectifications thus carried out.

22.2 Stripping Time:

Forms shall not be struck until the concrete has reached a strength atleast twice the stress to which the concrete may be subjected at the time of removal of formwork. The strength referred to shall be that of concrete using the same cement and aggregates with the same proportions and cured under conditions of temperature and moisture similar to those existing on the work. Where possible, the formwork shall be left longer as it would assist the curing.

Note-1:- In normal circumstances and where ordinary Portland cement is used formwork may generally be removed after the expiry of the following periods.

- | | | |
|---|----|--|
| a) Walls, columns and vertical faces of all structural members
Executive Engineer concerned. | .. | 24 to 48 hours as may be decided by the deputy |
| b) Slabs (Props left under) | .. | 3 days |
| c) Beam soffits (Props left under) | .. | 7 days |
| d) Removal of props under Slabs | | |

- i) Spanning upto 4.5 Mts .. 7 days
 ii) Spanning over 4.5 Mts .. 14 days

e) Removal of props under Beams and Arches

- i) Spanning upto 6 Mts .. 14 days
 ii) Spanning over 6 Mts .. 21 days

For other types of cements used in the concrete works, the stripping time recommended for ordinary Portland cement may be suitably modified.

Note-2:- The number of props left under, their sizes and description shall be such as to be able to safely carry the full dead load of the slab, beam or arch, as the case may be, together with any live load likely to occur during curing or further construction.

22.3 All cement concrete shall be machine mixed and machine vibrated.

22.3.1. The proportions of cement concrete specified on the above schedule are nominal and are indication of approximate proportion of cement, fine aggregate and coarse aggregate which may have to be latered, suitably at site to obtain desired strength and workability. However, the quantify of cement shall not be less than specified below:

<u>Nominal Mix</u>	<u>Cement in bags of 50 kgs per one cubic metre (net) of cement concrete</u>
a 1 : 1.5 : 3	.. 8.84 bags of 50 kgs
b 1 : 2 : 4	.. 6.62 bags of 50 kgs
c 1 : 2.5 : 5	.. 5.30 bags of 50 kgs
d 1 : 3 : 6	.. 4.42 bags of 50 kgs
e 1 : 4 : 8	.. 3.31 bags of 50 kgs
f 1 : 5 : 10	.. 2.65 bags of 50 kgs
g 1 : 6 : 12	.. 2.21 bags of 50 kgs
h 1 : 8 : 16	.. 1.66 bags of 50 kgs

22.3.2 Theoretical requirement of cement shall be as given below:

Sl. No.	Description of Items	Unit	Quantity of Cement motor required per unit
1.	R.R. in Cement mortor	1 cum	0.34 cum
2.	C.R. 1 st sort in cement mortor	1 cum	0.28 cum
3.	C.R. 2 nd sort in Cement mortor	1 cum	0.32 cum
4.	Cut stone in cement mortor	1 cum	0.16 cum
5.	Brick work in cement mortor	1 cum	0.20 cum
6.	Plastering 20 mm thick	10 smt	0.21 cum
7.	Plastering 12 mm thick	10 smt	0.15 cum

8.	Weather proof course with two courses of flat tiles including pointing	10 smt	0.47 cum
9.	Pointing with cement mortor	10 smt	0.02 cum
10.	Ellies pattern flooring 20mm thick	10 smt	120 kgs. of cement
11.	Other items of work	As decided by the University Engineer	

23.0 Construction Materials:-

23.1 The contractor has to make his own arrangements for procurement, supply and use of all construction materials including cement, steel and blasting materials etc., and compliance of following should be ensured standard firms of ISI marks:-

- a). All materials so procured should confirm to the relevant specifications indicated in the tender documents or to alternative standards or specifications which are equal or higher in quality than those specified subject to University Engineer's prior review and written approval. Difference between the standards specified and the proposed alternatives must be fully described by the contractor and submitted to the University Engineer atleast 30 days prior to the date when the contractor desires the University Engineer's approval. In the event University Engineer determines that the alternatives do not ensure equal or higher quality, the same will be rejected and the contractor shall comply with the standards set forth within the documents.
- b). All materials to be supplied should fully confirm to provisions of A.P.S.S./I.S./B.I.S. specifications as applicable.

23.2 Materials, Workmanship, Period and Certificate of maintenance and Defect Liability:-

Quality:-

All materials and workmanship shall be of the respective kinds described in the contract and in accordance with University Engineer's instructions and shall be subjected from time to time to such tests as the University Engineer may direct at the place of manufacture or fabricator or on the site or at such other place or places as may be specified in the contract, or at all or any of such places. The contractor shall provide such assistance, instruments, machines, labour and materials as are normally required for examining, measuring and testing the work and the quality, weight or quantity of any materials used and shall supply samples of materials before incorporation in the works for testing as may be selected and required by the University Engineer.

23.3 Tests, inspection of defective materials:-

The contractor shall without extra cost provide samples and cooperate in the testing of materials. The University Engineer shall have access at all times to the places of storage and where materials are being manufactured and processed for use in the works under contract to determine whether their manufacture and process are proceeding in accordance with the drawings and specifications. The University Engineer shall during the progress of the works have power to order in writing from time to time in respect of the following:-

- a). The removal from the site, within such time or times as may be specified in the order, of any materials which in the opinion of the University Engineer are not in accordance with contract.
- b). The substitution of proper and suitable materials, and
- c). The removal and proper re-execution not with-standing of any work which in respect of materials or workmanship is not in the opinion of the University Engineer in accordance with contract.

The contractor shall carry out such order (s) at no extra cost to the University. In case of default on the part of the contractor, in carrying out such order (s), the University Engineer shall be entitled to employ and pay other persons to carry out the same and all expenses consequent thereon or incidental thereto shall be recoverable from the contractor by University Engineer or may be deducted by the University Engineer from any amounts due to or which may become due to the contractor.

In lieu of removing the work or materials not in accordance with the contract, the University Engineer may order such work or materials to remain and in that case such work or materials may be paid at the reduced rates as may be decided by University Engineer. However, any action by the University Engineer under this Para shall not in any way absolve the contractor from his responsibility and liabilities as per conditions of contract.

23.4 Cement

23.4.1 General:

As per clause 4 of I.S. 456-1978 for the purposes of these specifications, cement used shall be any of the following with the prior approval of the University Engineer. Ordinary Or low heat Portland cement conforming to I.S, 29 - 1976 (I.S) (Specification for ordinary and low heat Portland cement third division)and 2 Portland pozzolana cement conforming to I.S. 1489- 1976 (I.S. specification for Portland pozzoland cement second devision). The cement should be of grade 53.

The provisions of this paragraph apply to cement for use in cast-in-place concrete required under these specifications. Portland cement required for items such as concrete pipes, pre-cast concrete structural members and other pre-cast concrete products, for grout and mortar and for other item is provided for in the applicable paragraphs of these specifications covering the terms for which such Portland cement is required.

The water used in making and curing of concrete, mortar and grout shall be free from objectionable quantities of slit, organic matter, injurious amounts of oils, acids, salts and other impurities etc., as per I.S. specifications No.456 - 1978.

The University Engineer will determine whether or not such quantities of impurities are objectionable. Such determination will usually be made by comparison of compressive strength, water requirement, time of set and other properties or concrete made with distilled or very clean water and concrete made with the water proposed for use. Permissible limits for solids when tested in accordance with I.S. 3025-1964 shall be as tabulated below.

Permissible limit for solids

	Maximum permissible limit
1. Organic	200mg/ litre.
2. Inorganic	3000
3. Sulphates (as SO4)	500
4. Chlorides (as CL)	2000 - for plain concrete work and 1000 mg/liire for R.C.C. work
5. Suspended matter	2000

23.4.2 The Contractor has to make his own arrangements for the procurement of cement of required specification, required for works subject to the following:-

23.4.3 The Contractor shall procure 43 grade ordinary Portland cement confirming to IS 8112-1989 or 53 grade ordinary Portland cement confirming to IS 12689-1900 in standard packing of 50 kg/Bag as fresh as possible from the authorized manufacturers/dealers. Cement procured from non B.I.S. Licence firms will not be allowed. The contractor shall make necessary arrangements at his own cost to the satisfaction of University Engineer for actual weighment of random samples from the available stock and shall confirm with the specification laid down by the **Bureau of Indian Standards** or other standard institutions, as the case may be. Cement shall be got tested for all the tests as directed by the University Engineer at least once in a month in advance before the use of cement bags brought and kept at site

godown. The testing of cement shall be conducted in accordance with I.S. 4031-1988 and I.S. 4032-1968 and I.S. 3535-1986. Cement with bags, required for testing shall be supplied by the Contractor free of cost.

- 23.4.4 The Contractor has to purchase the cement on the name of work and on the name of contractor. The cement without mentioning the above two names will not be accepted. Vendor's test certificates and weighment bills are to be furnished to the University Engineer. Any quantity purchased without test certificates will not be accepted for use on the work.
- 23.4.5 The Contractor should store the cement of 60 days requirement at least one month in advance to ensure the quality of cement so brought to site and shall be stored in accordance with clause No.112 APSS. The Contractor shall not remove the same without the written permission of the University Engineer. The Contractor shall forthwith remove from the works area any cement that the University Engineer may disallow for use on account of failure to meet with required quality and standard.
- 23.4.6 No cement procured by the Contractor shall be used in any work until notice has been given by the University Engineer, that test results are satisfactory. Physical and Chemical tests requirement shall confirm to IS 269-1989.
- 23.4.7 The Contractor has to furnish the test certificates samples for testing of each batch and each consignment to University Engineer immediately after receipt of the cement into the godown for verification and testing.
- 23.4.8 The Contractor will have to construct temporary sheds for storing cement having capacity not less the cement required for 30 days use at appropriate locations at the work site. University Engineer or his representatives shall have free access to such stores at all times for verification of the stock received, used on works and balance. A stock register should kept in the store shed to facilitate such verification. If difference is observed based on the carriage inwards, carriage outwards, theoretical requirement of the cement for the finished work, the contract will be cancelled and the contractor will be black listed.
- 23.4.9 The Contractor shall further, at all times satisfy the University Engineer on demand by production of records and books or by submission of returns and other proofs as directed that the cement is being used as tested and approved by the University Engineer for the purpose and the Contractor shall at all times keep his records up to date to enable the University Engineer to apply such checks as he may desire.
- 23.4.10 Cement, which has been unduly long in storage i.e. more than three months with the Contractor, shall invariably be tested to ascertain that it satisfied the acceptability requirements, any reduction in strength is observed in the tests alternatively has deteriorated due to inadequate storage and thus become unfit for use on the work shall be rejected by the department and no claims will be entertained. The Contractor shall forthwith remove from the work areas any cement as the University Engineer may disallow for use on work and replace it by cement complying with the relevant Bureau of Indian Standards.
- 23.4.11 Stacking and storage of cement at site shall be as per IS 4082-1977.

23.5 Steel

- 23.5.1 The various types of steel shall conform to the relevant IS specifications as provided in APSS No.126.
- 23.5.2 The Contractor has to make his own arrangements for procurement of tested mild steel (MS) reinforcement bars, High Yield strength deformed bars (HYSD), rods and structural steel etc., required for the works only from the main or second producers manufacturing steel, to the prescribed specification Bureau of India Standards or equivalent and licensed to affix or

other equivalent, certifications marks and acceptable to the University Engineer. Necessary ISI test certificates conforming to IS No.1786-1985 are to be furnished to University Engineer before use on works. The original bills of procurement should be submitted to the University Engineer for making payment of the item.

- 23.5.3 The Contractor has to purchase the steel on the name of work and on the name of Contractor. The steel without mentioning the above two names will not be accepted. Vendor's test certificates and weighment bills are to be furnished to University Engineer. Any quantity purchased without test certificates will not be accepted for use on the work.
- 23.5.4 The University Engineer or his representatives shall have free access to steel stored at site, at all times for verification of the stocks received, used on works and balance. A stock register should be kept in the store shed to facilitate such verification. If any difference is observed based on the carriage inwards, carriage outwards, theoretical requirements of the steel for the finished work, the contract will be cancelled and the contractor will be black listed.
- 23.5.5 The Contractor has to furnish the test certificates and samples for testing of each batch and each consignment to the University Engineer immediately after receipt of the steel at the work site for verification and testing.
- 23.5.6 No steel procured by the Contractor shall be used in any work until notice has been given by the University Engineer that the test results are satisfactory.
- 23.5.7 Storage of steel at site shall conform with IS 4082-1977.
- 23.5.8 The Diameter and weight of steel should be as follows:

Sl. No.	Diameter of Rod	Sectional weight in Kg/Rmt both for plain and HYSD Steel
1.	6 mm	0.222
2.	8 mm	0.395
3.	10 mm	0.617
4.	12 mm	0.888
5.	14 mm	1.208
6.	16 mm	1.578
7.	18 mm	2.000
8.	20 mm	2.466
9.	22 mm	2.800
10.	25 mm	3.854
11.	28 mm	4.830
12.	32 mm	6.313
13.	36 mm	7.990
14.	40 mm	9.864

Note:- If the rods other than those diameters specified above are procured, the weights shall be as per Standard Steel tables.

23.6 Stone for Masonry

23.6.1 General:

The stones used for stone masonry shall conform to the relevant specifications of Clause 4.1 of I.S.1597 (Part-1) 1967 code of practice for construction of stone Masonry Part-I Rubble Stone Masonry.

The stone of the required quality shall be obtained from the quarries which conform to the relevant specifications indicated in the tender documents. The common types of natural stones which are generally used are Granite and other

igneous rocks, and shall be free from rounded, worn or weathered Surfaces or skin or coating which prevents the adherence of mortar. All stones used shall be clean of uniform color and texture, strong, hard and durable. The percentage of water absorption shall not exceed 5% by weight as determined In Accordance with I.S, 1124-1974.

23.6.2 Cost:

The cost of collecting the stones for masonry will not be paid for separately and their cost of quarrying, transporting, stacking, royalty seigniorage charges shall be included in the unit price per cubic meter in the relevant item in the bill of quantities.

23.7. Brick for Masson

23.7.1 General:

Bricks used for brick masonry shall conform to the relevant specifications of I.S. 1077-1986 common burnt clay building bricks. Bricks shall be hand or machine molded. They shall be sound, hard, and homogeneous in texture well burnt and shall give a clear ringing sound when struck. They shall be clean, free from warping, distortion, cracks, chips, flaws, stones and Nodules of free lime. Unless otherwise specified the sizes of the bricks shall be 190 x 90 x 90 mm. The compressive strength shall not be less than 40 Kg/scum. The percentage of water absorption shall not be more than 20 percent by weight alter 24 hours immersion in cold water.

23.7.2 Cost:

The cost of collecting the bricks for masonry will not be paid for separately and their cost including the cost of transporting, slacking, royalty seigniorage charge shall be included in the unit price per cubic meter in the relevant item in the bill of quantities.

23.8 Sand for Masonry:

23.8.1 General :

Sand shall generally conform to specifications given in paragraph 10.1.5 except that the sand for mortar shall conform to the grading of sand given in clause 4 of IS. 2 1 1 6-1989 as detailed below in Table.

Table I.S. Sieve Designation	Grading of Sand for use in Masonry Mortars: Percentage passing by Mass
I	2
4.75 mm	100
1.18mm	70to 100
600 Micron	40 to 100
300 Micron	5 to 70
1 50 Micron	0 to 15

A sand whose grading falls out-side the specified limits due lo excess or Deficiency of coarse or fine particles may be processed to comply with the standard by screening through a suitability sized sieve and /or blending with required quantities of suitable size and particles. The procurement of sand for masonry shall confirm to the specifications given in paragraph 10.1.5

23.8.2 Cost:

The cost of sand for masonry will not be measured and paid separately and the cost of sand including the cost of stripping, transporting and storing and royalty charges shall be included in the unit price per cubic meter bid therefore in the relevant item of work in the bill of quantities for which this and is required.

24.0

AMENDMENTS TO A.P.S.S.**(Under Clause of P.S. to A.P.D.S.S.)****(Vide G.O.Ms.No.97Tenderer (R & B) (B.III) Dept. dt.15/05/97)**

Certain clauses of preliminary specifications to A.P.S.S. (as adopted in Andhra Pradesh) are modified to the extent indicated below:

Sl. No.	Preliminary Specifications	Amendments approved
1.	59	At the end of clause 59, the following shall be added, namely, "Liquidated damages on the Contractor for the delay in construction may be levied".
2.	62	<p>For the existing sub-clauses (a) & (b) of clause 62 of P.S., the following shall be substituted namely:-</p> <p>(a). Payment for the work done by Contractor will be made on the basis of the measurements recorded in the measurement books or level field books by an officer not below the rank of an Assistant Engineer/Assistant Executive Engineer and check measure by an officer not below the rank of a Deputy Executive Engineer / University Engineer.</p> <p>The measurements will be recorded at the various stages of the work, while it is in progress, for the proper assessment of the qualities of work done, and also after the work is completed or when the contract is determined. The Contractor or his authorised agent shall be present at the recording of each set of measurement and accept them, then and there, so as to avoid disputes at a later stage. The set of measurements and check measurement may also be taken by the Department even in the absence of the Contractor or his authorized agent, three days after the issue of a notice to the Contractor, in writing of such intimation by the Department.</p> <p>(b). In case of over payment or wrong payment made, if any, to the Contractor due to wrong interpretation of the provisions of the contract, the A.P. Detailed Standard specification or otherwise, such unauthorized payment will be deducted in the subsequent bills or final bill of the work, or failing that, from the bills under any other contract with the Government from the Contractor or any time thereafter, from his security deposits available with the Department.</p>

SPECIAL CONDITIONS

NAME OF WORK: CIVIL WORKS FOR LIFT FACILITY AT B.R. AMBEDKAR
MEMORIAL LIBRARY IN ANU CAMPUS

1.0 Inspection of site and alignment by Tenderer:-

Tenderers when submitting the tenders should certify in the tender that they have actually inspected the site/Building and alignment of work and have examined before the nature and extent to various kinds of soils at various depths and have based their tenders on such Examination by them.

The Contractors shall make their own arrangements for all the tools and plant. A statement giving brief particulars of equipment and resources that will be at their disposal for the execution of this work, shall accompany the tender (Annexure – IV)

2.0 Settlement of Claims:-

2.1 Expect as otherwise providing in the contract any disputes and differences arising out of or relating to the contract shall be referred to adjudication as follows:-

2.2 Settlement of all claims upto Rs.50,000/- in value and below by way of arbitration to be referred as follows:-

Claim upto Rs.10,000/-

in value --- Registrar

Acharya Nagarjuna University,

Nagarjuna Nagar 522 510

Claims above Rs.10,000/-

and upto Rs.50,000/- in value --- Registrar, Acharya Nagarjuna Nagar

2.3 The arbitration proceedings will be conducted in accordance with the provisions of the Arbitration Act, 1940, and as amended from time to time. The arbitrator shall invariably give reasons in the award.

2.4 Settlement of all Claims above Rs.50,000/- in value:-

All claims above Rs.50,000/- in value shall be decided by the Civil Court of competent jurisdiction by way of regular civil suit and not by arbitration.

2.5 A reference for adjudication under this clauses shall be made by either party to the contract within six months from the date of intimating the Contractor of the preparation of final bill or his having accepted payment which ever is earlier.

2.6 A reference clause of A.P. Standard Specification stands modified to the extent provided in this clause.

Note:- Claims means all claims in the contract.

3.0 Taxes

All taxes such as GST, VAT, Seigniorage, royalties etc. in respect of materials to be consumed on the work and also in the finished item of work etc. must be born by the Contractors themselves.

4.0 Specifications

- 4.1 The work should be carried out as per the relevant clauses of A.P.S.S., BIS/ISI codes and as per specification in tender documents to the satisfaction of the department.

5.0 Supplemental Items

- 5.1 The Contractor is bound to execute all supplemental items that are found essential, incidental, contingent and inevitable during the execution of work at the rates to be worked out as detailed below:-
- 5.2 For all items of work in excess of the quantities shown in Schedule-A of the tender, the rate payable for such items shall be sanctioned estimate rate plus or minus the over all tender percentage accepted by the competent authority.
- 5.3 For new items which do not correspond to any in the agreement the rate shall be Standard Schedule of rate of the year based on which the sanctioned estimated was approved plus or minus the overall tender percentage.

6.0 Rehandling Charges:-

- 6.1 No charges towards rehandling of excavated soils or materials will be paid for if deposited at the place other than those earmarked by the University Engineer, Acharya Nagarjuna University.

7.0 Minimum Wages Act:-

- 7.1 The Contractor shall have to abide by the Minimum Wages Act 1948 and the subsequent amendments to it.

8.0 Site Clearance:-

- 8.1 Clearing the site, taking mark out, Marking Center Lines, construction of necessary pillars for bench mark and mark out etc., shall be done at the cost of the contractor. Final clearance of the site shall be done by the Contractor at his own cost.

9.0 Over Payment or Wrong Payment:-

In case of over payment or wrong payment made, if any, to the Contractor due to wrong interpretation of the provisions of the contract, the Andhra Pradesh Standard Specifications or otherwise and due to oversight or calculation error etc., such unauthorized payment will be deducted in the subsequent bills or final bill of the work or failing that from the bills under any other contract with the Nagarjuna University from the Contractor or at any time thereafter from his security deposit available with the Acharya Nagarjuna University. If there is no payment due to the Contractor in Acharya Nagarjuna University the amount will be collected from his assets as Government dues by the Revenue Authorities.

10.0 Escalation:-

- 10.1 No escalation in rates will be paid and the tenderer has to quote his offer taking into account the period involved for the completion of work.

11.0 Accident Relief and Workmen Compensation:-

- 11.1 The Contractor shall at all times indemnify the Nagarjuna University against all claims which may be made under the Workmen's Compensation Act or any statutory modification thereafter or rules of compensation payable in consequence of any accident or any injury sustained by any workmen engaged in the performance of the work relating to this contract.

- 11.2 In all case of personal injury to the workmen employed by the Contractor for this work for which Contractor is liable to pay compensation under Workmen's Compensation Act, he shall pay the prescribed medical aid and the fee to the Medical Officer for issue of C&D forms as prescribed failing which the said medical aid cost and fee will be paid to the Medical Officer by the Acharya Nagarjuna University and recovery effected from the Contractor's bill.
- 11.3 No claim shall be entertained if the same is not represented in writing to the Registrar, Nagarjuna University within 15 days of its occurrence.

12.0 Return of Plant and Machinery:-

- 12.1 _____ Blank _____
- 12.2 _____ Blank _____

13.0 Apprentices Act:-

The Contractor shall during the currency of the contract as called upon by the University Engineer, Acharya Nagarjuna University, engage and also ensure engagement by his agents and other employed by the Contractor in connection with the work, such number of apprentices in the categories as required by the University Engineer, Acharya Nagarjuna University and for such periods as may be required by the Apprentices Act 1961 and the rules made thereunder and shall be responsible for all obligations of the employees under the said Act including the liability to make payment to apprentices are required under the said Act.

14.0 Quality Control:-

In addition to the normal inspection by the regular University Engineering staff in charge of the work, the work will also be inspected by the authorized representatives/nominees of the Registrar, Acharya Nagarjuna University and also **R&B Dept., Quality Control Wing** during the execution of work and during defects liability period, if any sub-standard work or materials or excess payments are noticed with reference to the measurement books etc., during inspection, recovery will be ordered based on their observations and these will be affected by the University Engineer from the bills of the Contractor. **Test reports shall be Submitted by the contractor to the University as well as R&B at his own cost. Intermediate/final bill will be paid to the contractor only after receipt of the report from the Quality Control Wing of R&B.**

15.0 Drawings to be kept at Site:-

- 15.1 One copy of the drawings furnished to the Contractor shall be kept by the Contractor on the site and same shall at all reasonable times be available for inspection and use by the Departmental Officers.
- 15.2 Order Book :** An order book shall be kept at the Engineering Office on the site of the work. As far as possible all orders regarding the work are to be entered in this book. All entries shall be signed and dated by the Departmental Officers who issues such orders and by the Contractor or by his representative. The order book shall not be removed from the work spot except with the written permission of the University Engineer, Acharya Nagarjuna University.
- 15.3 Variations by way of modification omissions or additions.
- 15.4 For all modifications, omissions from or additions to the drawings and specifications, the University Engineer, will issue revised plans, or written instructions, or both and no modification omission or additions shall be made unless authorized and directed by the University Engineer in writing.
- 15.5 The University Engineer shall have the privilege of ordering modifications, omission or additions at any time before the completion of the work and such orders shall not operate to annual those portions of the specifications with which said changes do not conflict.

16.0 Security Measures:-

- 16.1 The Contractor shall be responsible for the security of works for the duration of the contract and shall provide and maintain continuously adequate security personnel to fulfill these obligations. The requirements of security measures shall include but not limited to maintenance of order on the site, provision of all lighting, fencing, guard, flagment and all other measures necessary for the protection of the works within the colonies, camps and elsewhere on the site, all materials delivered to the site, all persons employed in connection with the works continuously throughout working and non-working period including nights, Sundays and Public Holidays for duration of the contract.
- 16.2 Other Contractors working in the site concurrently with the Contractor will provide security for their own plant and materials. However, their security provisions shall in no way relieve the Contractor of his responsibilities in this respect.
- 16.3 Separate payment for provision of security services will not be made and its cost shall be deemed to have been included in the offer of the Tenderer.
- 16.4 It shall be responsibility of the Contractor to store explosives, if any required in accordance with the rules of explosives act other rules that any be in force for the time being very carefully at a safe place.

17.0 Insurance:-

- 17.1 The Contractor shall provide in the joint names of the Registrar, Acharya Nagarjuna University and the Contractor, the insurance cover for the period from the starting date and upto the end of the defects liability period (i.e.) 24 (Twenty Four) months, for the accounts and deductibles stated in the contract for the following events which are the Contractor's risks:-
- (a). Loss of or damage to the works plant and materials
 - (b). Loss of or damage to the Equipment
 - (c). Loss of or damage to property (except the works plant materials and equipment) in connection with the contract, and
 - (d). Personal injury or death
- 17.2 Policies and certificates for insurance shall be delivered by the Contractor to the Registrar, Acharya Nagarjuna University for the Registrar's approval before the start date. All such insurance shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.
- 17.3 If the Contractor does not provide any of the policies and certificates required the Registrar may effect the insurance which the Contractor should have provided and recover the premiums, the Registrar had paid, from payment of otherwise due to the Contractor or from the E.M.D. Security Deposit, etc. of the Contractor. If no payment is due, the payment of the premiums shall be a debt due from the Contractor.
- 17.4 Alterations to the terms of an insurance policy shall not made without the approval of the Registrar.
- 17.5 Both parties shall comply with all conditions of the insurance policies.
- 17.6 On production of policies and certificates to the satisfaction of the Registrar, the Contractor will be reimbursed the premium amount paid by him towards insurance of this work to the extent of actual premium amount paid subject to the condition that the reimbursement amount should not exceed the Lump sum provision provided the Part - II of Schedule 'A' failing in comply with the above the reimbursement shall not be allowed and the Registrar, should take the policies at the cost of the Contractor duly deducting the premium from the Contractor's bills.

18.0 Power Supply:-

- 18.1 In case the Contractor desired to buy electricity from Acharya Nagarjuna University he shall be charged for the electric energy consumed at the rate of Rs.4.50/- (Rupees Four and paise Fifty Only) per each KWH.
- 18.2 Electricity supply required for the work will be made available by Acharya Nagarjuna University from the existing electric lines only. The tapping point from the existing electric lines will be decided by the University Engineer. The main switch and KWH meters to register the electric energy supplied shall be provided and installed by the Contractor. Contractor shall provide all necessary cables, fittings etc., in order to ensure a proper and suitable supply of electricity for the execution of works. All Contractor's Electrical installations shall conform to and be strictly in accordance with Indian Electricity Act and rules. More over the layout of cables etc., as proposed by him shall be as per plan approved by the University Engineer.
- 18.3 Acharya Nagarjuna University do not guarantee continuity of Electrical supply and no compensation shall be allowed if the supply becomes intermittent or for breakdown in the system.
- 18.4 The Contractor shall satisfy all the conditions of rules required as per Indian Electricity Act 1910 and under Rule-45 (i) of the Indian Electricity Rules, 1856 as amended from time to time and other pertinent rules.
- 18.5 The power shall be used for bonafied work and under this contract work only.

19.0 STORAGE OF CEMENT

- 19.1 It is often necessary to store Portland cement, some times for a period of months. This is particularly true when transportation facilities must be used to their capacity and deliveries.
- 19.2 Portland cement readily absorbs moisture not only in the form of free water but also moisture from the atmosphere or from damp material in contact with it and becomes hydrated and loses strength. It is necessary therefore that it should be protected from absorption of moisture before it is used if it is to fulfill its function. An absorption of one or two percent of water has not appreciable effect but further amounts of absorption, results in hardening of the cement and reduced strength. If the absorption exceeds 5%, the cement is for all ordinary purposes, ruined. Finally ground cement stored in stacks tend to deteriorate more than coarse cements. In this respects normal hardening Portland cement and high alumina cements are least effected than rapid hardening Portland cement.
- 19.3 American, Spanish and German experiments have shown that on average, the strength of cement stored in bags is reduced, as given below:-
- After 3 months by 15 to 20 per cent.
- After 6 months by 20 to 30 per cent.
- After 12 months by 30 to 50 per cent.
- After 2 years by 40 to 50 per cent.
- After 4½ years by 50 to 60 per cent.
- 19.4 These figures prove that special attending should be paid to the storage of cement, even when its strength is equal to or more than the specified normal strength.
- 19.5 With an extensive range of climate conditions it is difficult to lay down universal rules for the storage of cement. The general principle should always be kept in mind that

it must be protected as far as possible from any form of moisture prior to mixing it for making concrete mortar.

19.6 During the dry weather in main parts of the country where the relative humidity of the atmosphere even in nights is low, (that is to say when there is very little, moisture in the air), little or no protection may be necessary and the cement in its stock may require no more than a tarpaulin through for the stack. But there are parts of the country particularly near the coast where the atmosphere is always damp at any time of day or night and then greater precautions are necessary. In places such as the west coast and the Nilguries, during the period when heavy rain falls are encountered, such greater care has to be taken of the cement and proper protection is provided to the cement from the dampness.

19.7 Whenever there is any possibility of the cement exposed to moisture either in the atmosphere or actual rain it should be stored be weather proof construction, preferable with terraced roofing with a sound wooden or ground to ensure that it is damp proof building. Slant roofing's are prohibited because of their tendency to leak. Corrugated sheet roofing has tendency to condense moisture and should be protected by shield to prevent wind and rain driving through. Cement should not be placed directly on cement plaster flooring and other types of flooring commonly meant with, which are not damp proof. A wooden platform for false floor or sheet of water proof paper should be provided.

If none of these, is possible, then floor should be covered with straw, hay, cinder ir ash or such other material densely and uniformly packed to a thickness of at least 2.5 cms and over a laid tarpaulins or old cement bags. Windows and ventilators, if any, should be tightly shut to prevent from circulation of air inside the stores. Drainage should be provided, if necessary, to prevent accumulation of water in the vicinity of the store.

19.8 Cement should be stored in piles arranged parallel to the walls. It is not advisable to pile bags against the walls and an allowance of at least 0.3 m all round should be made between the exterior walls and piles. At least 0.6m wide gap should be left for each access and delivery. Successive consignments covered with separate waterproof covers as a measure of protection and to prevent the free circulation of air as each consignment will bring lot of proper fresh air will bring in more moisture. Once the cement has been properly stored, it should not be disturbed until it is to be used. There is no advantage in moving and stacking the bags to reduce waste house set as this practice only exposes fresh cement to the air, resulting in loss due to the shifting of cement through the cloth mesh and in damage to the stacks.

19.9 Cement required for use immediately after delivery to the site may be stored in the open, on a raised damp proof floor so long as it is fully protected by tarpaulin or either weather resisting covers. Storage under these conditions should be limited to 48 hours. The tarpaulin should be raised well above the top most tier of bags and must be sloped for rapid drainage in case of showers.

19.10 The storage place required for a given quantity of cement can be calculated from the following data. If stored in bags laid on their side the area required is 5.00 Sq. M to 6.00 Sq. M per ton, if laid in a single tier and proportionately less if laid on more than one tier. If the bags are stacked in any other manner, the minimum area provided should be increased to allow space for passages etc., to avoid ware-house set, the number of bags in a tier, in any case, not more than 15 bags. If staked higher than this, the pressure on the bottom bags is liable to burst at or form clad in damp water, apart from handling difficulties because of their height.

19.11 Consignments should be used in the same sequences as they are delivered. To ensure this the date of arrival of each consignment should be clearly indicated. This is best done by tying a piece of country twine or cord to the end bags in the bottom most tier of the days pile, taking the two pieces of card up the sides and along the top of pile and typing the main at center. The date of receipt in the store being clearly written on a bin card. Dead storage where the cement remains in place for

long time, other consignments of cement which come in and go out should be avoided.

19.12 In issuing cement from a store the cement bags should be removed in vertical column of the pile and not horizontal so as to avoid dead storage space.

19.13 As a rule cement should not be stored longer than three months and if this time is exceeded, the material should be retested. Especially, in the rainy season prolonged storage should be avoided. If stock is likely to be held over for more than three months anticipatory measures should be taken to use it on the works.

19.14 Cement that has become defective due to storage, in damp positions and due to exposure to the weather is generally useless for making concrete and should be removed from the site. Air set lumps that can be broken down to flow into pieces. If such lumps are numerous, it is easier to screen them out and discard them if the proportion of air cement is considerable. The fine material after screening should be tested to determine whether it has become defective.

19.15 The cement in bags is stored in high piles for long periods there is, often, a slight tendency in the lower layers to harden caused by the pressure above, this is known as warehouse set. Cement in this condition, can be reconditioned by letting each bag drop on a solid surface for using the cement contained.

20.0 Fair Wages Clause:-

20.1 The Contractor shall pay not less than fair wages to laborers engaged by him on the work.

20.2 Fair wage means wages, whether for time or place of work, notified by the Government from time to time in the area in which the work is situated.

20.3 The Contractor shall notwithstanding the provisions of any contract to the contrary cause to be paid to the laborer indirectly engaged on the work, including any labor engaged by the sub-contractor, in connection with the said work as if the laborers had been directly employed by him.

20.4 In respect of labor directly or indirectly employed on the works for the purpose of the contractor's part of the agreement, the Contractor shall comply with the rules and regulations on the maintenance of suitable records prescribed for this purpose from time to time by the Government.

He shall maintain his accounts and vouchers of the payment towards wages to the laborers to the satisfaction of the University Engineer, Acharya Nagarjuna University.

20.5 The University Engineer shall have the right to call for such records required to satisfy himself of the payment of fair wages to the laborers and shall have the right to deduct from the contract amount suitable amount for making good the loss suffered by the worker or workers due to breach of the "Fair Wages" clause to the workers.

20.6 The Contractor shall be primarily liable for all payments to be made and for the observance of the regulations framed by the Government from time to time without prejudice to his right to claim indemnity from his sub-contractors.

20.7 Any violation of the conditions above shall be deemed to be breach of his contract.

21.0 RULES FOR THE PROVISION OF HEALTH AND SANITARY ARRANGEMENT FOR WORKERS

The Contractor's special attention is invited to clause 37, 38, 39 and 51 of the preliminary specification to the Andhra Pradesh Standard Specifications and he is requested to provide at his own expenses the following amenities to the satisfaction of the University Engineer.

21.1 First Aid:-

At the work site there shall be maintained in a readily accessible place, first aid appliances and medicine including adequate supply of sterilized dressing and sterilized cotton wool. The appliance shall be kept in good order. They shall be placed under the charge of a responsible person, who shall be readily available during working hours.

21.2 Drinking Water:-

Water of good quality fit for drinking purpose shall be provided for the worker on a scale of not less than 9 litres per head per day.

- a). Where drinking water is obtained from an intermittent public water supply, each work site shall be provided with a storage tank, where such drinking water shall be stored.
- b). Every water supply storage shall be at a distance of not less than 10 M. from any latrine, drain or other source of pollution where water has to be drained. Any existing well, which is within such proximity of any latrine, drain or other source of pollution, the well shall be properly chlorinated before water is drawn from it for drinking. All such wells shall be dust and waterproof.
- c). A reliable pump shall be fitted to each inner well. The trap door shall be kept locked and opened only for inspection or cleaning which shall be done at least once a month.

21.3 Washing and Bathing Place:-

Adequate washing and bathing places shall be provided separately for men and women. Such place shall be kept clean well drained. Bathing or washing should not be allowed in or near any drinking water well.

21.4 Latrine and Urinals:-

Latrines and urinals shall be provided within the area of every work site in an accessible place for men and women separately. For each of them shall be on the following scales, the scale as directed by University Engineer in any particular case:-

- | | | |
|--|-----|---|
| 1. Where the number of persons employed does not exceed 50 | --- | 2 |
| 2. Where the number of persons employed exceeds 50 but does not exceed 100 | --- | 3 |
| 3. For every additional 100 | --- | 3 |

If women are employed separated latrines and urinals separated from those for men, shall be provided on the same scale.

Except in work site provided with water flushed latrines connected with a water borne sewage systems, all latrines shall be cleaned at least four times daily and at least twice during working hours and kept in a strict sanitary condition. The receptacles shall be tarred inside and outside at least once a year.

The Excreta from the latrines shall be disposed off, at the Contractors expenses, in out way pits approved by the local public health authority. The Contractor shall also employ adequate number of sanitary workers and conservancy staff of keep the latrines and urinals in a clean condition.

21.5 Shelters during Rest:-

At the work site there shall be provided free of cost suitable sheds, one for meals and other for rest for use of workers.

21.6 Crunch:-

At every work site at which 50 or more women workers are ordinarily employed there shall be provided two huts of suitable size for the use of children under the age of 6 years. One hut shall be used for infant's games and the other as a bed room. The huts shall not be constructed on a standard not lower than the following:-

1. Thatched roofs
2. Mud floors and wall
3. Planks spread over the mud floor and covered with matting

The huts shall be restricted to children, their attendants and mothers of the children.

21.7 Canteens:-

A canteen on a moderate scale and a cook shall be provided for the benefit of workers if it is considered essential.

21.8 Sheds for the Workers:-

The Contractor should provide at his own cost, sheds for housing the workers. The sheds shall be on a standard not less than the cheap shelter type to live in which the workers in the locality are accustomed. The sheds are to be in rows with 1.5 Mts, clear space between sheds and 2.5 Mts clear space between roof, if conditions permit. The workers camp shall be laid out in units of 400 persons. Each unit to have a clear space of 1.2 Mts. each side.

21.9 Land should be acquired temporarily for storing Contractor's materials or for housing their staff. The Contractor should make his own arrangements for temporary acquisition of land required for storing his materials and for the housing of his staff at his own expense.

22.0 Payments and Certificates:-

22.1 Payment will be made to the Contractor under the Certificates which will be issued at reasonable frequent intervals by the University Engineer or by Deputy Executive Engineer concerned. The details of such payments which will be made within fourteen days of the each certificate are set forth in the Schedule under the article. The deductions from bills shown there in are the normal deductions to be made and do not include any recoveries of forfeiture under penal clauses. The Contractor when applying for a certificate shall prepare a sufficiently detailed bills based on the figures of quantities and rates in the contract schedule 'A' to enable the University Engineer or the Deputy Executive Engineer concerned to check the claims mentioned in the application are as allowed by the University Engineer or the Deputy Executive Engineer shall be issued within fourteen days of the application. No application for a certificate shall be made within fourteen days of a previous application. No omission by the University Engineer or the Deputy Executive Engineer concerned to pay the amount due upon certificate shall vitiate or annul the contract.

22.2 The Contractor agrees that, before payment of the final bill shall be made on the contract, he will sign and deliver to the Registrar, Acharya Nagarjuna University,

Nagarjuna Nagar, either in the measurement book or otherwise as demanded, a valid release and discharge from any and all claims and demands what-so-ever for all matters arising out of, or connected with this contract, provided nothing in this clause shall discharge or release the Contractor from his liabilities under the contract. He shall also produce a certificate from the Income Tax Authorities that all Income tax payable by him upto date has been duly paid in the case of Contracts, the value of which is over Rs.25,000/- (Rupees twenty five thousand only), before payment of final bill. Final payments to the Contractors will be withheld if they fail to produce Income Tax Clearance Certificate.

23.0 Seigniorage Fee:-

23.1 As the quoted rates of the Contractor are inclusive of seigniorage fee/charges, the University shall recover the same from the bills of the Contractor for the quantities worked out on the basis of the work done and measured (excepting the materials supplied by University) as per theoretical requirement, at the rates given in Schedule - I & Schedule - II given below.

23.2 _____ BLANK _____

23.3Seigniorage Charges:

The rates recovery towards seigniorage fee charges for two various materials are detailed below:-

RATES OF SEIGNIORAGE FEE

S. N	Name of the Miner Minerals	Rate per Unit	Ref. To G.O. or Govt. Memo.
1	Building stone	Rs.50/- CUM	G.O.Ms.No.198 and Date 13-08-2009.
2	Rough stone/ Boulders	Rs. 50/-per CUM	-do-
3	Road Metal & Ballast	Rs. 50/-per CUM	-do-
3a	Dimensional Stones used for Kerbs & Cubes	Rs. 88/-per MT	-do-
4	Lime shell	Rs. 88/-per MT	-do-
5.	Lime Kankar	Rs. /- per tonne	-do-
6.	Marble	Rs.165/- per CUM	-do-
7.	Mosaic Chips	Rs.44/- per Mt.	-do-
8.	Gravel Merrum and Ordinary Earth.	Rs.22/- per CUM.	-do-
9.	Ordinary Sand/Sand Manufactured from boulders useful for Civil Construction	Rs.40/- per CUM	-do-
10	Ordinary Clay, silt and brick earth used in the manufacture of brick and tile including Mangalore Tiles	Rs.3,850-00 per kiln per annum for Bricks & Tiles.	-do-
11	Chalcedony pebbles used building purpose	Rs.33 /- per MT	-do-
12	Lime shell used for burning and building purpose	Rs. /- per tonne	-do-
13	Lime stone other than classified as major mineral used for lime burning for building construction	Rs. /- per tonne	-do-
14	Filters earth/bentonite	Rs.110/ per MT and Rs 44/- per M.T.	-do-
15	Shingle	Rs.17/-CUM	-do-
16	Shale and slate	Rs.110/- per MT	-do-
17	Rehmatti	Rs.17/- per CUM	-do-
18	Lime stone used in cutting and polishing units per using as panels and flooring materials	Rs. /- per tonne	-do-
19	a) Black-Granite	Rs.3300/- per CUM	-do-
	b) Black-Granite other than Galaxy variety	Rs.2475/- per Cum	-do-
	c) Colour Granite of Srikakulam Blue,Indian Aurora of Nizamabad Dist,Leptinites of Coastal Dists,Black PEARL of Prakhasam & Guntur Dists.	Rs.2475/- per Cum	-do-
	d)Colour Granite of other variety	Rs.1925/- per Cum	-do-
20	Lime Stone Slabs		
	a)Colour	Rs.7/-per SMT	-do-
	b)White	Rs.5/-per SMT	-do-
	c)Black	Rs.4/-per SMT	-do-

Note:- The above rates are liable to be revised and amended from time to time by the State Government by Notification in the Andhra Pradesh Gazette.

Note:- In case of revision, the revised rates as fixed by mines and Geology Department have to be adopted.

REQUIREMENTS OF CEMENT MASONARY, STONE MASONARY PER UNIT (1 CUM) OF FINISHED WORK

- a). C. R. Masonry 1st Sort. 0.28 Cum. of Cement Mortar
- b). C.R. Masonry 2nd Sort. 0.32 Cum. of Cement Mortar
- c). R.R. Masonry 0.34 Cu. Mt. of Cement Mortar

Note:- In Massive walls above one meter thick 0.40 Cu. Mt. of Cement Mortar shall be allowed.

24.0 A LIST OF PAYMENTS AND DEDUCTIONS FROM BILLS

Name of the Contract	Class of bill	Amount of Payment	Nature of Deduction	Refund or Deduction
Piece work contract	Intermediate	Case (i) Total value of work done if it is less than 20 items earnest money. Case (ii) Total value of work done less deduction shown in Col. (4) if the value of work done is more than 20 times earnest money.	Nil 5% of value of work in excess of 20 times earnest money to be held as security to be credited to deposits only for the withheld amount exceeds Rs.500/-	Nil To be refunded after payment of final bill if credited to deposits as stated in Col.4 otherwise, to be refunded in the final bill itself.
Piece work contract	Final bill	Total value of work done less amount if any withheld for proper maintenance (L.S.) contract	A suitable amount of the discretion of the University Engineer for the proper maintenance	To be refunded after expiry of the maintenance period of TWENTY FOUR MONTHS
L.S. or Schedule contract supply of materials only	Intermediate	90% of the value of work	10% of value towards security	To be refunded full in the final bill
L.S. or Schedule contract supply of materials only	Final bill	Total value of the work done	Nil	Nil
L.S. or Scheduled	Intermediate	92½ % of value of work done	7½% of value towards security	2.5% to be refunded in final bill and the balance to be dealt with as indicated against final bill below.
L.S. or Scheduled	Final bill	15% of value of work done less amount any withheld for proper maintenance	(i). 5% of value towards security to be credited to deposit (ii). suitable amount (to be refunded on expiry of the TWENTY FOUR MONTHS) in addition to (i) above at the discretion of the University Engineer for	To be refunded on expiry of the observation period or on rectification of any defects that appears during the observation period which ever happens last.

25.0 AGGREGATE I.S. 383/1970**25.1 Coarse Aggregate****TABLE - I**

I.S. Sieve Designation	Per cent passing for single - size Aggregate of Nominal Size						Percentage passing for graded Aggregate of Nominal Size			
	63 mm	40 mm	20 mm	16 mm	12.50 mm	10 mm	40 mm	20 mm	16 mm	12.50 mm
80 mm	100	-	---	---	---	---	100	---	---	---
63 mm	85-100	100	---	---	---	---	---	---	---	---
40 mm	00-30	85-100	100	---	---	---	95-100	100	---	---
20 mm	0-5	0-20	85-100	100	---	---	30-70	95-100	100	100
16 mm	---	---	---	85-100	100	---	---	---	90-100	---
12.5 mm	---	---	---	---	85-100	100	---	---	---	90-100
10 mm	0-5	0-5	0-20	0-30	0-45	85-100	10-35	25-55	30-70	40-85
4.75 mm	---	---	0-5	0-5	0-10	0-20	0-5	0-10	0-10	0-10
2.35 mm	---	---	---	---	---	0-5	---	---	---	---

25.2 Fine Aggregate**TABLE - II**

I.S. Sieve Designation	Grading Zone - I	Grading Zone - II	Grading Zone - III	Grading Zone - IV
10 mm	100	100	100	100
4.75 mm	90-100	90-100	90-100	95-100
2.36 mm	60-95	75-100	85-100	95-100
1.18 mm	13-70	55-90	75-100	90-100
600 microns	15-34	35-59	60-79	80-100
300 microns	5-20	8-30	12-40	15-50
150 microns	0-10	0-10	0-10	0-15

25.3 All-in Aggregate Grading

I.S. Sieve Designation	40 mm Nominal Size	20 mm Nominal Size
80 mm	100	
40 mm	95-100	100
20 mm	45-75	95-100
4.75 mm	25-75	30-50
600 microns	8-30	10-35

150 microns	0-6	0-6
-------------	-----	-----

25.4 For Vibrated Reinforced Concrete Items (V.R.C.C.)

TABLE - IV

CHARACTERISTIC STRENGTH OF CONE AT THE AGE OF 28 DAYS OF CURING

M-25	1:1:2	25 N/mm ² = 250 kgs/cm ²
M-20	1:1½ :3	20 N/mm ² = 200 kgs/cm ²
M-15	1:2:4	15 N/mm ² = 150 kgs/cm ²

26.0 Application of various Acts

26.1 The Contractor shall at all times during the currency of the contract comply fully with all existing Acts regulations and bylaws including all statutory amendments and re-enactment's of State or Central Government and other local authorities and any other enactments, notification and Acts that may be passed in future either by the State or the Central Government or Local Authority including Workmen's Compensation Act 1923, Contract Labour (Regulation and Abolition) Act, 1970. The Child Labour (Prohibition and Regulation) Act, 1986 and Equal Remuneration Act 1976, Factories Act 1948. Minimum Wages Act 1948, Provident Fund regulations and Employees provident fund Act 1952, schemes made under the same Act. The Buildings and other Construction Workers (Regulation of employment and condition of service) Act 1996, the Cess Act 1996 and also applicable labour regulations, health and sanitary arrangement for workmen, insurance and other benefits and shall keep Department indemnified in case any action is commenced by competent authorities for contravention by the Contractor.

27.0 Supply of Water:-

27.1 Water will be supplied by the Acharya Nagarjuna University at the point in the existing University water lines to the Contractor. Tapping point from the existing water supply lines for issue of water to the Contractor will be decided by the University Engineer.

27.2 The Contractor shall make his own arrangements from the tapping point for the conveyance and storage of water required for the work, labour, workmen etc. In the event of breakdown of Acharya Nagarjuna University supply of water or in the event of said supply of Acharya Nagarjuna University water becoming intermittent, the Contractor shall have no claim whatsoever on this account.

27.3 Water supplied to the contractor by the University for the work on the free of cost.

28.0 Secrecy Clause:-

28.1 The Drawings and specifications made available to the Tenderers shall exclusively be used on this work and they are restrained from passing such plans to any unauthorized hand either in parts or in full under the provisions of Section 3 and 5 of the Official Secrets Act 1923. Any violation in this regard will entail suitable action under appropriate clauses of Official Secrets Act 1923.

29.0 Miscellaneous Conditions:-

29.1 No claims for compensation will be entertained by the Nagarjuna University on account of any variations in the wages of labour, paid holidays, grant of provident fund due to enactment of legislatures regarding labour employment laws etc.

29.2 Contractor will make his own arrangements at his own cost to construct approach roads for conveyance of materials etc., preferable on the alignment accepted by the

University, to procure land etc., for housing his staff and workmen near the site of the work.

29.3 The Contractor shall entirely be responsible for efficiency and sufficiency of the scaffolding, timbering, tools, implements and generally of all the means used for the fulfilment of the work, whether such means may or may not be agreed or recommended by the University Engineer. The Contractor must accept at his own cost all risks or accidents or damage.

29.4 Tools and Seigniorage:-

The Contractor shall, unless otherwise specially stated in the tender notice and subsequently on this basis in the contract, be responsible for the payment, wherever payable of all import duties, tolls, octrai duties, seigniorage, quarry fees etc., on all materials and articles that he may use.

29.5 The rates shall be inclusive of pumping charges, excavation and making up of surface wherever necessary. The Contractor will have to make his own arrangements for all the pumping sets, and all other tools and plants required on the works.

29.6 Welding of reinforcement

29.6.1 If welding is required and so decided by the University Engineer for the reinforcing bars instead of lapping, the Contractor shall make the necessary arrangements at his own cost without claiming any extra amount from the University. Only the qualified welders shall be employed on the work and all welding shall conform to I.S.S. code on welding specification 1104.5 of APSS.

--BLANK--

30.1 The Price adjustment shall be both for increase and decrease in the works completed with in the original agreement period.

30 --BLANK--

31 --BLANK--

32 --BLANK--

32.2 The Contractor shall have sufficient plant, equipment and labour and shall work such hours and shifts as may be necessary to maintain the progress on the work as per the approval progress schedule. The working and shifts hours shall comply with the Govt. Regulations in force.

32.3 It is to expressly and clearly understood that contractor shall make his own arrangements to equip himself with all machinery and special tools and plant for the speedy and proper execution of the work and University does not undertake responsibility towards their supply.

TENDER

To
 The Registrar
 Acharya Nagarjuna University
 Nagarjuna Nagar – 522 510
 Guntur District
 Andhra Pradesh

Sir,

I/We do hereby tender and, if this tender be accepted, undertake to execute the following work viz.

1. NAME OF WORK: **Civil works for Lift facility at B.R. Ambedkar memorial Library in ANU Campus.**

2. I/We agree to keep the offer in this tender valid for period of mentioned in the tender notice and not to modify the whole or any part of it for any reason within the above period. If the tender is with drawn by me/us for any reason whatsoever the earnest money deposited by me/us will be forfeited to Acharya Nagarjuna University.

3. I/We hereby distinctly and expressly declare and acknowledge that before the submission of my/our tender, I/We have carefully followed the instructions in the tender notice and have read the Andhra Pradesh Specifications therein and the Andhra Pradesh Standards Specifications addenda volume and that I/We have made such examination of the contract documents and of the plan (s), specifications and quantities and rates and of the location and alignment where the said work is to be done and such investigation of work required to be done and materials required for the work as to enable me/us to thoroughly understand the intention of the same and the requirements, covenants, agreements, stipulations and restrictions contained, in the contract and in the said plans and specifications and distinctly agree that I/We will not hereafter make any claim or demand upon the Acharya Nagarjuna University based upon or arising out of any alleged misunderstanding or misconception or mistake on my/our part of the said requirement, covenants, agreements, stipulations, restrictions and conditions.

4. If my/our tender is not accepted, this sum shall be returned to me/us on my/our application soon after entering into agreement with the successful Tenderer, or expiration of after the last date prescribed for the receipt of tenders whichever is earlier. If my/our tender is accepted the earnest money shall be retained by the Nagarjuna University as security for the due fulfillment of the contract. If upon the written intimation to me/us by the Registrar, Acharya Nagarjuna University Office, If I/We fail to attend the said office on the date therein fixed or if upon intimation being given to me/us by the Registrar, Acharya Nagarjuna University, of acceptance of my/our tender, I/We fail to make the balance EMD and additional security deposit if any, or enter into the required agreement as defined in tender notice then I/We agree to the forfeiture of the earnest money. Any notice required to be served on me/us there under shall be deemed to have been served on me/us by post (Registered or Ordinary) or left at my/our address given herein. Such notice shall, if sent by post be deemed to have been served on me/us at the time when in due course of post if it would be delivered at the address to which it is sent.

5. I/We shall not assign the contract or sublet any proportion of the same. In case, it becomes necessary such subletting with the permission of the University Engineer shall be limited to:-
 - i). Labour contract
 - ii). Transport contract
 - iii). Material contract
 - iv). Engaging specialists for special items of work as enjoined in APSS

CONTRACTOR

REGISTRAR

6. I/We fully understand that the written agreement entered into between me/us and the Nagarjuna University shall be the foundation of the rights of both the parties and the contract shall not be completed until the agreement has first been signed by me/us and then by the proper Officer authorized to enter into the contract on behalf of Acharya Nagarjuna University.

7. I am/We are professionally qualified and my/our qualifications are given below:-

Sl. No.	Name	Qualifications
1.		
2.		
3.		
4.		

8. If I/We employ the minimum number key personnel for supervising the work. I/We shall see all of them are always at site during working hours and we personally check all items of works and paying extra attention to such works which require special attention.

- Note:-**
- a). If the Tenderer fails to comply with the qualification data of key personnel as required, the work will be suspended or the Department will engage a technical staff and recover the actual cost thereof from the Contractor, in addition to the recovery to be made in accordance with the clause 17.5 of Tender Notice.
 - b). The successful tenderer will have to furnish the names and qualifications of the Key personnel employed by the Contractor together with the willingness letter of the persons and appointment orders of the Contractor at the time of the concluding agreement bond.

9. I/We provide/deploy the key and critical construction plant and equipment for the proposed work.

I/We hereby confirm that the quantity and type of equipment used for construction are as specified. I/We agree to bring more equipment if warranted in the opinion of the University Engineer, Acharya Nagarjuna University.

**Indemnity Bond to be executed by the Contractor while entering into
an Agreement**

NAME OF WORK: CIVIL WORKS FOR LIFT FACILITY AT B.R. AMBEDKAR
MEMORIAL LIBRARY IN ANU CAMPUS

AGREEMENT No.: _____

I/We _____

Contractor _____

S/o _____ **Aged** _____

Resident of _____

and myself agree to pay all the claims which may come (a) under Workmen's Compensation Act, 1923, with any statutory modification thereof and rules thereunder or otherwise for or in respect of any damage or compensation payable in connection with an accident or injury sustained, (b) under Minimum Wages Act, 1948, (c) under Payment of Wages Act, 1936, (d) under the Contractor Labour (Regulation Act 1970) by any workman engaged for the performance of the business relating to the above contract.

Failing such payment of claims or workman engaged in the above, I abide in accepting for the recovery of such claims effected from any of my assets with the Department.

As per Contract Labour (Regulation and Abolition) Act, 1970 the Contractor has to produce the license from the licensing officer to the labour department along with the tender or at the time of Agreement.

TENDERER/CONTRACTOR

DECLARATION

I/We hereby declare that I/We have inspected the site and verified the said particulars and read through the conditions in the tender schedules, the Andhra Pradesh Detailed Standard Specifications (APSS), the Highway Manual, IRC Bridge codes, relevant Bureau of Indian Standard codes, including all amendments, addenda issued upto the date of opening of tender and these have been taken into consideration in working out the rates quoted for each item of work in Schedule 'A' part - I.

TENDERER/CONTRACTOR

SCHEDULE - C**LIST OF SPECIAL SPECIFICATIONS FOR THE VARIOUS ITEMS OF WORKS SUPPLEMENTING THOSE DESCRIBED IN SCHEDULE - A BY STANDARD SPECIFICATION NUMBERS**

NAME OF WORK : CIVIL WORKS FOR LIFT FACILITY AT B.R. AMBEDKAR MEMORIAL LIBRARY IN ANU CAMPUS

SCOPE OF WORK:-

The proposed CIVIL WORKS FOR LIFT FACILITY AT B.R. AMBEDKAR MEMORIAL LIBRARY IN ANU CAMPUS

The estimated cost of the work is approximately Rs. 8, 95,189.00/- (Rupees Eight Lakhs Ninety Five thousand One Hundred and Eighty Nine only) which is based on the Government of Andhra Pradesh State Common Standard Schedule of rates for civil works for the year 2015-16 and local market rates.

SCHEDULE 'C'**2.0 LIST OF BUREAU OF INDIAN STRUCTURE TO BE FOLLOWED**

S. No.	Short Title	I.S. Number
I.	CEMENT: 1. 43 Grade ordinary portland cement 2. Methods of physical tests for hydraulic cements	8112-1989 4031 (part 1 to 15)-1988
II.	AGGREGATES: 1. Aggregates (Coarse and fine) from natural source for concrete 2. Specification for sand for masonry 3. Method for tests for aggregates for concrete	383-1970 2116-1980 2386 (Part-I to Part-IV)-1983
III.	BUILDING STONES: 1. Method of Tests for determination of strength and properties of natural building stones Part - I : Comprehensive strength Part-II : Transverse strength Part-III : Tensile strength Part - IV : Shear strength 2. Quarrying stones for construction purposes recommended practice 3. Measurement of buildings and Civil Engineering works 4. Specifications for dressing natural building stones 5. Drilling and permeability tests 6. Code of practice for permeability tests (during and after construction)	1121 (Part-I to Part-IV) - 1974 8381-1977 Part - IV Stone Masonry 1200 (Part-IV)-1976 1129-1972 5529 (Part-III)-1973 11216-1985
IV.	STEEL 1. Code of practice for bending and fixing of bars for concrete reinforcement 2. Specifications for High Strength Deformed Steel bars and Wires for concrete reinforcement 3. Recommendation for detailing of reinforcement in reinforced Cement concrete works 4. Mild steel and Medium Tensile steel bars for concrete reinforcement 5. Measurement of Building and Civil Engineering Works Part-VIII Steel work and Iron Work	2502-1963 1786-1985 5529-1969 432 (Part-I)-1982 1200 (Part-VIII)-1993
V.	MASONRY 1. Code of practice for construction of stone masonry Part-I Rubble stone masonry 2. Measurement of building and Civil Engineering works Part-XII Plastering and pointing	15979 (Part-I)-1992 1200 (Part-XII)-1976
VI.	CONCRETE: 1. Measurement of building and Civil Engineering works method of concrete works 2. Concrete works: Code of practice for plain and reinforced concrete 3. Pre cast concrete copying blocks	1200 (Part-II)-1974 456-1978 5751-1984

	4. Method of Testing for strength of concrete	516-1959
	5. Specification for Admixtures for concrete	9103-1979
	6. Method of sampling and analysis of concrete	1199-1976
	7. Concrete mixer-batch type	1791-1968
	8. Concrete Vibrators-immersible type	2505-1980
VII.	EARTH WORK:	
	1. Measurement of building and Civil Engineering works method of Part-I Earth Work	1200 (Part-I)-1974
	2. Safety code for filling and other deep foundations	5121-1969
	3. Safety code for excavation works	3701-1966
	4. Code of practice for earth work on canals	4701-1982
	5. Method of testing for soils Part-I Determinations of Water content	2720 (Part-II)-1973
	6. Determination of water content dry density relation using light compaction	2720 (Part-VIII)-1980
	7. Determination of Dry density of soils in place by sand replacement method (first revision)	2720 (Part-XXVII)-1974
	8. Determination of dry density of soils in situ by the core cutting method (first revision)	2720 (Part-XXIX)-1975
VIII.	OTHER SUBJECTS:	
	1. Safety code for scaffolds	3698 (Part-I)-1966
	2. Safety code for ladders	3696 (Part-II)-1966
	3. Recommendation of stacking and storage of construction materials at site	4082-1977

3.0 General Conditions:-

- 3.1 No claims for compensation will be entertained by the Nagarjuna University on account of any variations in the wages of labour, paid holidays, grant of provident fund due to enactment by legislatures, regarding labour employment laws etc.
- 3.2 Contractor will make his own arrangements at his own cost to construct approach roads for conveyance of materials etc., preferable on the alignment accepted by the University, to procure land etc., for housing his staff and workmen near the site of the work.
- 3.3 The Contractor shall entirely be responsible for efficiency and sufficiency of the scaffolding, timbering, tools, implements and generally of all the means used for the fulfillment of the work, whether such means may or may not be agreed or recommended by the University Engineer. The Contractor must accept at his own cost all risks or accidents or damages.

4.0 Mortars:

4.1.0 Preparation of Mortar:

Unless otherwise specified, the cement mortar used in Masonry work shall be Cement mortar mix MM5 grade using minimum 288 kgs of cement per cubic meter of mortar. Mixing shall be done thoroughly preferably in a mechanical mixer. In such cases, the cement and sand in the specified proportions shall be mixed dry thoroughly in the mixer operated manually or by power.

Water shall be added gradually and wet mixing continued at least for 3 minutes. Water should not be more than that required for brining the mortar to the required working of 90 to 130 millimeters as required in clause 9. It of I.S. 2250-1981. The mix shall be cleaned free from injurious kind of soil, acid, alkali, organic matter or deleterious substances.

4.1.2 Time of use of cement mortar

Cement mortar shall be used as soon as possible after mixing and before it has begun to set. within 30 minutes after the water is added to the dry mixture. Mortar unused for more than 30 minutes should not be used and shall be removed from the site of work. The cost of such wasted mortar shall be borne by the bidder. The use of retempered mortar will not be permitted to be used for the masonry.

4.1.3 Tests of Mortar:

Mortar Test cubes shall be cast for the mortar used on the work and shall be tested in accordance with Appendix-A of I.S.2250 - 1965 code of practice for preparation and use of Masonry Mortars. Such cubes shall develop a compressive strength of at least 50 Kgs / square centimeter for MMS Grade cement mortar mix. 75 Kgs / square centimeter for MM 7.5 grade cement mortar mix and 30 Kgs/square centimeter for MM-3 grade cement mortar mix. Mortar not conforming to the specifications will be rejected, and the cost of such wasted mortar shall be borne by the bidder.

4.1.4 Measurement and Payment:

Cement Mortar will not be measured and paid separately and its cost, including cost of materials, transporting and placing shall be included in the unit price per cubic meter bid therefore in the bill of quantities of the contractor for the relevant finished item of work or which cement mortar mix mentioned in the above paragraph is required.

4.1.5 Dismantling of Structures:

Hiring course of execution of drainage works certain dismantling of brick masonry/R.R. masonry retaining walls in CM C.C. MIO grade leveling course are to be carried out. These have to be carried out as specified under section 202 of A.P.S.S. and as per directions of University Engineer and site cleared before facing up actual execution.

5. PLASTERING & POINTING

SECTION:

5.1.0 MATERIALS:

5.1.1 Sand for Mortar for Plastering and Pointing:

- a) General: The Sand for preparation of Mortar for plastering and pointing shall conform to the following gradation, shown in Table

TABLE:**REQUIREMENTS OF GRADING FOR SANDS FOR EXTERNAL PLASTERING AND RENDERING**

PERCENTAGE BY WEIGHT PASSING I.S., SIEVE		
I.S. Sieve		
Designation	Class -A	Class -B
4.75 mm	100	100
2.36 mm	90 to 100	90 to 100
1.18 mm	70 to 100	70 to 100
600 Microns	40 to 85	40 to 95
300 Microns	5 to 50	10 to 65
ISO Microns	0 to 10	0 to 15

For the purpose of indicating the suitability for use, the sand is classified as Class A and Class B in accordance with the limits of grading. Class "A" sands shall be used generally for plastering and pointing, and when they are not available, Class "B" sands may be used with the approval of University Engineer.

The procurement of sand for Mortar for plastering and pointing shall conform to the specifications given in paragraph 5.2.5.

5.1.2 Cost:

The cost of sand for mortar for plastering and pointing will not be measured and paid separately, and the cost of sand including the cost of stripping, transporting and storing and royalty charges shall be included in the unit price per Cubic meter bid therefor in the relevant item of work in the Schedule "A" for which this sand is required,.

5.1.3 Cement:

The specifications and conditions specified for supply for cement in paragraph 4.1.4 shall be applicable here also.

Portland pozzolana cement conforming to I.S. 1489-1976 shall be used for preparation of mortar for plastering and pointing works. Ordinary portland cement conforming to I.S. 269-1976 may also be used for masonry work, in the event of non-availability of Portland pozzolana cement.

5.1.4 Water:

Shall conform as per specifications No.129 of A.P.S.S.

6.0 MORTAR**6.1 Preparation of Mortar for Plastering work :**

Unless otherwise specified, the cement mortar used in plastering work shall be in cement mortar mix of MM. 7.5 grade, using minimum 360 Kgs. of cement per cubic meter of mortar.

The other specifications and conditions enunciated in paragraph 3.2.1 shall apply for this for plastering work also.

6.1.2 Preparation of Mortar for Pointing :

The cement mortar used in pointing work shall be cement mortar mix of M.M. 7.5 grade, using 480 Kgs. of cement per cubic meter of mortar.

The other specifications and conditions enunciated in paragraph 3.2.1 shall apply for this mortar for pointing work also.

7.0 PLASTERING WITH CEMENT MORTAR MIX MM.7.5. GRADE 20mm THICK**7.1 Preparation of Surface:**

The roughening of the back-ground improves the bond of plaster. All joints shall be thoroughly raked. After roughening the surface, care shall be taken to moisten the surface sufficiently before plastering as otherwise rashly exposed surface may tend to absorb considerable amount of water from the plaster. The surface shall be wetted evenly before applying the plaster. Care shall be taken to see that the surface is not too dry as this may cause lack of adhesion of excessive of water from the plaster. A fog spray may be used for this work. As far as possible, the plaster work shall be done under shade.

7.1.2 Laying of Plastering with Cement Mortar Mix MM. 7.5 grade 20mm Thick:

The mortar used for plastering shall be stiff enough to cling and hold when laid. To ensure even thickness and true surface, plaster shall be applied in patches of 150mm x ISO mm. Of the required 20 mm. thickness at not more than 2 meters intervals horizontally and vertically over the entire surface to serve as guides. The surface of these guides shall be truly in the plane of the furnished plaster surface and truly plumb. The mortar shall then be applied to the surface to be plastered between the guides with a trowel. Each trowel full of mortar shall overlap and sufficient pressure shall be used to force it into thorough contact with the surface. On relatively smooth surfaces, the mortar shall be dashed on with the towel to ensure adequate bond. 1 lie mortar shall be applied to a thickness slightly more than that specified, using a string, stretched out between the guides. This shall then be brought to a true surface by working with a long wooden float with small sawing motion. The surfaces shall be periodically checked with a string stretched across it. Finally the surface shall be rendered smooth with a small wooden float, over working shall be avoided. All comers, arises, and junctions shall be brought truly to a line with any necessary rounding or chamfering.

If it is necessary- to suspend the work at the end of the day, it shall be left in a clean horizontal or vertical line not nearer than 150 millimeters for any comer or arises or on parapet tops or on copings etc. When recommending the work, the edges of the old work shall be scraped clean and treated with cement slurry before the new plaster is laid adjacent to it. After the first coat is done, it shall be kept undisturbed for the next 24 hours and thereafter kept moist and not permitted to dry until the final rendering applied.

After the plaster has sufficiently hardened cement slurry with cream like consistency shall be applied as thinly and evenly and rubbed to a line condition. The finished surface shall be cured with water for a period of 10 days.

8.0 POINTING TO STONE MASONRY WITH CEMENT MORTAR MIX MM.7.5 GRADE

8.1 Preparation of Surface:

The joints in the masonry shall be raked out to a depth not less than the width of the joint or as directed when the mortar is green. Joints are to be brushed clean of dust and loose panicles with a stiff brush. The area shall then be washed and the joints thoroughly wetted before pointing is commenced.

8.1.2 Mush Pointing with Cement Mortar Mix MM.7.5. Grade for Rubble Masonry:

The pointing to be done shall be flush pointing with cement mortar mix MM.7.5. grade. The mortar shall be pressed into the ranked out joints according to the types of pointing required. The mortar shall not be spread over the comers, edges or surface of the masonry. The pointing shall then be finished as detailed below. The mortar shall be finished off, flushed off, flush and level with the edges of the stones, so as to give a smooth appearance. The edges shall be neatly trimmed with a trowel and a straight edge. The pointing shall be cured for seven days.

9.0 MEASUREMENT AND PAYMENT

9.1 PLASTERING:

The measurement for pointing will be in units of square meters, and it shall be paid at the relevant unit prices per ten Square meters bid in the schedule Bill of quantities which unit price shall include the cost of materials, their conveyance, charges for preparation of mortar including mixing charges and charges for performing the pointing work as illustrated in this division, including curing.

9.1.2 POINTING:

The measurement for pointing will be in units of square meters, and it shall be at the relevant unit prices per ten Square meters bid in the schedule Bill of quantities which unit price shall include the cost of materials, their conveyance, charges for preparation of mortar including mixing charges and charges for performing the pointing work as illustrated in this division, including curing.

10.0 Construction of Structures:

Cast-in-place concrete for the structures shall conform to the requirements of section. The structures shall be built to the lines, grades and dimensions shown on the drawings. The dimensions of each structure as shown on the drawings will be subject to such modifications as may be found necessary by the University Engineer to adopt the structure to the conditions disclosed by the excavation or to meet other conditions. Where the thickness of any portion of a concrete structure is variable, it shall vary uniformly between the dimensions shown. Where necessary, as determined by the University Engineer, the Contractor will be furnished additional detail drawings of the structures to be constructed. The bidder will not be entitled to any additional allowances above the prices bid in the schedule by reason of the dimensions fixed by the University Engineer or by reasons of any modifications or extensions of a minor character to adopt a structure to a structure at site as determined by the University Engineer.

The cost of furnishing all materials and performing all work, installing timber, metal and other accessories for which specific prices are not provided in the schedule, shall be included in the applicable prices bid in the schedule for the work to which such items are appurtenant.

10.1 General Concrete Requirements:**10.1.1 Composition:****a) General:**

Concrete shall be composed of cement, sand, coarse aggregate, water and admixtures (if any) as specified, all well mixed and brought to the proper consistency.

b) Nominal maximum size of Aggregates :

In coarse aggregates to be used in concrete shall be as large as practicable, consistent with required strength, spacing of reinforcement and embedded items, and placement thickness. The size of the coarse aggregate to be used will be determined by the University Engineer and may vary incrementally according to the conditions encountered in each concrete placement. Nominal maximum size of aggregate for concrete in structures shall be as indicated in the relevant drawings appended to the contract documents. Smaller coarse aggregate than specified shall be used wherein the opinion of the University Engineer that proper placement of concrete is impracticable with the size of the aggregate specified in the drawings.

c) Mix Proportions:

The proportions of various ingredients to be used in the concrete for different parts of the work will be established by proper mix design by the University Engineer during the progress of the work. In proportioning concrete, the quantity of both cement and aggregate should be determined by mass as per clause 9.2 of I.S. 456-1978 Water shall be either measured by volume in calibrated tanks or weighted. All measuring equipment shall be maintained in a clean serviceable condition and their accuracy periodically checked. Adjustment shall be made as directed to obtain concrete having suitable workability, impermeability, density, strength and durability without use of excessive cement. The acceptance or rejection of concrete shall be as per the acceptance criteria laid down in clause 15 of IS. 456-1978.

The mix design and average concrete strength shall be adjusted according to the cube strength test results conforming to clauses 14.2, 14.3, 14.4, 14.5 of I.S. 456-1978. The bidder shall not be entitled for any additional allowances above the prices bid in the schedule due to adjustments of the mix proportions. The net water cement ration exclusive of water absorbed by the aggregate shall be sufficiently low to provide adequate durability in concrete. The water cement ratio for various grades of concrete shall be as determined and ordered by the University Engineer.

d) Consistencies:

The slump of concrete at the placement shall be as follows: Reinforced Cement Concrete:

Sl. No.	Placing condition	Degree of Workability	Value of workability
1.	Concreting of lightly reinforced Sections without vibration or heavily sections with vibration	Medium	25 nun to 75 mm slump for 20 mm aggregate
2.	Concreting of heavily reinforced section without vibration	High	75 mm to 125 mm slump for 20 mm aggregate

II. For plain concrete work, slump requirements mentioned in item - I above are applicable.

If the specified slump is exceeded at the placement, the concrete is unacceptable. The University Engineer reserves the right to require lesser slump whenever concrete of such lesser slump can be consolidated readily into place by means of vibration specified by the University Engineer. The use of any equipment which will not readily handle and place concrete of the specified slump will not be permitted. To maintain concrete at proper consistency, the amount of water and sand batched for concrete shall be adjusted to compensate for any variation in the moisture content or grading of the agreements as they enter the mixer. Addition of water to compensate for stiffening of the concrete after mixing but before placing will not be permitted. Uniformity in concrete consistency from batch to batch will be required.

10.1.2 Concrete quality control measures and concrete quality Assurance Test Programmed

- a) Concrete quality control measures : The bidder shall be responsible for providing quality concrete to ensure compliance of the bid requirements.
- b) Concrete quality Assurance Programmed : The concrete samples will be taken by the Engineers and its quality will be tested in the departmental laboratory as per the relevant Indian Standard Specifications I.S.No.516-1959 and I.S. 1199-1959.

1)Tests: The University will obtain samples and conduct tests as specified in I.S.No.456-1978.1.S. 1199-1959 and I.S. 516-1959.

2). Test Facilities : The bidder shall furnish free of cost samples of all ingredients of concrete for testing and to obtain approval from the University Engineer. He should also supply free of cost, the samples of all the ingredients of concrete for conducting the required tests.

3) When R. C.C. slab is laid the following tests may be carried out by the Contractor at his own cost to prove that the slab is impervious.

- a) After the centering is removed and curing period is over the slab shall be put to test by providing water 15 cm depth and watch carefully for a period of not less than a week.
- b) If leakage is observed, an immediate action should be taken to rectify it by the contractor at his own cost and again tested to see that there are no leakages.
- c) The officer observing the leakage test shall issue a certificate to the University before final bill is made.

10.1.3 Cement:**General:**

Shall conform to paragraph 23.4

10.1.4 Water:

Shall conform as per specification No.129 of A.P.S.S.

10.1.5 Sand (Fine Aggregate)**a) General:**

The term sand is used to designate aggregate most of which passes 4.75 millimeter I S. Sieve and contains only so much coarser material as permitted in Clause 4.3 of L.S.383-1970. Sand shall be predominantly natural sand which may be supplemented with crushed sand to make up deficiencies in the natural sand grading.

All sand shall be furnished by the bidder from any source approved by University Engineer.

Sand as delivered shall have a uniform and stable moisture content. Determination of moisture content shall be made as frequently as possible, the frequency for a given job being determined by the University Engineer according to weather conditions (I.S 456-1978).

b) Quality:

The sand shall consist of clean, dense, durable, un-coated rock fragments, as per I.S. 383-1970.

Sand may be rejected if it fails to meet any of the following quality requirements.

Organic impurities in Sand :

Colours darker than the specified standard in clause 6.2.2 of I.S. 2386 (Part II) 1963. (Indian Standard method of test for aggregates for clearance Part-II estimation of deleterious materials and organic impurities)

Sodium Sulphate Test for Soundness : The sand to be used shall pass a Sodium of Magnesium Sulphate accelerated test as specified in IS 2386 (Part-V) 1963 for limiting loss of weight.

Specific Gravity ; 2.6 minimum

Deleterious Substances :

The amounts of deleterious substances in sand shall not exceed the maximum permissible limits prescribed in table I Clause 3.2 I of I.S. 383 – 1970 Indian Standard specification for coarse and fine aggregate from natural source. For concrete when tested in accordance with I.S. 2386-1963.

c) Grading:

The sand as batched shall be well graded and when tested by means of standards sieves shall conform to the limits given in Table - 4 of I.S. 383-1970. And shall be described as Fine aggregates, grading zones - I.II.III and IV . Sand complying with the requirements of any of the four grading zones is suitable for concrete. But, sand conforming to the requirements of grading zone-IV shall not be used for reinforced cement concrete work.

10.1.5 Coarse Aggregate:

a) General :

For the purposes of these specifications the term "Coarse Aggregate" designates clean well grade aggregate most of which is retained on 4.75 mm IS. Sieve containing only so much finer material as permitted for various types described under clause 2.2 of I.S. 383-1970. Coarse aggregate for concrete shall consist of uncrushed, crushed and partially crushed stone. Crushed Aggregate for concrete shall be furnished by the Contractor from the sources approved by the University Engineer. Coarse Aggregate as delivered shall generally have uniform and stable moisture content. In case of variations, clause 9.2.3 of I.S. 456-1978 shall govern during batching.

b) Quality:

The Coarse aggregate shall consist of natural occurring (crushed or uncrushed) stones, and shall be hard, strong, durable, clear and free veins and adherent coating, and free from injurious amounts of disintegrated pieces, alkali, vegetable matter and other deleterious materials.

Coarse aggregate for concrete shall be separated into various nominal maximum sizes specified in the relevant drawings. Separation of the coarse aggregate into the specified sizes shall conform to the grading requirements specified in Table-2 of I.S.383-1970, when tested in accordance with I.S.2386-(Part-I) 1963 (Method of test for aggregates for concrete Part-I Particle size and shape).

Coarse aggregate for mass concrete may be separated as previously herein specified. Separation of the Coarse aggregate into the specified sizes shall conform to the grading requirements specified in Table-2 of I.S. 383-1970, when test in accordance with I.S.2386-(Part-I) 1963 (Method of test for aggregates for concrete Part-I particles size and shape)

Coarse aggregate for mass concrete may be separated as previously herein specified. Separation of the Coarse aggregate into the various sizes shall be such that when tested in accordance with I.S.2386(Part-I)1963 shall conform to the requirements specified in Table-3 of I.S.383-1970.

Sieves used in grading tests will be standard mesh sieves conforming to I.S. 460 (Part-I)-19 78(Specification for test sieves Part-I wire cloth test sieves).

10.1.7 Mixing :

i) General:

The concrete ingredients shall be thoroughly mixed in mechanical mixers designed to positively insure uniform distribution of all component materials throughout the concrete at the end of the mixing period. Mixing shall be done as per clause 9.3 of I.S.456-1978. The mixer should comply with I.S. 1971-1978 (I.S. specifications for batch type concrete mixers).

The concrete as discharged from the mixer, shall be uniform in composition and consistency from batch to batch. Workability shall be checked at frequent intervals as per I.S. 1199-1969. Mixers will be examined regularly by the University Engineer for changes in conditions due to accumulation of hardened concrete or mortar or to wear of blades. The mixing shall be continued until there is a uniform distribution of the materials so that the mass is uniform in color and consistency and to the satisfaction of the University Engineer. If there is segregation after unloading, the concrete should be re mixed.

Any mixer that at any time produces unsatisfactory mix, shall not be used until repaired. If repair attempts are unsuccessful, a defective mixer shall be replaced. Batch size shall be at least 10% of but not in excess of the rate capacity of the mixer unless otherwise authorized by the University Engineer.

Concrete Mixers: Water shall be admitted prior to and during charging of mixer with all other concrete ingredients. After all materials are in the mixer, each batch shall be mixed for not less than the time specified by the University Engineer. The minimum mixing time shall be 2 minutes. The minimum mixing time specified is based on average mixer performance. The University Engineer will adjust the minimum mixing time as required by the observations of the mix delivered from mixer. Excessive over mixing which require addition of water to maintain the required concrete consistency) will not be permitted.

10.1.8 Forms:

a) General:

Forms shall be used wherever necessary, to confine the concrete and shape it to the required lines. The bidder shall set and maintain concrete forms so as to insure completed work is within the applicable to clearance limits prescribed in clause 10 of I.S. 456-1978. If a type of form does not consistently perform in an acceptable manner, as determined by the University Engineer, the type of form shall be changed and method of erection shall be modified by the bidder subject to approval by University Engineer.

Plumb and string lines shall be installed before, and maintained during concrete placement. Such lines shall be used by the bidder's personnel and by the University Engineer and shall be in sufficient number and property installed as determined by the University Engineer. During concrete placement, the bidder shall continuously monitor plumb, and string line, form positions and immediately correct deficiencies.

Forms shall have sufficient strength to withstand the pressure resulting from placement and vibration of the concrete and shall be maintained rigidly in position. Where vibrators are to be used, forms shall be sufficiently rigid to effectively transmit energy from the form vibrators to the concrete, while not damaging or altering the positions of forms. Forms shall be sufficiently tight to prevent loss of mortar from the concrete. Chamfer strips shall be placed in the corners of forms and at the top of walls placements to produce beveled edges on permanently exposed concrete surfaces. Interior angle of inter-seating concrete surface and edges of construction joints shall not be beveled except where indicated on the drawings.

Suitable struts or stiffeners or ties shall be used for the form work wherever necessary. All supports, shall be braced and cross braced in two directions. All splices and braces shall be secured by bolting unless specially intended otherwise. All struts shall be firmly supported against settlement and slipping by suitable means as directed. All supports shall be cut square at both ends and firmly supported against settlement and slipping. When the form work is supported on soils, planks, sleepers etc, shall be used to properly disperse the loads. In case, the supports rest on already completed beam or slab, suitable props shall be provided under the latter.

- c) The form work shall be of steel. They shall be lined with M.S. sheet or other suitable smooth faced non-absorbent material as specified. Supports may be of timber or steel. Suitable wedges in pairs to facilitate adjustment and subsequent releasing of forms shall be provided preferably at the upper end of the supports. Tie details of the proposed form work and supports shall be submitted to the University Engineer and got approved before execution. In case of columns, retaining walls or deep vertical component, the height of the column shall facilitate any placement and compaction of concrete and suitable arrangement may be made for securing the form to the already poured concrete for placing the subsequent lifts. No steel ties or wires used for securing this form work shall be left exposed on the face of the finished work.

- d) Suitable insert for block outs electrical and other service fixtures where necessary shall be provided in the required locations as specified.
- e) Cleaning and Oiling of Forms: At the time the concrete is placed in forms, the surfaces of the forms shall be free from encrustations of mortar, grout or other foreign materials. Before concrete is placed, the surface of the forms shall be oiled with a commercial forms of oil.
- f) **Removal of Forms :**

The stripping of form work shall conform to clause 10.3 of 1.5.456*1978. The bidder shall be liable for damage and injury caused by removing forms before the concrete has gained sufficient strength. Forms on upper sloping faces of concrete such as forms on the water sides of warped transitions, shall be removed as soon as the concrete has attained sufficient to prevent .sagging. Any needed repairs or treatment required on such sloping surfaces shall be performed at once and be followed immediately by the specified curing.

To void excessive stresses in concrete that might result from swelling of forms, wood forms for wall openings shall be loosened as soon as the loosening can be accomplished without damage to the concrete . Forms shall be removed with care so as to void injury to the concrete, and any concrete. Forms shall be removed with care so as to avoid injury to the concrete, and concrete so damaged shall be repaired.

- g) **Cost:**

The cost of furnishing all materials and performing all work or constructing forms. including any necessary treatment or coating of forms shall be included in the applicable prices bid in the schedule for the items of concrete for which the forms are used.

10.1.9 Concrete Surface Irregularities:

a) Surface Irregularities:

1) General:

Bulges, depressions and offsets are defined as concrete surface irregularities. Concrete surface irregularities are classified as "abrupt" or " gradual" and are measured relative to the actual concrete surface.

2) Abrupt Surface Irregularities:

Abrupt surface irregularities are defined herein as offsets such as those caused by misplaced or loose forms, loose knots in form Lumber, or other similar forming faults. Abrupt surface irregularities are measured using a straight edge held firmly against the concrete surface over the irregularity and the magnitude of the offset is determined by direct measurement.

3) Gradual surface irregularities:

Gradual surface irregularities are defined herein as bulges and depressions resulting in gradual changes on the concrete surface. Gradual surface irregularities are measured using a suitable template conforming to the design profile of the concrete surface being examined. The magnitude of the gradual surface irregularities is defined herein as a measure of the rate of change in slopes of the concrete surface.

The surface irregularities shall not exceed 6 mm for bottom slab and 12 mm for side slopes when tested with a straight edge of 1.5 meters in length.

The magnitude of gradual surface irregularities on concrete shall be checked by the bidder to insure that the surfaces are within the specified to tolerances. The

University Engineer will also make such checks to hardened concrete surfaces as determined necessary to ensure compliance with these specifications.

b) Repair of Hardened concrete not within specified tolerance:

Hardened concrete which is not within specified tolerances shall be repaired to bring it within those tolerances. Such repair shall be in accordance with paragraph 6.2.16 and shall be accomplished in a manner approved by the University Engineer. Concrete repair to bring concrete within the tolerances shall be done only after consultation with a representative of University Engineer. Concrete repair to bring concrete within the tolerances shall be done only after consultation with a representative of University Engineer regarding the method of repair. The Government shall be notified as to the time when repair will be performed. Concrete which will be exposed to public view shall be repaired in a manner which will result in a concrete surface with a uniform appearance. Grinding of concrete surface exposed to view shall be limited in depth such that no aggregate particles are exposed to view shall be limited in depth such that no aggregate particles are exposed more than 1.5 millimeters at the finished surface. Where grinding causes exposure of aggregate particles greater than 1.5 millimeters at the finished surface. Concrete shall be repaired by excavating and replacing the concrete.

c) Prevention of Repeated failure to meet tolerances:

When concrete placements result in hardened concrete that does not meet the specified tolerances, the bidder shall submit to the Government an outline of all preventive actions such as modification 10 forms, modified procedure for setting screeds, and different finishing techniques to be implemented by the bidder to avoid repeated failures.

The University reserves the right to delay concrete placement until the bidder implements such preventive actions which are approved by the University Engineer.

10.1.10 Reinforcing Bars:

- a) **General** : Reinforcing bars shall be placed in the Concrete as shown in the drawings or as directed.
- b) **Materials**: Unless shown otherwise on the drawings, the reinforcement to be used shall be of High Yield strength deformed (H.Y.S.D.) bars of grade Fe 415 conforming to I.S.1786-1975 (IS. specifications for High Yield strength deformed steel bars and wires for concrete reinforcement).
- c) **Placing**: Reinforcement shall be bent and fixed in accordance with procedure Specified in I.S. 2502 - 1963 (code of practice for bending and fixing of bars for concrete reinforcement). All reinforcement shall be placed and maintained in the position shown in the drawings, splices shall be located where shown on the drawings provided that the location of the splices may be altered subject to the written approval of the University Engineer.

Subject to the written approval of the University Engineer. the bidder may for his convenience splice bars at additional locations other than those shown on the drawings. All additional splices allowed shall be at the expense of the bidder. In order to meet design and space limitation, on splicing, some bent bars may exceed usual clearance cutting and bending of such bars from stock lengths may be required at the site.

Unless other wise prescribed , placement dimensions shall be to the center lines of the bars. Reinforcement will be inspected for compliance with requirements as to size, shape, length, splicing, position, and amount after it has been placed, but before covered with concrete.

Before reinforcement is embedded in concrete, the surfaces of the bars and the surfaces of any supports shall be cleaned of heavy flaky rust, loose mill scale, dirt, grease or other foreign substances which in the opinion of the University Engineer, are objectionable. Heavy flaky rust that can be removed by firm rubbing with burlap, or equivalent treatment is considered objectionable.

As specified in clause 11.3 of I.S. 456- 1978 unless otherwise specified by the University Engineer, reinforcement shall be placed within the following tolerances:

- a) For effective depth 200mm or less - + 10 mm
- b) For effective depth more than 200mm - + 15 mm

The cover in no case be reduced by more than one third of specified over or 5 Mm whichever is less. Reinforcement shall be securely held in position so that it will not be displaced during the placing of the concrete and special care shall be exercised to prevent any disturbance of the reinforcement in concrete that has already been placed. Welding of bars shall be done as directed by the University Engineer and in conformity with the requirements of clause 11.4 of I.S.456-1978. Chairs, hangers, spacers and other supports for reinforcement shall be of concrete, metal or other approved material. Concrete cover shall be as shown as shown on the drawings.

Reinforcement Drawings:

The University will supply drawings of reinforcement details and bar bending schedules for adoption.

Measurement and Payment:

Measurement for payment reinforcement bars will be based on the weight of the bars placed in the concrete in accordance with drawings supplied by the University when conformance with these specifications drawings has been determined at the time of embedment. Except as other wise provided below, payment for furnishing and placing reinforcing bars will be made at the unit price per one kilogram bid in the bill of quantities for furnishing and placing reinforcing bars, which unit price shall include the cost of reinforcing bars, attaching wire ties or other approved supports and of cutting, bending, cleaning, securing and maintaining in position reinforcing bars as shown on the drawings.

10.1.11 Preparation for Placing:

- a) General:** No concrete shall be placed until all form work, installation of items to be embedded, and preparation of surface involved in the placement have been approved. All surfaces of forms embedded materials shall be free from curing compound, dried mortar from previous placement, and other foreign substances before the adjacent or surroundings concrete placement is begun.

Prior to beginning concrete placement, the bidder shall make ready, a sufficient number of properly operating vibrators and operators, and shall have readily available Additional vibrators to replace defective ones during the progress of the placement. The Engineer's representative at the placement may require that the bidder delay the start of the concrete placement until the number of workings vibrators available is acceptable.

b) Foundation Surface:

All surfaces upon or against which concrete is to be placed shall be free from frost, ice, water, mud and debris.

- 1) Rock surfaces shall be free from oil, objectionable coatings, and loose, semidetached and unsound fragments. Immediately prior to placement of concrete, surfaces of rock shall be washed with an air water jet and shall be brought to a uniform surface dry conditions.
- 2) Earth foundation surfaces shall be wet to a depth of 15 cm or to impermeable material whichever is less before concrete is placed.

c) Construction Joint:

Construction joints are defined as concrete surface upon or against which concrete is to be placed and to which new concrete is to adhere but which have become rigid that the new concrete can not be incorporated integrally with that previously place. The provision of construction joints shall conform to clauses 12.4.1 and 12.4.2 of IS. 456-1978.

When the work has to be resumed on surface which has hardened such surface shall be roughened. It shall be swept clean and thoroughly wetted. For horizontal joints the surface shall be covered with a layer of mortar about 10 to 15 mm thick composed of cement and sand in the same ratio as the cement and sand in concrete mix. These layer of cement slurry or mortar shall be freshly mixed and applied immediately before placing of the concrete.

Where the concrete has not fully hardened all balance shall be removed by scrubbing the wet surface with wire or bristle brushes, care being taken to avoid dislodgment of panicles of aggregate. The surface shall be thoroughly wetted and all free water removed. The surface shall then be coated with real cement slurry. On this surface, layer of concrete not exceeding 150mm in thickness shall first be placed and shall be well rammed against old work, particular attention being paid to comers and close spots, and work thereafter shall proceed in the normal way.

10.1.12 Placing:**a) General:**

The Bidder shall notify the University Engineer before batching begins for placement of concrete. Placing shall be performed only in the presence of an authorized Engineer's representative. Placement shall not begin until after all preparations are completed to the satisfaction of the University Engineer.

All surfaces upon or against which concrete is to be placed shall be prepared in accordance with paragraph 10.1.11.

Re-tampering of concrete will not be permitted. Any concrete which has become so stiff that proper placing cannot be assured shall be wasted.

Concrete shall not be placed in standing water except with written permission of the University Engineer and the method of placing shall be subject to approval. Concrete shall not be placed in running water and shall not be subjected to running water until after the concrete has hardened.

Concrete shall be deposited as nearly as practical in its final position and shall not be allowed to flow in such a manner that the latter movement will cause segregation of the coarse aggregate from the concrete mass. Methods and equipment employed in depositing concrete informs shall minimize clusters of coarse aggregate. Clusters that occur shall be scattered before the concrete is vibrated.

Forms shall be constantly monitored and their position adjusted as necessary during concrete placement in accordance with paragraph 10.1.8.

All concrete shall be placed approximately horizontal layers. The depth of layers shall not exceed 25 cm. The University Engineer reserves the right to require lesser depths of layers where concrete cannot otherwise be placed and consolidated in accordance with the requirements of these specifications. All construction joints which intersect exposed concrete surface shall be made straight and level to plumb as shown otherwise on the drawings.

The placing of concrete shall be in accordance with clause 12.2 of I.S. 456-1978.

If concrete is placed monolithic all around openings having vertical dimensions greater than 60 cm or if concrete in decks, floor slabs or other similar parts of structures is placed monolithically with supporting concrete, the following requirements shall be strictly observed.

- a) Concrete shall be placed up to the top of the formed openings at which point further placement will be delayed to accommodate settlement of fresh concrete. If levels are specified beneath nearly horizontal structural members such as decks, floor slabs, beams and girders, such bevels being between the nearly horizontal members and the vertical supporting concrete below, concrete shall be placed to the bottom of the levels before delay of placement.
- c) The last 60 cm. Or more of concrete placed below horizontal members of levels shall be placed with a 50mm or less slump and shall be thoroughly consolidated. In placing concrete on unformed slopes so steep as to make internal vibration of the concrete in-practical without forming, the concrete shall be placed ahead of non vibrating slip form screed extending approximately 0.75 meter back from its leading edge. Concrete ahead of the slip form screed shall be consolidated by internal vibrator so as to insure complete filling under the slip form.

A cold joint is an unplanned joint resulting when a concrete surface hardens before the next batch is placed against it. Cold joints will be allowed only in the event of equipment breakdown or other unavoidable prolonged interruption of continuous placing. If such unavoidable delays in placing occur which make it appear that unconsolidated concrete may harden to the extent that later vibration will not fully consolidate such concrete to a stable and uniform slope. If delay of placement is then short enough to permit penetration of the under laying concrete, placement; shall resume with particular care being taken to thoroughly penetrate and re-vibrate the concrete surface placed before the delay. If concrete cannot be penetrated with vibrator. The cold joint shall be then treated as a construction joint.

Care shall be taken to prevent cold joints when placing concrete in any part of the work. The concrete placing rate shall insure concrete is placed while the previously placed adjacent concrete is plastic so that the concrete can be made monolithic by normal use of vibrators.

Concrete shall not be placed in rain sufficiently heavy or prolonged to wash mortar from concrete. A cold joint may necessary result from prolonged heavy rainfall.

The bidder shall not be entitled to any additional payment, over the unit prices bid in the schedule for concrete, by reason of any limitation in the placing of concrete required under the provisions of this paragraph.

b) Transportation:

The transportation of concrete to clause 12.1 of I.S. 456-1978.

c) Consolidation:

The consolidation of concrete shall conform to clause 12.3 of I.S. 456-1978.

Concrete shall be consolidated by vibrators. The vibration shall be sufficient to remove all undesirable air voids from the concrete, including the air voids trapped against the forms. After consolidation, the concrete shall be free of rock pockets and honey comb areas and shall be closed snugly against all surfaces of forms and embedded materials. All concrete shall be properly consolidated before it hardens. Except as hereinafter provided, consolidation of all concrete shall be by immersion type vibrators. Immersion type vibrators shall be operated nearly vertical position and the vibrating head shall penetrate and re-vibrate the concrete in the upper

portion of the underlying layer. Care shall be exercised to avoid contact of the vibrating head with embedded items and with formed surfaces which will later be exposed to view. Concrete shall not be placed upon either plastic concrete until the previously placed concrete has been thoroughly consolidated.

10.1.13 Finished and Finishing:

The requirements for finishing of concrete surface shall be as specified in this paragraph, paragraph 10.1.9 or as otherwise indicated on the drawings. The bidder shall notify the University Engineer before finishing concrete. Unless inspection is waived, in each specific case, finishing of concrete shall be performed only when a Engineer's representative is present. Finished concrete which is not within the specified tolerances shall be repaired in accordance with paragraph 10.1.16. Interior surface shall be sloped for drainage where shown on the drawings or as directed. Surfaces which will be exposed to the weather, and which would normally be level, shall be sloped for drainage

Floating may be performed by use of hand or power driver equipment Floating shall be started as soon as the screeded surface has stiffened sufficiently and shall be the minimum necessary to produce a surface that is free from screed marks and is uniform in texture Joints and edge shall be tooled where shown on the drawings or as directed.

10.1.14 Protection:

The bidder shall protect all concrete against damage until final acceptance by the University Engineer.

The Bidder shall provide protection to prevent erosion to fresh concrete whenever precipitation either periodic or sustaining is imminent or occurring When precipitation appears imminent, the bidder shall immediately make ready at the placement site all materials which may be required for protection of fresh concrete. The University Engineer may delay placement of concrete until adequate provisions for protection against weather are made all fresh concrete surfaces shall be protected from contamination and from foot traffic until the concrete has hardened. Hardened concrete surfaces which have to receive finish shall be protected against damage from foot traffic and other construction activity by covering with protective mats, ply-wood, or by other effective means Methods of protection shall be subject to approval by the University Engineer.

Concrete curing members shall be kept intact, and other curing materials and processes shall be maintained as necessary to assure continuous curing for a minimum specified curing time. Protection of curing members and other curing methods shall be as described in paragraph 10.1.15.

10.1.15 Curing:**a) General :**

The Bidder shall furnish all materials and perform an work required for curing concrete The curing of concrete shall conform to clause 12.5 of I.S. 456-1078 and clause 5.8 1 S 3873-1978.

Concrete shall be cured by water curing.

The unformed top surfaces of bridges or culvert decks shall be cured for 28 days with damp sand cover or curing mat cover The sand or curing mats shall not be kept so wet as to allow water to drain from them and stain other concrete the sand of curing mats shall be removed after the expiry of the curing period.

All concrete surfaces shall be treated as specified to prevent loss of moisture from the concrete until the required curing period elapsed or until immediately prior to placement of other concrete or back fill against those surfaces. Only sufficient time to prepare construction joint surfaces and to bring them to a surface dry condition shall be allowed between discontinuance of curing and placement of adjacent concrete.

Forms shall be removed within 24 hours after the concrete has hardened sufficiently conforming to clause 10.3 of I.S. 456 - 1978 to prevent structural collapse or other damage by careful removal. Where required repair of all minor surface imperfections shall be made immediately followed by the initiation of curing by the applicable method specified herein Concrete surfaces shall be kept continuously moist after form removal until of curing.

d) MATERIALS:

Concrete cured with water shall be kept wet for at least 28 days from the time the concrete has obtained sufficient set to prevent detrimental effects to the concrete surfaces The concrete surfaces to be cured shall be kept wet by covering them with water -saturated material by using a system of perforated pipes mechanical sprinklers or porous hose, or by other methods which will keep all surfaces continuously (not periodically) wet. All curing methods are subject methods are subjected to approval of University Engineer.

c) COST:

The cost of furnishing all materials and performing all work for curing concrete shall be included in the price bid in bill of quantities for the concrete on which the particular curing methods are required.

10.1.16 Repair of Concrete:

a) General:

Concrete shall be repaired in accordance with clause 5.7 to I.S. 3873 - 1978. Imperfections and irregularities on concrete surface shall be corrected in accordance with paragraph 5.2 9 and clause 5.7 of I.S. 3873 - 1978.

b) Types of Repair:

All repairs shall be made with concrete Repairs to concrete surfaces and addition were required shall be made by cutting regular openings into the concrete and placing fresh concrete to the required lines. The chipped openings shall be sharp and shall not be less than 70 mm in depth. The fresh concrete shall be reinforced and chipped and trowel led to the surface of the openings. The mortar shall be placed in layers not more than 20 mm in thickness after being compacted and each layer shall be compacted thoroughly. All exposed concrete surfaces shall be cleaned of impurities, lumps of mortar or grout and unsightly stains.

c) Cost:

The cost of furnishing all materials and performing all work required in the repair of concrete shall be borne by the Bidder

10.1.17 Measurement of Concrete:

Measurement for payment of concrete required to be placed directly upon or against surfaces of excavation will be made to the lines for which payment for excavation is made measurement for payment of all concrete will be made to the neat lines of the structures, unless otherwise specifically shown on the drawings prescribed in these specification The unit of measurement will be cubic meter.

In measuring concrete for payment, the volume of all openings, embedded pipes and metal work, each of which is larger than 0.1 square meter in cross section will be deducted.

10.1.18 Payment for Concrete:

Payment for concrete in the various pans of the work will be made applicable, unit prices bid therefore in the schedule, which unit price shall include the cost of furnishing all materials and performing all works required for the concrete construction, except that payment for furnishing and placing reinforcing bars will be made at respective prices bid therefore in the schedule.

11.0 DOORS & WINDOWS :**11.1 Anodized sliding Window:**

The Window shall be made to the relevant IS. /Manufacturer standards and shall have necessary accessories such as stopper bolts weather strapping, sliding window, interlocking arrangements and shutter shall be inter locked for weather, scaling shall be mounted on nylon roller, wheels, fixed with suitable thickness glass fitted with suitable PVC rubber beading with M.S.Grill as per the drawings/directions of the University Engineering.

11.2 Aluminium single leaf doors:

The door shall be made to the relevant I S./Manufacturer standards and shall have outer frame of rectangular box section of suitable sizes with suitable thickness with pre-laminated exterior type Novo pan panicle board both side same colors with required glazing, clips, hard ware materials, steel door lock, Aluminum handle, tower bolts, metal Lola screws etc. as per the drawing / directions of University Engineer.

11.3 P.V.C. Doors:

P.V.C. door shall be made as per relevant IS./Manufacturer standards with required accessories and shutters of PVC. materials fitted with suitable rubber beading etc as per the drawing/directions of University Engineer.

11.4 Anodised Aluminum Ventilators:

Ventilator shall be made to the relevant I S /manufacturers standards with necessary accessories such as stoppers etc, with ventilator frame and shutter with suitable size and fixed with suitable thickness of glass fitted with suitable PVC/rubber beading with stay at bottom etc, as per the drawings/directions of University Engineer.

11.5 Collapsible steel shutter:

Collapsible steel shutters shall be made to the relevant I.S/Manufacture standards and shall have vertical channels of suitable braced with flat iron diagonals of suitable size with top and bottom rails of T. Iron required size with suitable diameter of steel pulleys complete with bolts, nuts, locking arrangements, stoppers, handles, including providing priming coat of red oxide etc, as per departmental drawing/directions of University Engineer.

11.6 Aluminum Grill:

Aluminum grill shall be made to the relevant I S./Manufacturers standards and fixed in suitable cement mortar. The grill shall be self finished without any honey combing of surface impairments. The rate shall be for any height and depth including moulding ranking of joints, grooves and all scaffolding and reinforcement as per drawings/directions of University Engineer.

12.0 Internal Electrification:-**12.1 General Requirements:-****12.1.1 Materials:-**

All materials, fittings, appliances etc., used in electrical installations shall comply with the requirements of relevant Indian Standard Specifications and shall be well finished. Materials for which Indian Standard Specifications not been indicated, shall confirm in quality to the samples maintained by the University Engineer or as approved by him.

12.1.2 Conformity with Indian Electricity Act, Rules etc.:-

All electrical work shall be carried out in conformity with the requirements of the Indian Electricity Act 1910 and Indian Electricity Act 1956 framed thereunder and also the relevant regulations of Electric Supply Authority concerned as amended from time to time.

12.1.3 Execution of Work :-

Unless otherwise exempted under the rules of the Indian Electricity Rules, the work of electrical installation shall be carried out under the supervision of a person holding a certificate of competency issued by the recognized authority. The workmen shall also hold certificate of competency. Good workmanship is an essential requirement for compliance with these specifications.

12.1.4 The work shall be executed in such sections and in a manner as directed by the University Engineer to suit the building operations or the convenience of users/occupants.

12.1.5 Testing :-

Generally all electrical work shall be systematically tested by the Contractor in the presence of University Engineer or his nominee to ensure compliance with the specifications laid down. Test results shall be recorded and signed by the Contractor and the University Engineer or his nominee. If the test results are not acceptable, all repairs and replacements and extra work of removal and relaying or refixing shall be carried out by the Contractor at his expense and installation retested, until test results indicate compliance with the prescribed requirements. The Contractor shall supply the necessary apparatus, labour and instruments required for testing.

12.1.6 Record of Installation :-

On completion of the work the Contractor shall submit to the University Engineer complete wiring diagram for each of the installations in the case of internal electrical works, and schematic diagram gear works and the route layout plans in case of external over-head line or underground cable work. Two sets of plans shall be submitted and it shall be ensured that the plans indicate complete site data of the installations.

All circuits shall be clearly indicated and numbered in the wiring diagram and all points shall be given the same number as the circuit to which they are electrically connected.

12.1.7 Safety Procedures and Practices :-

In all major electrical installations, such as substations, industrial establishments, transmission and distribution lines and cable networks. Safety procedures, instructions and working on low, medium and high voltage mains and apparatus and safety practices listed in IS-5216-1969 Guide for safety practices in electrical works shall be followed to the extent applicable. The Contractor shall provide workmen with safety devices and appliances.

12.1.8 Fire Safety :-

All electrical equipment shall satisfy the requirements laid down in IS-1646-1961 Code of practice for fire safety of buildings (general) electrical installations and IS-3034-1966 Code of practice for fire safety of industrial buildings, electrical generating and distributing stations, to the extent applicable.

12.2 Materials:-

12.2.1 Wooden boards shall be seasoned teak wood, unless otherwise indicated, and shall be of substantial designs the exposed edges shall be rounded or chamfered as directed. They shall be not less than 6 mm and sides not less than 20 mm. The size of the boards shall be suitable for the accessories to be mounted thereon so that accessories are neatly and conveniently mounted.

The holds for screws shall be drilled and prepared for countersinking of screws. The boards shall be finished with (2) two coats of shellac varnish.

12.2.2 Conduit and Conduit Fittings:-

All conduit and conduit fittings and accessories shall be of rigid steel conduit or rigid non metallic PVC conduit as indicates and shall comply with the followings Indian Standards. Rigid steel conduits shall be soliding drawn or seamed by welding and with stove enameled black or galvanised finish as indicated.

- (a) IS-2509-1973 Specification for rigid non-metallic conduits for electrical installations. Rigid non-metallic conduits shall be of unplasticised PVC.
- (b) IS-3419-1976 specification for fittings for rigid non-metallic conduits. Conduits fittings shall be of unplasticised PVC.

12.2.3 Screws and Fastenings:-

All screws shall be of alloy aluminum or chromium plate iron, unless otherwise indicated.

12.3 Workmanship:

12.3.1 Fitting of Electrical Equipment:-

The sitting of cable and conduit runs, controls, distribution boards, fittings and accessories, etc., shall be as laid down in IS 4648-1968, Guide for electrical layout in residential buildings or directed by the University Engineer. The location of fittings etc., shall be marked in a advance on walls, etc., and approved by the University Engineer or his nominee.

12.3.2 Main Switches, Switch Board and their Locations:-

- (a). Open type switch boards shall be placed only in dry situations and shall not be placed in the vicinity of storage batteries or exposed to chemical fumes.
- (b). Main switch boards shall be installed in rooms or cupboards having provision for locking arrangements.
- (c). Switch boards shall not be erected above gas, stoves or sinks or within 2.5 m of any washing unit i.e. the washing rooms to laundries or in the bathrooms lavatories toilets or kitchens.
- (d). Switch boards, where indicated, shall have weather proof outlet casing and shall be provided with glands or bushings or adapted to receive screwed conduit according to the manner in which cables are run. PVC and double flanged bushes shall be fitted in the holes of the switches for entry and exit of wires.
- (e). A switchboard shall be installed so that its bottom is not within 1.25mts. above the floor, unless the front of the switch board is completely enclosed by a door.

- (f). Switch boards shall be recessed in the wall, if so specified. The front shall be fitted with hinged panel as indicated with locking arrangements the outer surface of door being flush with the walls unless otherwise indicated. Ample room shall be provided at the back for connections and at the front between the switch gear mountings and the door.
- (g). Equipment which are on the front of a switch board shall be so arranged that inadvertent personal contact with live parts is unlikely during the manipulation of switchgears, changing of fuses or like operations.
- (h). No holes other than the holes by means of which the switch board panel is fixed shall be drilled closer than 13 mm from any edge of the panel.
- (i). Various live parts, unless they are effectively screened by substantial barriers of non-hygroscopic, non-inflammable, insulating material shall be so spaced that an arc cannot be maintained between such parts and earth.
- (j). The arrangement of the switch gears shall be such that they shall be readily accessible and their connections to all instruments and apparatus shall also be easily traceable.
- (k). In every case in which switches and fuses are fitted on the same pole, these fuses shall be so arranged that the fuses are not alive when their respective switches are in the 'off' position.
- (l). No fuses, other than those in instrument circuit, shall be fixed on the back of or behind a switch board panel or frame.
- (m). All switch board connected to medium voltage and above shall be provided with 'Danger Notice Plate'.

12.3.3 Main and Branch Distribution Boards and their Location:-

- (a). Main distribution board shall be controlled by a linked switch fuse or circuit breaker. Each outgoing circuit shall be provided with a fuse on the phase or line conductor, the switches shall always be linked.
- (b). Branch distribution boards shall be controlled by a linked switch or a circuit breaker. Each outgoing circuit shall be provided with a fuse on the phase or live conductor. The earthed neutral conductor shall be connected to a common link and be capable of being disconnected individually for testing purposes.
- (c). The distribution fuse boards, shall be fixed on suitable stanchion or wall and shall be accessible for replacement of fuses.
- (d). The distribution fuse boards shall be located as near as possible to the center of the load they are intended to control.
- (e). Where two or more distribution fuse boards are connected at different phases these distribution boards shall be:
 - (i). Fixed not less than 2 M apart or
 - (ii). Arranged so that two cannot be opened at a time, such as they are interlocked and metal case is marked 'Danger' 415 volts.
 - (iii). Installed in a room or enclosure accessible to only authorized persons.

12.3.4 Passing through Walls and Floors:-

- (a). Where conductors pass through walls and floors, the following methods shall be employed. Care shall be taken to see that wires pass freely through protective pipe or box and that the wires pass through in a straight line without any twist or cross in wires on either ends of such poles.
- (i). The conductor shall be carried either in a rigid steel conduit or a rigid non metallic conduit or in a porcelain tube of such a size which permits easy drawing in the ends of conduit or tube shall be neatly and securely bushed with approved material.
 - (ii). Insolated conductors while passing through floors shall be protected from mechanical injury by means of rigid steel conduit to a height not less than 1.5m above. The floors and flush with the ceiling below. This steel conduit shall be earthed and security bushed.
 - (iii). Where a wall tube passed outside a building so as to be exposed to weather the outer shall be bell-mounted and turned downwards and properly bushed on the open end or shall be sealed to prevent entry of water.

12.3.5 Fixing to Walls and Ceilings:-

Plugs for ordinary walls or ceilings shall be of seasoned wood not less than 50mm long and 25 mm square on the inner end and 20 mm square on the outer end. They shall be cemented into walls within 6.5 mm of the surface, the remainder being finished according to the nature of the surface with cement plaster. In the case of new buildings, wherever possible, wood plugs shall be fixed in the walls before they are plastered keeping in mind the thickness of plaster to obtain a flush surface. To achieve neatness, plugging of walls or ceilings may be done by an approved type of asbestos, metallic or a fiber fixing plug as alternative to wooden plugs.

12.4. Bends in Conduit:-

All necessary bends in the system including diversion shall be done by bending conduit pipes or by inserting suitable solid or inspection type normal bends, elbows or similar fittings or by fixing cast iron inspection boxes as approved by University Engineer. Conduit fittings shall be avoided as far as possible on conduit system exposed to weather and where considered necessary solid type fittings shall be used. Radius of bends in conduit pipes shall not be less than 75 mm.

12.5 Recessed Conduit Wiring System:-

12.5.1 General :-

Recessed conduit wiring systems shall compile with all the requirements of surface conduit wiring system except with regard to fixing of conduits and in addition the requirements specified in the following clauses shall also be compile with.

12.5.2 Making of Chases :-

Chases in the wall shall be neatly made and of ample dimensions to permit the conduit to be fixed in the desired manner. In the case of buildings under construction conduits, shall be buried in the wall before plastering and shall be finished neatly after erection of conduit. In case of exposed brick/ruble masonry work special care shall be taken to fix the conduit and accessories in position along with the building work.

12.5.3 Fixing of Conduit in Chase :-

Conduit pipe shall be fixed by means of staples or by means of saddles not more than 600 mm apart. Fixing of standing bends or elbows shall be avoided as far as practicable and all curves shall be maintained by bending the conduit pipe itself with a long radius which will permit easy drawing in of conductors. All threaded

joints of conduit pipe shall be treated with approved preservative compound to secure protection against rust.

12.5.4 Fixing of Ms./Cast Iron Conduit Boxes in Walls :-

Conduits boxes of mild steel or cast iron shall be fixed in the walls with cement and sand mortar 1:2. No screwing of conduit boxes shall be required when fixed in recessed conduit wiring system.

12.5.5 Inspection Boxes :-

Inspection boxes shall be provided to permit periodical inspection and to facilitate replacement wires, if necessary. These shall be mounted flush with the wall. Suitable ventilating holes shall be provided in along with laying of recessed conduit.

13.0 R.C.C. Jallies

13.1 R.C.C. Jallies shall be of cement mortar (1:2) reinforcement with 3mm dia M.S. Sire at 75mm C/C in both directions.

13.2 R.C.C. Jallies Fixing :-

The jallies shall be set in position true to plumb level before the jambs sills and soffits of the openings plastered it shall then be properly grouted with a cement mortar (1:3) (1 cement course sand) and rechecked for levels finally, the jambs, sills and soffits shall be plastered embedding the Jallies uniformly on all sides.

14.0 Flooring with cement concrete surface Ellies pattern flooring Ist sort

14.1 The Concrete base shall be prepared as detailed in APSS 701.

14.2 On the clean wet surface of the concrete base, before has set, will be laid a layer of cement concrete to give finished depth 20mm over the base concrete. The cement concrete will consist of standard specification hard broke stone chippings, grounded from gauges 3.34mm to 10mm and well mixed with standard specifications. Portland cement neat, in the proportion of 3 parts of broken stone to one part of cement, or as maybe otherwise specified or instructed by the University Engineer. The cement concrete shall be spread immediately it has been mixed, using a straight edge. The concrete must well beaten with 2kg wooden "thapies" until mortar comes to the surface, say for not less than 15 minutes and it is very important that the consolidation should be carried out quickly, as otherwise the initial set of the cement is likely to spoil the work, if the beating is continued too long or is not sufficiently through. When the mortar has come to the surface, the floor shall be polished with trowels.

14.3 To prevent large areas of cement concrete from cracking due to contraction during setting, the floor shall be divided into strips extending across the width of the room or into squares or rectangles 1.2 Mtrs to 2.4 Mtrs in width. The edge of each section into which the floor is divided should be defined by flat bars of steel or wood, their depth being the same as that proposed for the finished floor, they should be white wash in order to prevent them from adhering to the concrete. When the slabs have set, the bars should be removed and the joints filled in, with standard specifications cement mortar (1:2).

14.4 If it is desired to have a fine polish, neat cement mortar may be sprinkled over the surface of the concrete which has set and rubbed over with polishing stones.

- 14.5** After the floor has been completed, it should be covered with 50mm of grass, sand or saw-dust and kept wet for three weeks. It is better not to be brought into use for a month after laying.

15.0 Pressed galvanized steel frames for doors and windows and cupboards

- 15.1** Galvanized steel frames for wooden shutters shall be pressed out of galvanized commercial mild steel sheets of 1.25 mm thickness and shall comply with requirements of IS 4351-1976, specification for steel door frames. The size, type (profile) and dimensions of the frames shall be as indicated. The tolerance over the profile size shall be +2mm. Steel frames shall be of approved make.

15.2 Construction:-

Each door frame shall consist of jambs, head and if indicated angle threshold. The whole shall be welded or rigidly fixed together by mechanical means. Where threshold is indicated, temporary base tie shall be screwed to the feet of frames in order to form a rigid unit.

15.3 Fixing Lugs:-

There shall be three adjustable lugs with split end tail to each jamb without fanlight and four for jamb with fanlight. The length of head of lugs shall correspond to the profile and size of door frame and shall be made from flat steel strip 25mm wide and not less than 1.6mm thick. The tail of lugs shall be 20cm long and of steel strip not less than 40 x 1mm.

15.4 Hinges:-

Hinges shall be welded to the jambs.

15.5 Lock Striking Plate:-

There shall be an adjustable lock strike plate of steel, complete with motor guard, to make provision for locks or latches. Lock-striking plates shall be of mild steel and fixed at 75cm to 90 cm from finished floor level.

15.6 Shock Absorbers:-

For side-hung door there shall not be less than three buffers of rubber or other suitable material inserted in holes in the rebate. For double shuttered doors there shall be two buffers.

15.7 Finish:-

The surface shall be thoroughly cleaned, and made free of rust, mill scale, dirt, oil etc., either by mechanical or chemical means.

- 15.8** Frame should be galvanized with electrolytic plating coating of zinc 15 to 20 microns thickness.

15.9 For Fixing:-

The door frame shall be fixed in masonry or concrete work. The hollow partition of frame shall be fixed with P.C.C. (1:2:4).

- 15.10** The frame shall be treated with a coat of primary paint.

15.11 Method of Measurement:-

The length the vertical post and head only for door frames will be measured in meters correct on 0.01 of a meter.

16.0 Steel Windows and Ventilators

The steel windows and ventilators shall be confirming in to I.S.I.No.1033-1975 and approved make.

17.0 R.C. Dabbing with C.M. using 126 gauge chicken wire mesh (Hexagonal) for parapets, domes etc.

17.1.1 Chicken wire mesh shall be galvanized wire 0.90mm dia and of 12.5 mesh.

17.1.2 Workmanship

17.1.3 Chicken wire mesh shall be lightly stretched with the longway of the mesh across the supports before nailing. This shall be secured with 25mm galvanised steel staples or nails at 200mm centers, if studding of wood and with 0.90mm iron tying wire, if the studding is of steel. Edges of lathing shall be lapped not less than 2.5mm at the sides and ends and wired together with 1.25mm tying wire. Overlaps shall not occur at angles or curves and end laps shall occur only at supports sides of sheets shall be wired together with galvanized wire diameter not less than 1.25mm, every 100mm between supports.

17.1.4 The strands in the various sheets shall all slope in the directions: in vertical work they should slope inwards and downwards from the face of the rendering.

17.1.5 Before plastering, the surface of metal lathing shall be brushed over with then cement slurry or given a protective coat of bitumen oil paint.

17.1.6 It should be carried in three coats. Mortar for first coat shall be stiff consistency and applied as evenly as possible to give a good cover to the lathing. It shall be allowed to dry until all shrinkage movement has ceased before the following cost is applied. Too much pressure shall not be used in applying plastered to lathing to guard against the deflection.

17.1.7 Mortar, application, curing etc., This shall confirm to APSS:903

18.0 Builder's Hardware**18.1.1 Material:-**

Articles of builder's hardware (fittings) shall be of mild steel, cast iron, brass, aluminum alloy etc., as indicated. The type and size of the fittings shall also be as indicated. Fittings shall be of approved make.

18.1.2 Shape and Dimensions:-

The shape and dimensions of the fittings shall conform to the shape and dimensions given in the relevant IS Specifications, unless otherwise indicated. Where, however, shape of fittings or its components are indicated in the relevant IS specification as illustrative, they are not intended to limit their design. Such fitting or components shall be provided of the shape as approved by the University Engineer.

18.1.3 Where no IS Specifications are indicated, such fittings shall be provided equal in quality to the samples maintained by the University Engineer or as otherwise approved and directed by him.

18.1.4 Finish:-

Except where otherwise specified, articles of builders' hardware shall have the following finish:-

- (a). Mil Steel and Cast iron fittings : Stove enamelled black
- (b). Brass fittings : Finished bright or satin polished
- (c). Aluminium fittings : Anodised, Anodic fill shall be transparent, unless indicated to be dyed.

18.1.5 Manufacture:-

Fittings shall be well and finished to the correct shape and size, free from surface defects and flaws and shall have smooth action. Cast fittings or components shall be free from casting and other defects. All screw holes shall be countersunk to suit the countersunk head wood screws. All burrs, sharp edges and corners shall be removed and finished smooth.

18.1.6 Screws:-

Unless otherwise indicated, brass articles shall be fixed with brass screws; and mild steel, cast iron and aluminium articles with MS wood screws or as indicated. Screws shall be of the sizes as given in the IS specification for the fitting or as required.

18.2 Tower Bolts

18.2.1.1 Generally steel tower bolts shall comply with IS 204 (Part-I)-1978, specification for tower bolts, Part I, ferrous metals. Brass and aluminium tower bolts shall comply with IS 204 (Part-II)-1978, Specification for tower bolts, part-II non ferrous metals. The type and size of the tower bolts shall be as indicated.

18.2.1.2 Where diameter of bolt for a particular size of tower bolt is stated in the IS as 10 or 12mm, the bolt shall be of 10mm dia upto size 125mm and 12mm dia for sizes 150mm and above.

18.2.2 Ferrous Tower Bolts:-

Steel tower bolts shall be of the following types. Bolts shall be finished bright and other parts stove enameled black.

- (a) Mild steel barrel tower bolts with mild steel barrel and mild steel bolt
- (b) Mil steel semi-barrel tower bolts, open cover, with mild steel sheet pressed barrel and mild steel bolt
- (c) Mild steel tower bolts reveted type with back plate and mild steel bolt and open staple
- (d) Mild steel skeleton tower bolts with steel sheet pressed plate and staple and mild steel bolt.

18.2.3 Non Ferrous Tower Bolts:-

Brass and aluminium tower bolts shall be of types as given below. These shall be provided with a small spring and ball on the inside of the barrel for smooth working. Brass bolts and barrels shall be polished bright. Aluminium alloy bolts and barrels shall be anodised.

18.2.3.1 Types of Barrel Tower Bolts:

- (a) Brass barrel tower bolts with cast brass barrel and rolled or cast brass bolt
- (b) Brass barrel tower bolts with sheet brass barrel and rolled or drawn brass bolt
- (c) Brass barrel tower bolts with barrel of extruded sections of brass and rolled or drawn brass bolt
- (d) Aluminium barrel tower bolts with barrel and bolt of extruded sections of aluminium alloy.

18.2.3.2 Types of Skeleton Tower Bolts

- (a) Brass skeleton tower bolts with cast brass plate and staples and rolled or drawn brass bolt.
- (b) Brass skeleton tower bolts with staples and plate of extruded sections of brass and rolled or drawn brass bolt.
- (c) Aluminium skeleton tower bolts with plate, staples and bolt of extruded sections of aluminium alloy.

18.3 Sliding Door Bolts

18.3.1 Mild Sliding Door Bolts:-

These shall be plate type and comply with IS 281-1973, Specification for mild steel sliding door bolts for use with padlocks. The sliding door bolts shall have smoothing sliding action. Hasp shall be surely riveted in the bolt. Staple shall be firmly riveted. The screw holes on the staple shall be so positioned that they are completely covered by the hasp in the closed position. Back plate, strap and staple plate shall be stove enameled black. Hasp and bolt shall be finished bright.

18.3.2 Non Ferrous Metal Sliding Door Bolts:-

These shall comply with IS 2681-1979, Specification for non-ferrous sliding door bolts for use with padlock and shall be of the following types, as indicated:-

- (a) Brass sliding door bolts with sand or die cast brass hasp, staple and fixing bolts and rolled or drawn brass bolts.
- (b) Aluminium alloy sliding door bolts with hasp, staple and fixing clips of sheet, casting or extruded sections and fixing and sliding bolts of extruded sections or coating of aluminum alloy.

18.3.2.1 The sliding door bolt shall have smooth sliding action. The hasp, when not cast integral with the bolt, shall be properly secured to the bolt. Sliding bolts shall be provided with fixing bolts. Brass bolts shall have satin finish or polished. Aluminum bolts shall be anodized.

18.4 Hinges

18.4.1 Generally Hinges shall be well made and shall be free from flaws and defects. All hinges shall be cut clean and square. The hole for the hinge pin shall be central and square to the knuckles/boss. All sharp edges and corners shall be removed. The sides of the knuckles shall be straight and at right angles to the flap. The movement of the hinges shall be free, easy and square and working shall not have any play or shake. The hinge pin shall fit inside the knuckles firmly and riveted in the case of steel hinges, and riveted or firmly notched in the case of non ferrous metal butt hinges and properly finished.

Rivet head shall be well formed so as not to allow any play or shake. All screw holes shall be clean countersunk, suitable for countersunk head wood screws.

18.4.2 Steel Butt Hinges:-

Steel but butt hinges shall be of cold rolled mild steel and shall comply with IS 1341-1976 specification for steel but hinges. Steel but hinges are classified as light weight, medium weight and heavy weight. Hinges shall be of medium weight, unless otherwise indicated. The pins shall be of mild steel wire. Hinges shall be finished bright with smooth surface.

18.4.3 Non Ferrous Metal Butt Hinges:-

Brass and aluminum butt hinges shall comply with IS 205-1978 Specification for non ferrous metal butt hinges and shall be of cast brass, extruded brass or extruded aluminum alloy, as indicated. Brass hinges shall be polished bright or satin finished. Aluminum hinges shall be polished bright or satin finished. Aluminum hinges shall be anodized.

18.4.3.1 In the case of brass hinges, the hinge pin shall be made of mild steel: or of brass in locations susceptible to atmosphere corrosion where indicated. In the case of aluminum alloy hinges, the hinges shall be of aluminum alloy; or of mild steel, galvanized, where indicated. The aluminum alloy hinge pin shall be hard anodized, and sealed with oil, wax or lanolin.

18.4.3.2 Non ferrous metal butt hinges shall be of the size as indicated. Those are designated with length of the hinge followed with letter A, B, C, D, E and F suitable for use with 45, 40, 35, 30, 25 and 20mm thick shutters respectively suffixed with numbers 11, 12, 21, or 22. Lower suffixing numbers indicate heavier 11, 12 hinges which are recommended for shutters of larger sizes, while higher suffixing numbers indicate lighter hinges and are recommended for shutters of comparative smaller sizes. For example, a hinge with size designation 125 C 11 would indicate that the hinge is 125mm in length and is suitable for 35mm thick shutter when the size of the shutter is considerably larger.

18.5 Hasps and Staples:-

These shall conform to IS 363-1976, Specification for hasps and staples. These shall be of the following types as indicated:-

- | | | | |
|------|--------------------------------|---|-------------|
| (a). | Mild steel hasp and staple | - | Wire type |
| (b). | Mild steel hasp and staple | - | Safety type |
| (c). | Brass hasp and staple | - | Safety type |
| (d). | Aluminum alloy hasp and staple | - | Safety type |

18.5.1 Hasps and staples shall be well made and free from defects. The hinge pin shall be of mild steel in the case of mild steel hasp and staples, and of mild steel or brass in the case of brass or aluminum hasps and staples, as indicated. The movement of the hinge shall be free, easy and square and shall not have any play or shake. The hasps shall fit the staples correctly. The staple, except in the case of cast one, shall be riveted properly to its plate. The ends of the hinge pin for the safety type hasp shall be riveted and rivet head properly formed and finished. All screw holes shall be lean an countersunk to suit countersunk head wood screws.

18.5.2 Mild steel hasps and staples shall be stove enameled black. Brass hasps and staples shall be finished bright and covered with clear lacquer. Aluminum alloy hasps and staples shall be anodized.

18.6 Handles:-

These shall conform to IS 208-1979, Specification for door handles. These shall be of the following types, as indicated:

- (a). Cast iron or malleable cast iron
- (b). Mild steel pressed oval
- (c). Cast brass
- (d). Brass, fabricated handles
- (e). Cast aluminum
- (f). Aluminum alloy fabricated handles

18.6.1 Door handles shall be finished smooth. When the grip portion of the handle is joined with the base piece by mechanical means, the arrangement shall be such that the assemble handle shall have adequate strength. Cast iron, malleable cast iron and mild steel door handles shall be finished stove enameled black. Brass handles shall be with bright polished finish. Aluminum handles shall be anodized.

18.7 Floor Door Stoppers:-

These shall conform to IS 1823-1974, Specification for floor door stoppers. These shall be of the following types, as indicated:-

- (a). Aluminum alloy body and tongue with hard drawn steel spring.
- (b). Brass body and tongue with hard drawn steel spring.

18.7.1 The door stopper shall be well made and shall have smooth action. The body or housing of the door stopper shall be cast in one piece and it shall be fixed to the cover plate by means of brass aluminum, or mild steel screws. The spring shall be fixed firmly to the pin. The tongue which would be pressed while closing or opening of the door shall be connected to the lower part by means of copper pin. On the extreme end, a rubber piece shall be attached to absorb shocks due to the pulling action of the door.

18.7.2 The exterior of the brass door, stopper, which will be in flush and above the floor, shall be finished bright or satin and exterior of aluminum stopper shall be anodized.

18.8 Door Closers (Hydraulically Regulated):-

These shall comply with IS 3564-1975 Specification for door closer (hydraulically regulated) and shall be of designation 2 suitable for doors weighing 36 to 60 kg of designation 3 suitable for doors weighing 61 to 80 kg as indicated. Door closers shall have cast iron body or aluminum alloy body, as indicated. Closers shall be universal type suitable for both anti-clockwise and clockwise doors, without any change in parts of the closers.

Door closers with cast iron body shall be painted and finished with lacquer. In case of aluminum body, closer shall be anodized.

18.8.1 The surface of the closer shall be clean, without sharp edges, free from cracks burrs, dents or any other visible surface defect. The door closer shall not allow any signs of leakage under working conditions. The closing time shall be easily adjustable by means of regulating screw.

18.9.1 Towel rails shall be D Type with flanged ends for fixing to the background. Alternatively brackets with sockets suitable for fixing to the background shall be provided.

18.10 Wire Cloth:-

Wire cloth shall comply with IS 1568-1970, Specification for wire cloth for general purposes. Wire shall of galvanized mild steel and the cloth shall conform to the following dimensions:

Average width of aperture	Nominal diameter of wire
mm	mm
11.40	0.63
1.18	0.56
1.00	0.50

Wire cloth shall be regularly woven with a number of equally spaced parallel wires in both warp and weft directions to produce uniformly square meshes or openings. The wire cloth shall be properly salved by one or more wires in each edge.

“WORKMANSHIP”

18.11 Generally:-

All builder's hardware shall be fixed to Joinery in a secure and efficient manner. Special attention shall be given to the size and fixing of screws to ensure that the screws are driven (and not hammered) tight and the heads of the screw do not protrude.

18.12 Hinges:-

All hinges except 'T' or strap hinges shall be countersunk into the edge of timber joinery and frames to a depth equal to the thickness of the leaf of the hinge.

18.13 Metal Sockets:-

These shall be provided to all tower bolts and sliding bolts where the bolts enter brick, stone, or concrete. These shall be securely fixed flush with the surface into mortices and cemented. Mortice plates over holes shall be provided where the shoots enter wood.

18.14 Oiling:-

All locks, bolts, springs, and other items of builders' hardware with moving parts shall be properly oiled and handed over in working condition on completion.

18.15 Woven Wire Cloth:-

When fixed in panels of door, window or opening shall be secured into the rebates of stiles and rails or frames and fixed with beads. Edges of the wire cloth shall be bent over beads and the bead pressed well into the angle of the rebate to hold the wire cloth on two faces.

18.16 Wire Netting Galvanized:-

When fixed to wood frames, shall be fixed with staples at intervals not exceeding 30cm wire netting shall be tightly stretched during fixing to prevent sagging. Authorized joints shall be sewn together with 15cm over-lap with 1.6m annealed wire.

19.0 Brand and make of materials for building works, water supply works, sanitary works and Electrification works unless otherwise specified.

- | | |
|-----------------------|--|
| 1. G. I. pipes | I.S.I. Standard |
| 2. Wash basins | I.S.I. Standard |
| 3. G. M. Wheel valves | Leader make heavy type
or equivalent brand with |

	I.S.I. Standard
4. Brass taps 15 mm	Leader make heavy type or equivalent brand with I.S.I. Standard
5. PVC waste pipe	Usha, Kohinoor or equivalent brand with ISI standard.
6. C.P. Waste pipes	Usha, Kohinoor or equivalent brand with ISI standard
7. Nylon connections 15 mm	Usha, Kohinoor or equivalent brand with ISI standard
8. Pillar taps	SSF heavy type, leader make or equivalent brand with ISI standard
9. Steel door frames	M/s. Savaram Mastan Rao & Sons, Guntur M/s. Hanuman Industries, Nandyala M/s. Sarada Enterprises, Jeedimetla, Hyderabad M/s. Ganesh Rolling Shutters, Hyderabad
10. M.S. Windows and :	a).M/s. Hanuman Industries, Ventilators Nandyala b).Maganti make from Messers, Maganti Brothers,Madras c).Madhu Industries, Mavalli tank bund road, Bangalore – 560 002 d).M/s. Balaji Steel Industries, Balaji Nagar, Hyderabad e).M/s. Ganesh Rolling Sector, Hyderabad f).M/s. Sarada Enterprises, Jeedimetla, Hyderabad.
11. Cement	a). M/s. Coromandal/Bhima Cements, Ramapuram (P.O) Kodad (Tq) Nalgonda Dist., (A.P.) b). M/s. K.C.P. Ltd., (Ram Krishna Cements) Macherla – 522 406 Guntur Dist. (A.P) c). M/s. Sri Vishnu Cement Ltd., Sitapuram (P.O.) Poudapdu (Tq) Nalgonda Dist. (A.P) d). M./s. Andhra Cement Co., Ltd., Durga Cement Works,

Durgapuram, Dachepalli,
Guntur Dist., (A.P.)

- e). M/s. Rasi Cements Ltd.,
40-1-48/2, Valluru Complex, Bandar Road
Vijayawada – 520 010 (A.P.)
- f) Maha Gold Cements.
- g) Priya Cements.
- h) L&T Cements
- I) Hemadri Cements

12. Reinforcement Steel

- a). M/s. Steel Authority of India Ltd,
GVR Towers,
1st line, Bharati Nagar,
Ring Road,
Vijayawada – 520 008 (A.P.)
- b). M/s. Vishaka Steel Plant
Visakhapatnam. (A.P.)
- c). M/s. Tata Iron and Steel Co., Ltd.,
104, S.P. Road,
Surya Towers, 6th Floor
Secunderabad – 500 003. (A.P.)

SCHEDULE- 'A'**Part - I**

NAME OF WORK: Civil works for Lift facility at B.R. Ambedkar memorial Library in ANU Campus.

NOTES TO SCHEDULE 'A' PART-I:

1. The Tenderer has to quote an overall excess/less percentage against Estimated Contract Value shown in Scheme 'A' Part - I.
- 1.1 Civil works for Lift facility at B.R. Ambedkar memorial Library in ANU Campus shall be completed within a period of 3 (Three) months from the date of Agreement.
2. The Contractor has to quote his excess/less or Nil percentage in the Contractor's offer sheet in the space provided for the purpose.
 1. The percentage quoted shall be upto a maximum of two decimals and shall be written clearly in figures and words in case of discrepancy between the percentage quoted in figures and words, the percentage quoted in words will prevail.
 2. The quantities given here are those upon which the lumpsum cost of the work is based but they are subject to alterations, omissions, deductions or additions as provided for in the conditions of the contract and do not necessarily show the actual quantities of work to be done.
 3. It is to be expressly understood that the measured work is to be taken net (notwithstanding any custom or practice to the contrary) according to the actual quantities placed and finished according to the drawings or as may be ordered from time to time by the University Engineer and the cost calculated by measurement or weight at the respective prices without any additional charge for any necessary or contingent works connected therewith. The rates shown are for the works in site and complete in every respect.
 4. All items of work will have to be executed as per standard specifications laid down in A.P.S.S. and the special specifications and general features of design attached herewith. The quoted offer shall include all operations described in the said specifications and general features and shall be inclusive of all charges such as leads, lifts classification, incidental charges, all taxes, royalties, hire and operational charges of all T & P, security measures, maintenance of works and insurance's during the defects liability period etc. complete.
 5. Vernacular signature should be translated into English.
 6. Additions and alterations in schedules or conditions will disqualify the tender.
 7. Steel centering should be used for all members involving the use of centering.
 8. The Tenderer should inspect the site and check up the possible water sources for carrying out work throughout the year, monsoons or non-monsoon seasons irrespective of the quantum of rainfall and quote their offer accordingly. No subsequent claims for extra water leads will be entertained under any circumstances.
 9. The Contractor will not be entitled to claim any interest on arrears, which he may get on the final settlement of accounts.
 10. The Contractor shall make his own arrangements for the acquisition of stone and other quarries etc., at his own cost.

11. Time is the essence of the contract and the contractor is required to complete the work within the specified agreement time. If for any reason there is a shortage of work due to any exigencies for more than one month, the University will take necessary action to complete the balance work after duly settling bills of the contractor as per rules.
12. The tenderer is advised to quote the tender after working out their own rates, without any reference to the estimated provision, keeping in view the clause 19 of tender notice regarding the recovery of VAT tax and other levies, as the estimate was prepared at 5.00% VAT tax. The contractor is advised to quote his offer taking this in to consideration.
13. The basic rates towards cost of steel and cement are provided in the estimate. The Contractor is advised to quote his offer taking into consideration of the prevailing market rates. No claim of any sort in this regard will be entertained by the University.
14. The technical personnel employed by the contractor and the contractors are responsible for the mark out of the building and its correctness and for submitting monthly bills for payment and for the compliance of instructions issued in the order book. The payment of reimbursement for engaging technical personnel will be made if and only if the above items are properly attended to and if and only if the work is completed in time, maintaining the required quality.

The payment towards reimbursement of expenditure in engaging the technical staff will be subject to turn actual attendance, preparation and submission of working drawings for approval by the University etc.,. The University Engineer is the deciding authority about the payment of this item.

SCHEDULE 'B'
List of Drawings

NAME OF WORK: Civil works for Lift facility at B.R. Ambedkar
memorial Library in ANU Campus

1. All drawings given hereunder are to be signed by the Contractor as well as the Registrar, Acharya Nagarjuna University.

Sl. No.	Drawing No.	Date	Description	No. of Sheets
1	Nil	Nil	Nil	Nil

2) The Contractor's attention is drawn to the clause 14 to 19 of the preliminary specifications of A.P.S.S. referring to the drawings and specifications.

ACHARYA NAGARJUNA UNIVERSITY:: NAGARJUNA NAGAR

Name of work:- Civil works for Lift facility at B.R. Ambedkar memorial Library in ANU Campus.

SCHEDULE – A

S.N	QTY	Description of work	APS S No.	Estimated rate in figures and words	Unit of calculations in figures and words	Amount in figures
		GROUND FLOOR				
1	35.00	Earth work excavation for foundation of building in hard gravel soils & red earth i.e. cost of depositing in bank with initial lead of 10 m & left of 2M etc complete		267.54 (Rupees Two Hundred Sixty Seven and Paise Fifty Four Only)	1 cum (One Cubic Meter Only)	9363.90
2	2.00	P.C.C (1:4:8) machine basis for foundation / base concrete using 40mm HBG metal of approved quantity by blastical hard broken i.e. of all materials taxes, high order less octrai, all leads, lifts chip labour charges etc complete		3873.40 (Rupees Three Thousand Eight Hundred Seventy Three and Paise Forty Only)	1 cum (One Cubic Meter Only)	7746.80
3		V.R.C.C(1:11/2:3) in ground floor using 20mm HBG metal obtained by plastering, hand crushed i/c cost, conveyance of all materials, taxes, all leads, lifts, cantering, scaffolding, curing, labour charges etc., complete. But excluding cost and fabrication of steel reinforcement				
A	5.50	for columns up to G.L. (Plinth level)		8177.14 (Rupees Eight Thousand One Hundred Seventy Seven and paise Fourteen Only)	1 cum (One Cubic Meter Only)	44974.27
B	2.00	For Plinth beams		10164.79 (Rupees Ten Thousand One Hundred Sixty Four and Paise Seventy Nine Only)	1 cum (One Cubic Meter Only)	20329.58
C	1.50	For columns at G.F		10244.30 (Rupees Ten Thousand Two Hundred Forty Four and Paise Thirty Only)	1 cum (One Cubic Meter Only)	15366.45
D	1.00	For T beams & slab beams		9956.28 (Rupees Nine Thousand Nine Hundred Fifty Six and Paise Twenty Eight Only)	1 cum (One Cubic Meter Only)	9956.28
E	4.00	For slab		1348.36 (Rupees One Thousand Three Hundred Forty Eight and Paise Thirty Six Only)	1 smt (One Square Meter Only)	5393.44
4	1.10	Supplying, cutting, fabrication of steel for reinforcement i/c. cost, conveyance of all materials, taxes, labour charges etc., compete.		56458.50 (Rupees Fifty Six Thousand Four Hundred Fifty Eight and Paise Fifty Only)	1 M.T (One Metric Ton Only)	62104.35
5	6.00	Brick work in CM(1:8) ground floor using approved quality traditional size bricks i/c cost, conveyance of all materials, taxes, all leads, lifts, curing, centring, scaffolding, labour charges etc., compete		5621.18 (Rupees Five Thousand Six Hundred Twenty One and Paise Eighteen Only)	1 cum (One Cubic Meter Only)	33727.08
6	90.00	Impervious coat with imperious compound/ Acco proof compound at 1.00kg per 1 bag of cement in plastering in cm(1:3) 20mm thick i/c. cost, conveyance of all materials, taxes, labour charges etc., compete In G.F.		3905.49 (Rupees Three Thousand Nine Hundred Five and Paise Forty Nine Only)	10 smt (Ten Square Meter Only)	35149.41

S.N	QTY	Description of work	APS S No.	Estimated rate in figures and words	Unit of calculations in figures and words	Amount in figures
		FIRST FLOOR				
7		V.R.C.C(1:11/2:3) in ground floor using 20mm HBG metal obtained by plastering, hand crushed i/c cost, conveyance of all materials, taxes, all leads, lifts, cantering, scaffolding, curing, labour charges etc., complete. But excluding cost and fabrication of steel reinforcement				
A	2.00	for columns at FF		10783.21 (Rupees Ten Thousand Seven Hundred Eighty Three and paisa Twenty One Only)	1 cum (One Cubic Meter Only)	21566.42
B	1.00	For T beams & slab beams at FF		9863.66 (Rupees Nine Thousand Eight Hundred Sixty Three and Paisa Sixty Six Only)	1 cum (One Cubic Meter Only)	9863.66
C	4.00	For slab at FF		1395.51 (Rupees One Thousand Three Hundred Ninety Five and Paisa Fifty One Only)	1 smt (One Square Meter Only)	5582.04
8	1.10	Supplying, cutting, fabrication of steel for reinforcement i/c. cost, conveyance of all materials, taxes, labour charges etc., compete.		57672.56 (Rupees Fifty Seven Thousand Six Hundred Seventy Two and Paisa Fifty Six Only)	1 M.T (One Metric Ton Only)	23069.02
9	6.00	Brick work in CM(1:8) ground floor using approved quality traditional size bricks i/c cost, conveyance of all materials, taxes, all leads, lifts, curing, centring, scaffolding, labour charges etc., compete		5832.70 (Rupees Five Thousand Eight Hundred Thirty Two and Paisa Seventy Only)	1 cum (One Cubic Meter Only)	34996.20
10	40.00	Plastering with CM in two coats of 12 mm thick, base coat in c.m (1:5) 8mm thick and top coat in c.m (1: 3) 4mm thick with Dudara sponge finish i/c. cost, conveyance of all materials, taxes, labour charges etc., compete. AT F. F.		3846.97 (Rupees Three Thousand Eight Hundred Forty Six and Paisa Ninety Seven Only)	10 smt (Ten Square Meter Only)	15387.88
11	50.00	Plastering with CM in two coats in 20 mm thick, base coat (1:6) 16mm thick and top coat (1:4) 4mm thick with Dubara sponge finish i/c.cost, conveyance of all materials, taxes, labour charges etc., compete AT F. F.		3905.22 (Rupees Three Thousand Nine Hundred Five and Paisa Twenty Two Only)	10 smt (Ten Square Meter Only)	19526.10
		SECOND FLOOR				
12		V.R.C.C(1:11/2:3) in ground floor using 20mm HBG metal obtained by plastering, hand crushed i/c cost, conveyance of all materials, taxes, all leads, lifts, cantering, scaffolding, curing, labour charges etc., complete. But excluding cost and fabrication of steel reinforcement				
A	2.00	for columns at SF		11,322.11 (Rupees Eleven Thousand Three Hundred Twenty Two and paisa Eleven Only)	1 cum (One Cubic Meter Only)	22,644.22
B	1.00	For T beams & slab beams at SF		10,373.48 (Rupees Ten Thousand Three Hundred Seven Three and Paisa Forty Eight Only)	1 cum (One Cubic Meter Only)	10,373.48
C	4.00	For slab at SF		1,442.60 (Rupees One Thousand Four Hundred Forty Two and Paisa Sixty Only)	1 smt (One Square Meter Only)	5770.40

13	0.40	Supplying, cutting, fabrication of steel for reinforcement i/c. cost, conveyance of all materials, taxes, labour charges etc., compete.	58,886.63 (Rupees Fifty Eight Thousand Eight Hundred Eighty Six and Paise Sixty Three Only)	1 M.T (One Metric Ton Only)	23,554.65
14	6.00	Brick work in CM(1:8) ground floor using approved quality traditional size bricks i/c cost, conveyance of all materials, taxes, all leads, lifts, curing, centring, scaffolding, labour charges etc., compete	6,044.20 (Rupees Six Thousand Forty Four and Paise Twenty Only)	1 cum (One Cubic Meter Only)	36,265.20
15	40.00	Plastering with CM in two coats of 12 mm thick, base coat in c.m (1:5) 8mm thick and top coat in c.m (1: 3) 4mm thick with Dudara sponge finish i/c. cost, conveyance of all materials, taxes, labour charges etc., compete. AT S. F.	4,310.24 (Rupees Four Thousand Three Hundred Ten and Paise Twenty Four Only)	10 smt (Ten Square Meter Only)	17,240.96
16	50.00	Plastering with CM in two coats in 20 mm thick, base coat (1:6) 16mm thick and top coat (1:4) 4mm thick with Dubara sponge finish i/c.cost, conveyance of all materials, taxes, labour charges etc., compete AT S. F.	4,305.01 (Rupees Four Thousand Three Hundred Five and Paise One Only)	10 smt (Ten Square Meter Only)	21,525.05
THIRD FLOOR					
17		V.R.C.C(1:11/2:3) in ground floor using 20mm HBG metal obtained by plastering, hand crushed i/c cost, conveyance of all materials, taxes, all leads, lifts, cantering, scaffolding, curing, labour charges etc., complete. But excluding cost and fabrication of steel reinforcement			
A	2.00	for columns at TF	11,861.02 (Rupees Eleven Thousand Eight Hundred Sixty One and paise Two Only)	1 cum (One Cubic Meter Only)	23,772.04
B	1.50	For T beams & slab beams at TF	11,041.06 (Rupees Eleven Thousand Forty One and Paise Six Only)	1 cum (One Cubic Meter Only)	16,561.59
C	31.00	For slab at TF	1,491.13 (Rupees One Thousand Four Hundred Ninety One and Paise Thirteen Only)	1 smt (One Square Meter Only)	46,225.03
18	0.80	Supplying, cutting, fabrication of steel for reinforcement i/c. cost, conveyance of all materials, taxes, labour charges etc., compete.	60,109.69 (Rupees Sixty Thousand One Hundred Nine and Paise Sixty Nine Only)	1 M.T (One Metric Ton Only)	48,080.55
19	16.50	Brick work in CM(1:8) ground floor using approved quality traditional size bricks i/c cost, conveyance of all materials, taxes, all leads, lifts, curing, centring, scaffolding, labour charges etc., compete	6,255.78 (Rupees Six Thousand Two Fifty Five and Paise Seventy Eihjt Only)	1 cum (One Cubic Meter Only)	1,03,220.37
20	75.00	Plastering with CM in two coats of 12 mm thick, base coat in c.m (1:5) 8mm thick and top coat in c.m (1: 3) 4mm thick with Dudara sponge finish i/c. cost, conveyance of all materials, taxes, labour charges etc., compete. AT S. F.	4,773.75 (Rupees Four Thousand Seven Hundred Seventy Three and Paise Seventy Five Only)	10 smt (Ten Square Meter Only)	35,803.13
21	85.00	Plastering with CM in two coats in 20 mm thick, base coat (1:6) 16mm thick and top coat (1:4) 4mm thick with Dubara sponge finish i/c.cost, conveyance of all materials, taxes, labour charges etc., compete AT S. F.	4,705.04 (Rupees Four Thousand Seven Hundred Five and Paise OFourne Only)	10 smt (Ten Square Meter Only)	39,992.84
22	5.50	Manufacturing and supplying and fixing of G.I frame 106x60mm size with 1.25mm thick C.R sheet for doors, windows, cupboards i/c. all necessary arrangements i/c cost, conveyance of all materials, taxes, labour charges etc., compete.	527.21 (Rupees Five Hundred Twenty Seven and Paise Twenty One Only)	1 rmt (One Running Meter Only)	2,899.66
23	2.50	Supplying and fixing of Teak wood frame door shutters best Indian teak wood second class around frame and shutters with railway sunglass 6mm thick i/c cost of 100mm butthings, door handles, i/c cost, conveyance, of all materials, all taxes, labour charges, etc., complete for finished item of work..	5011.00 (Rupees Five Thousand and Eleven Only)	1 smt (One Square Meter Only)	

24	3.50	Supplying and fixing of M.S. Windows manufactured by cold roll framed prosses steel sheet 1.25mm thick with hings and tower bolts and window shutters and grills are made of 47 X 20mm size pre painted section with 4mm thick glass , grills are made from 8mm square rods at 100mm spaceing etc, complete		4,820.55 (Rupees Four Thousand Eight Hundred Twenty and Paisa Fifty Five Only)	1 smt (One Square Meter Only)	16,871.93
25	430.00	Painting two coats with plastic emulsion of first quality of approved brand and colour including cost and conveyance of all materials to work site and all operational, incidental charges, labour charges, etc. complete for finished item of work as directed by the Engineer-in-charge for internal walls		859.00 (Rupees Eight Hundred and Fifty Nine Only)	10 smt (Ten Square Meter Only)	36,937.00
26	10.00	Painting Two coats with synthetic enamel paint of grade-I approved brand, and shade to old wood/ iron work including preparing the surface to give an even finish including the cost, of scaffolding, brushes etc., complete		870.47 (Rupees Eight Hundred Seventy and Paisa Forty Seven Only)	10 smt (Ten Square Meter Only)	870.47
						895189.00

**ACHARYA NAGARJUNA UNIVERSITY
NAGARJUNA NAGAR**

FINANCIAL BID

(TO BE SUBMITTED IN SEPARATE SEALED AND SIGNED ENVELOPE)

Name of Work : Civil works for Lift facility at B.R. Ambedkar memorial Library in ANU Campus.

Estimate Contract Value (E.C.V):- **Rs.8,95,189.00**

I/We,

Sri/Smt/M/s.....

..... do here by
express my willingness to execute the above said work as per the condition, standards,
specification rules, regulations, etc., at an overall tender percentage (In figures
.....) at excess or less than E.C.V. in Words
.....
.....

CONTRACTOR