TELANGANA FOREST DEVELOPMENT CORPORATION LIMITED

TENDER DOCUMENT

VOLUME-I

Name of Work: RENOVATION OF TGFDC CAMP OFFICE AT KAGHAZNAGAR DIVISION OFFICE COMPLEX
NAME & ADDRESS OF TENDERER : **WHO DOWNLOADED THE TENDER** **DOCUMENT**

Tenderer

General Manager
TGFDC Ltd

STANDARD BID DOCUMENT

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TELANGANA FOREST DEVELOPMENT CORPORATION LTD

Tender Notice No. 6.2.11/HDM/Civil/2024-25

NITNo.Ref. No: 6.2.11/HDM/Civil/2024-25

NAME OF WORK: RENOVATION OF TGFDC CAMP OFFICE AT KAGHAZNAGAR DIVISION OFFICE COMPLEX

Officer Inviting Tenders: General Manager, TGFDC Ltd

1. Tenders are invited on the e-procurement platform for the above -mentioned work from the Contractors / Contracting firms having registration as mentioned in Para 8 of this document. The details of Tender conditions and terms can be downloaded from the electronic procurement platform **https://tender.telangana.gov.in.**
2. Estimate Contract value of work **:Rs.9,43,950.**
3. Contractors would be required to register on the e-Procurement Market place **"www.e-procurement. gov. in**" and submit their bids online. The Corporation will not accept any bid submitted in the paper form.

4 a)E.M.D. for **Rs.9440** (i.e., 1.0% of ECV) shall be paid through Net banking/RTGS/NEFT/Credit Card/Debit Card in favour of Vice Chairman and Managing Director TGFDC Ltd or unconditional and irrevocable Bank Guarantee / Demand Draft issued by any Nationalized Bank /scheduled bank in the standard format as shown in the Tender Schedule drawn in favour of Vice Chairman and Managing Director TGFDC Ltd. along with bids and the balance EMD equivalent to 1.50%(total @ 2.50% of Estimate Contract Value / Tender Contract Value whichever is higher) is to be paid at the time of concluding agreement. All the tenderers shall invariably upload the scanned copies of documents towards EMD in e-procurement system and this will be the primary requirement to consider the bid as responsive. The Corporation shall carry out the technical bid evaluation solely based on the uploaded certificates/documents, documents towards EMD and open the price bids of the responsive tenderers. The Corporation will notify the successful tenderer for submission of original hard copies of all uploaded documents, documents towards EMD prior to entering into agreement.

Note: Original DD / Bank guarantee towards EMD, TGFDC Processing fee should be submitted at TGFDCL Head office, Botaical Garden, Kothaguda, Hyderabad-500084 before opening of tenders, otherwise bid will be rejected.

Tenderer

General Manager
TGFDC Ltd

b) The Successful tenderer shall invariably furnish the original documents towards EMD, Certificates/documents of the uploaded scanned copies to the tender inviting authority before entering into the agreement either personally or through courier or post and the receipt of the same within the stipulated date shall be the responsibility of the successful tenderer. The Corporation will not take any responsibility for any delay in receipt/non-receipt of original documents towards EMD, certificates/documents from the successful tenderer before the stipulated time. On receipt of documents, the Corporation shall ensure the genuineness of the BG towards EMD and all other certificates/documents uploaded by the tenderer in support of qualification criteria before concluding agreement.

c) If any successful tenderer fails to submit the original hard copies towards EMD and other documents with in the stipulated time, the successful tenderer will be suspended from participating in the tenders on e-procurement for a period of three years. The e-procurement system will deactivate the user ID of such defaulting successful tenderer based on the trigger/recommendation by the tender inviting authority and also criminal prosecution shall be invoked.

5. Period of completion of work: 3 **Months**_

6. The tenderers can view/ down load the tender documents from the 'e' market place.

7. Form of contract – Lump sum contract.

8. Eligible class of contractor as per:

i) 94, I &CAD (PW-CAD) dt.01-7-2003: Class V(Civil & above)
ii) As per GO Ms No: 66, I&CAD (REFORMS) dept., dated 20.04.2015: Class V (Civil) & above
iii) As per GO Ms No: 14, I&CAD (REFORMS) dept., dated 31.01.2015: Class V (Civil) & above

9. Date and time for Receipt of tenders: From 10.07.2024 to 24.07.2024

10. Time and date of opening of tenders:
(a) Technical Bid at 25.07.2024 @ 11.00 AM
(b) Price Bid After completion of technical bid

Note: The dates stipulated above are firm and under no circumstances they will be relaxed unless otherwise extended by an official notification or happen to be Public Holidays.

11. **Procedure for submission of Tenders:**

(a) Tenderers need to contact **General Manager, TGFDC Ltd or any authorized officer of TGFDC.** for information on e-Procurement.

(b) Tenderers need to register on the electronic procurement market place of **"https://tender.telangana.gov.in"**. On registration on the e-Procurement market place they will be provided with a user id and password by the system through which they can submit their tenders online.

(c) While registering on the e-procurement market Place, tenderers need to scan and upload the required documents as per the Tender requirements onto their profile.

The Tenderers who are desirous of participating in 'e' procurement shall submit their Technical bids etc., in the standard formats prescribed in the Tender documents displayed at 'e' market place. The Tenderers should upload the scanned copies of all the relevant certificates, documents etc., in the 'e' market place in support of their Technical bids. The

Tenderers shall sign on all the statements, documents, certificates uploaded by him, owning responsibility for their correctness / authenticity

AS per G.O.Ms. No. 174, I & CAD (PW – Reforms) Dept. Dt. 01.09.08.

1 All the Tenderers shall invariably upload the scanned copies of documents towards EMD in e – procurement system and this will be the primary requirement to consider the bid as responsive AND ORIGINAL SHALL BE SUBMITTED AT TGFDC HEAD OFFICE BEFORE OPENING OF TENDER.

2 The Corporation shall carry out the technical bid evaluation solely based on the uploaded certificates / documents, documents towards EMD in the e-procurement system and open the price bids of the responsive tenderers.

3 The Corporation will notify the successful tenderer for submission of original hard copies of all uploaded documents, documents towards EMD prior to entering into agreement.

4 The successful tenderer shall invariably furnish the original documents towards EMD, certificates / documents of the uploaded scanned copies to the Tender Inviting Authority before entering into agreement either personally or through courier or post and the receipt of the same with in the stipulated date shall be the responsibility of the successful tenderer. The Corporation will not take any responsibility for any delay in receipt / non receipt of original documents towards EMD, certificates / documents from the successful tenderer before the stipulated time. On receipt of documents, the Corporation shall ensure the genuinity of the documents towards EMD and all other certificates, documents uploaded by the tenderer in E-procurement system in support of the qualification criteria before concluding the agreement.

5 If any successful tenderer fails to submit the original Hard copies of uploaded certificates / documents, documents towards EMD with in the stipulated time or if any variation is noticed between the uploaded documents and the hard copies submitted by the tenderer, the successful tenderer will be suspended from participating in the tenders on e-procurement platform for a period of 3 years. The e-procurement system would de-activate the user ID of such defaulting successful tenderer based on the trigger / recommendation by the Tender Inviting Authority in the system. Besides this the Corporation shall invoke all processes of law including criminal prosecution of such defaulting tenderer as an act of extreme deterrence to avoid delays in the tender process of execution of the development schemes taken up by the Corporation. The information to this extent may be displayed in the e-procurement platform website.

6 The successful (L1) tenderer shall furnish the original hard copies of all the documents / certificates / statements up loaded by him before concluding agreement.

7 The tenderers shall be required to furnish a declaration in on line stating that the soft copies uploaded by them are genuine. Any incorrectness/deviation noticed will be viewed seriously and apart from canceling the work duly forfeiting the EMD, Criminal action will be initiated including suspension of business.

8 The data filled by the tenderer in the online form shall be the sole criteria for the evaluation of responsiveness and assessing the bid capacity and any other supplemental data shall not be accepted by the tender accepting authorities for evaluation.

9 The tenderer is solely responsible for the correctness of the particulars furnished online bid form.

10 Such uploaded documents pertaining Technical Bid need to be attached to the tender while submitting the bids on line. All the tenderers shall invariably upload the scanned copies of documents to wards EMD in e-procurement system and this will be the primary requirement to consider the tender as responsive. The Corporation shall carry out the technical bid evaluation solely based on the uploaded certificates/documents, documents towards EMD and open the price bids of the responsive tenderers. The Corporation will notify the Successful tenderer for submission of original hard copies of all uploaded documents, documents towards EMD prior to entering into agreement.

(d) Steps for registration and submission of bids are described in detail in the "Tenderers Training Booklet" available at the above web site.

12. To qualify for consideration of the contract each tenderer should fulfill the following criteria:

i) 94, I &CAD (PW-CAD) dt.01-7-2003: Class V(Civil & above)
ii) As per GO Ms No: 66, I&CAD (REFORMS) dept., dated 20.04.2015: Class V (Civil) & above
iii) As per GO Ms No: 14, I&CAD (REFORMS) dept., dated 31.01.2015: Class V (Civil) & above

No Partnership deed in case of firms & Article of Association in case of registered companies.

MANDATORY REQUIREMENTS FOR VALIDITY OF TENDER :

a) The bidder should have **satisfactorily completed similar works** of value not less than **Rs 4,71,975** as a Prime Contractor in the same name and style in any one year during the financial years 2019-2020 to 2023-2024 updated to 2024-2025 price level. Sub contractor's / GPA holder's experience shall not be taken into account.

The works shall be in any State Govt./Central Govt./Undertakings /CPWD/MES/PSUs and the tenderer has to furnish the experience certificates issued by an officer of rank equivalent to Executive Engineer concerned and countersigned by officer of rank equivalent to superintending Engineer equivalent or higher.

b) The tenderer shall submit details of existing Commitments of works and Statement of works for which tenders are submitted as per the Proforma available in the tender schedules along with supporting documents certified by an officer of rank equivalent to Executive Engineer concerned and countersigned by officer of rank equivalent to superintending Engineer or higher showing the balance value of work to be done and balance period of completion.

c) **The Bidder should have executed the minimum quantities of items of work as given below in any one year during the financial years** 2019-2020 to 2023-2024 updated to 2024-2025

The bidder shall enclose certificate issued by the Engineer-in-Charge of the State/Central CorporationCorporations/Undertakings / CPWD/MES/PSUs not below the rank of Executive Engineer or equivalent and countersigned by the officer of the rank of Superintending Engineer, or equivalent.

Sl. No	Item	Min. Qty. of item required
1	Plastering in Cement Mortar of any thickness	192 Sqm
2	Painting	192 Sqm

d) The tenderer should further demonstrate availability (either owned or leased) of the following **key and critical equipment**.

Sl. No	Item	Minimum quantity of equipment required
1	scaffolding	60 Sqm

The tenderer has to submit either a certificate issued by the Executive Engineer not earlier than one year from last date of submission of bids in support of owning machinery (or) a declaration on non-judicial stamp paper worth Rs.100/- as prescribed In Statement – V along with sufficient proof of owning such as invoice/certificate of registration by the competent authority in support of the critical equipment or the lease deed along with sufficient proof of owning the machinery.

e) The tenderer has tofurnish the availability of the following key technical personal with adequate experience: 1 Nos. Diploma Engineer with not less than 3 years of experience.

Availability of the **key technical personnel**with adequate experience as per clause 7.2 of conditions of contract.

f) The tenderer shall furnish a copy of valid GST registration.

g) The tenderer should furnish copy of permanent account number (PAN) and copy of latest Income Tax returns submitted along with proof of receipt.

h) The tenderer should submit the particulars in the format specified in the tender schedule along with necessary certificates.

i) The tenderer should submit the particulars of information of litigation history.

j) Liquid assets/credit Facilities/Solvency certificate from Nationalized Bank/Schedule banks of value not less than **Rs.4,71,975 issued not earlier than one year from last date of submission of tender document.**

k) Certificate in support of Annual Financial Turnover issued bythe Executive Engineerand countersigned by the superintending Engineer (or) from CharteredAccountant supported with Audited balance sheet tallying with ITCC.

l) E.M.D.amounting to **Rs.9,440/-** shall be paid electronically through Net banking/RTGS/NEFT/Credit Card/Debit Card in the e procurement platform in favour of Vice Chairman and Managing Director, TGFDC Ltd. or unconditional and irrevocable Bank Guarantee / Demand Draft issued by any Nationalized Bank /scheduled bank in the standard format given in tender schedule or **Rs.9,440/-** in favour Vice Chairman and Managing Director, TGFDC Ltd. at 1% of the estimated contract value of work along with bid documents to be valid for 6 months from the date of NIT.

m) The Tenderer should submit signed undertaking of tender on line.

n) Assessed available Bid capacity as per formula (2AN-B) should be greater than the Estimated Contract Value as specified in the Tender Document.

o) The details and certificates are to be furnished as per the Proforma available in the tender schedules.

The tenderer is subjected to be black listed and the EMD forfeited if he is found to have misled 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, inordinate delays in completion of the works, litigation history and / or financial failures

Even while execution of the work, if found that the contractor had produced false/fake certificates of experience he will be black listed and the contract will be terminated and his EMD will be forfeited.

Note : *The certificates in support of Group of works, Similar works, water supply sanitary works experience, experience in electrical works& existing commitments,certificates in support of quantities executed must be in State/Central Governments / Corporations / or State/Central undertakings / CPWD/MES/PSUs only and should be issued by the concerned Executive Engineer and counter signed by the Superintending Engineer or equivalent authority.*

13. The participating tenderers shall electronically pay the transaction fee**i.e.,0.03%of E.C.V plus 18.00% GST** in favour of **MD, TSTS, Hyderabad**through payment gateway ofICICI Bank, HDFC bank, Axis bank or UTI Bank for providing online payment service through e-procurement. The payment of transaction fee by the participating Tenderers through the electronic payment Gateway to the service provider is made mandatory as per GO Ms No 13-information technology & communication Corporation, e-procurement dated 05-07-2006 & GO Ms No 11 IT & C Corporation dated 5-5-2007.

14. The successful tenderershall pay **Rs.10,000/-i.e., 0.04% of the E.C.V(with a cap of Rs.10,000/-)**towards 'e' procurement corpus fund in the form of D.D. in favour of **Managing Director, Telangana state Technology** services at the time of concluding agreement and hand over the same to **Vice Chairman and Managing Director, TGFDC Ltd.**

Any further information can be obtained from the office of the **General Manager, TGFDC Ltd**

16. Procedure for Tender Submission

i) The Tenderers who are desirous of participating in e-procurement shall submit their Technical bids, price bids etc., in the Standard formats prescribed in the Tender documents, displayed at e-market place. The tenderers should upload the scanned copies of documents in support of their Technical bids.

ii) The Corporation will not hold any risk and responsibility for the loss in transit during uploading of the scanned document, for the invisibility of the scanned document online, and any other problem(s) encountered by the Tenderers while submitting his bids online.

iii) The tenderers shall authenticate the bid with his digital certificate for submitting the bid electronically on e-Procurement platform and the bids not authenticated by digital certificate of the tenderer will not be accepted on the e-Procurement platform.

17) Rs. 590/- (Rupees Five hundred and ninety Only) towards the TGFDC Processing Fee (Non-refundable) should be paid through Net Banking/ RTGS/NEFT/Credit Card/Debit Card only into the bank account. Current Account Name: Telangana State Forest Development Corporation Limited, A/c. No. 62426505532 with State Bank of India, Gachibowli Branch, Hyderabad, IFSC Code: SBIN0012941 and Upload the original Transaction Slip with UTR No. Failure to pay the TGFDC Processing Fee in the aforesaid manner will entitle for rejection of the bid.

INSTRUCTIONS TO TENDERERS

A – GENERAL

Name of work: Renovation of TGFDC Camp Office at Kaghaznagar Division office complex

1. Scope of work :

a) **Brief description and location of work**:

b) Renovation of TGFDC Camp Office at Kaghaznagar Division office complex

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Principal Components of the work: Civil, Renovation of Building Work,

ECV put to tender: Rs. 9,43,950

Period of completion: **3 months**

c) SSR adopted: **2023-24**

d) Rates adopted for

i)	**Cement:**	**Rs.5300/-per MT**
ii)	**HYSD Steel(Fe-500):**	**Rs.59000/-per MT**

e) Details of provisions included in the ECV put to tender.

i) Seigniorage charges : As per Tender condition No.**102**
ii) Goods and Service Tax (GST) : As per Tender condition No. **103**
iii) LabourCess: As per tender condition No.104

f) Reimbursable provisions : GSTas per Govt. guidelines

3.1 Bidder should submit original hard copies of the uploaded scan copies of BG /DD towards EMD to the tender opening authority before opening of the bid. All the tenderers shall invariably upload the scanned copies of documents towards EMD in e-procurement system and this will be the primary requirement to consider the bid as responsive. The Corporation shall carry out the technical bid evaluation solely based on the uploaded certificates/documents, documents towards EMD and open the price bids of the responsive tenderers. The Corporation will notify the successful tenderer for submission of original hard copies of all uploaded documents, documents prior to entering intoagreement.

3.2 The tenders will be opened by the **Vice Chairman and Managing Director, TGFDC Ltd** or his nominee at his office on the dates mentioned in NIT. If the Office happens to be closed on the dates, the opening of tenders gets automatically postponed to the next working date, the time being unaltered, unless extended by a notification published in News papers.

3.3 The successful tenderer shall invariably furnish the original documents towards EMD, Certificates/documents of the uploaded scanned copies of the tender inviting authority before entering into the agreement either personally or through courier or post and the receipt of the same within the stipulated date shall be the responsibility of the successful tenderer. The Corporation will not take any responsibility for any delay in receipt/non-receipt of original documents towards EMD, certificates/documents from the successful

tenderer before the stipulated time. On receipt of documents, the Corporation shall ensure the genuinity of the documents towards EMD and all other certificates/documents uploaded by the tenderer in support of qualification criteria before concluding agreement.

3.4 If the successful tenderer fails to submit the original hard copies towards EMD and other documents with in the stipulated time, the successful tenderer will be suspended from participating in the tenders on e-procurement for a period of three years. The e-procurement system will deactivate the user ID of such defaulting successful tenderer based on the trigger/recommendation by the tender inviting authority and also criminal prosecution shall be invoked.

3.5 The tenderers shall be required to furnish a declaration in online stating that the soft copies uploaded by them are genuine. Any incorrectness / deviations noticed will be viewed seriously and apart from canceling the work duly forfeiting the EMD, Criminal action will be initiated including suspension of business.

3.6 The successful tenderer is expected to complete the work within the time period specified in the NIT.

3. Firms Eligible to Tender:

3.1 The Firms who

i) Possess the valid registration in the class and category mentioned in the Tender Notice and satisfy all the conditions therein.

ii) are not blacklisted or debarred or suspended by the Corporation for whatever the reason, prohibiting them not to continue in the contracting business.

iii) have complied with the eligibility criteria specified in the Tender Notice

are the eligible tenderers.

3.2 Firms Ineligible to Tender:

i) A retired officer of the Govt. of Telangana or Govt. of India executing works is disqualified from tendering for a period of two years from the date of retirement without the prior permission of the Govt / Corporation.

ii) The Tenderer who has employed any retired officer as mentioned above shall be considered as an ineligible tenderer.

iii) The contractor himself or any of his employees is found to be Gazetted Officer who retired from TGFDC Corporation Service and had not obtained permission from the Corporation for accepting the contractor's employment within a period of 2 years from the date of his retirement.

iv) The Contractor or any of his employees is found at any time after award of contract, to be such a person who had not obtained the permission of the Corporation as aforesaid before submission of the tender or engagement in the Contractor's service.

v) Contractor shall not be eligible to tender for works in the division / circle where any of his near relatives are employed in the rank of Assistant Engineer or Assistant Executive Engineers and above on the Engineering side and Divisional Accounts

Officer and above on the administrative side. The Contractor shall intimate the names of persons who are working with him in any capacity or are subsequently employed. He shall also furnish a list of Gazetted /Non-Gazetted, State Corporation Employees related to him. Failure to furnish such information tenderer is liable to be removed from the list of approved contractors and his contract is liable for cancellation.

Note: Near relatives include

1. Sons, step sons, daughters, and stepdaughters.
2. Son-in-law, and daughter-in-law.
3. Brother-in-law, and sister-in-law.
4. Brothers and Sisters.
5. Father and Mother.
6. Wife / Husband.
7. Father-in-law and Mother-in-law
8. Nephews, nieces, uncle and aunts
9. Cousins and
10. Any person residing with or dependent on the contractor.

4. Qualification data of the Tenderers / QUALIFICATION CRITERIA FOR OPENING OF THE PRICE BID:

The tenderer shall upload the following particulars in the formats enclosed, supported by documentary evidence as specified in the formats.

a) Check slip to accompany the tender (in Annexure-I).

b) Attested copies of documents relating to the Registration of the firm, Registration as Civil Contractor,

i) 94, I &CAD (PW-CAD) dt.01-7-2003: Class v (Civil & above)

ii) As per GO Ms No: 66, I&CAD (REFORMS) dept., dated 20.04.2015: Class-V (Civil) & above

iii) As per GO Ms No: 14, I&CAD (REFORMS) dept., dated 31.01.2015: Class-V (Civil) & above

c) The bidder should have **satisfactorily completed similar works** of value not less than **Rs 4,71,975** as a Prime Contractor in the same name and style in any one year during the financial years 2019-2020 to 2023-2024 updated to 2024-2025 price level. Sub contractor's / GPA holder's experience shall not be taken into account.

The works shall be in any State Govt./Central Govt./Undertakings /CPWD/MES/PSUs and the tenderer has to furnish the experience certificates issued by an officer of rank equivalent to Executive Engineer concerned and countersigned by officer of rank equivalent to superintending Engineer equivalent or higher.

h) The tenderer shall submit details of existing Commitments of works and Statement of works for which tenders are submitted as per the Proforma available in the tender schedules along with supporting documents certified by an officer of rank equivalent to Executive Engineer concerned and countersigned by officer of rank

equivalent to superintending Engineer or higher showing the balance value of work to be done and balance period of completion.

i) The Bidder should have executed the **minimum quantities** of items of work as given below in any one year during the financial years 2019-2020 to 2023-2024.

The bidder shall enclose certificate issued by the Engineer-in-Charge of the State/Central CorporationCorporations/ CPWD/MES/PSUs not below the rank of Executive Engineer or equivalent and countersigned by the officer of the rank of superintending Engineer or equivalent.

Sl. No	Item	Min. Qty. of item required
1	Plastering in Cement Mortar of any thickness	192Sqm
2	Painting	192 Sqm

a) The tenderer should further demonstrate availability (either owned or leased) of the following **key and critical equipment**.

Sl. No	Item	Minimum quantity of equipment required
1	Scaffolfing	60 Sqm

j)

The tenderer has to submit either a certificate issued by the Executive Engineer not earlier than one year from date of submission of bids in support of owning machinery (or) a declaration on non-judicial stamp paper worth Rs.100/- as prescribed In Statement – V along with sufficient proof of owning such as invoice/certificate of registration by the competent authority in support of the critical equipment or the lease deed along with sufficient proof of owning the machinery.

k) The tenderer has tofurnish the availability of the following key technical personnel with adequate experience:
1 Nos. Diploma holders with not less than 3 years of experience.

Availability of the **key technical personal** with adequate experience as per clause 7.2 of conditions of contract.

l) The tenderer shall furnish a copy of valid GST registration.

m) The tenderer should furnish copy of permanent account number (PAN) and copy of latest Income Tax returns submitted along with proof of receipt.

n) The tenderer should submit the particulars preferably in the format specified in the tender schedule along with necessary certificates.

o) The tenderer should submit the particulars of information of litigation history.

p) Liquid assets/credit Facilities/Solvency certificate from Nationalized Bank/Schedule banks of value not less than **Rs. 4,71,975 issued not earlier than one year from date of submission of tender document.**

b) Certificate in support of Annual Financial Turnover issued by the Executive Engineer and countersigned by the superintending Engineer(or) from Chartered Accountant supported with Audited balance sheet tallying with ITCC.

q) E.M.D.amounting to **Rs.9,440/-** shall be paid electronically through Net banking/RTGS/NEFT/Credit Card/Debit Card in the e procurement platform in favour of Vice Chairman and Managing Director, TGFDC Ltd. or unconditional and irrevocable Bank Guarantee / Demand Draft issued by any Nationalized Bank /scheduled bank in the standard format given in tender schedule or **Rs.9,440/-** in favourVice Chairman and Managing Director, TGFDC Ltd. at 1% of the estimated contract value of work along with bid documents to be valid for 6 months from the date of NIT..

r) The Tenderer should submit signed undertaking of tender on line.

s) Assessed available Bid capacity as per formula (2AN-B) should be greater than the Estimated Contract Value as specified in the Tender Document.

t) The details and certificates are to be furnished as per the Proforma available in the tender schedules.

u) The particulars of **quality control testing Lab owned / tie up** with established quality control testing laboratories in Statement - VIII.

v) The proposed methodology and program of construction, backed up with equipment, planning and deployment, duly supported with broad calculations, justifying their capability of execution and completion of the work as per technical specifications within the stipulated period of completion as per milestones.

w) The tenderers shall be required to furnish a declaration in online stating that the soft copies uploaded by them are genuine. Any incorrectness / deviations noticed will be viewed seriously and apart from cancelling the work duly forfeiting the EMD, Criminal action will be initiated including suspension of business.

The tenders will be opened by the **Vice Chairman and Managing Director, TGFDC Ltd**

or his nominee at his office on the date mentioned above.

d) The price-bids of such tenderers, who are determined to have complied with the eligibility criteria, will only be opened.

Any other details can be obtained from the Office of the **Vice Chairman and Managing Director, TGFDC Ltd**

Note: a) **The tenderer shall sign all the statements /documents and certificates uploaded by him owning the responsibility for their correctness/ authenticity.**

a) Tenders from Joint Ventures are not accepted.

Note 1 : *The certificates in support of Group of works, Similar works, water supply sanitary works experience, experience in electrical works& existing commitments,certificates in support of quantities executed must be in State/Central Governments / Corporations / or State/Central undertakings / CPWD/MES/PSUs only and should be issued by the concerned Executive Engineer and counter signed by the Superintending Engineer or equivalent authority.*

Note 2 : *Weightage of 10% per annum should be given for the annual turnover in building works to bring them to present price level.*

Note3 : ***Tenders from joint ventures will not be accepted.***

Tenderer

General Manager
TGFDC Ltd

6. **Bid capacity.**

The tenderer who meets the above qualification criteria and whose available bid capacity is more than the estimated contract value will be qualified for opening of Price bid. The available bid capacity will be calculated as under:

Available Bid Capacity **:** **2AN-B**

Where,

A= Maximum value of Civil Engineering works executed in its name in any one financial year during the last five financial years (updated to current Price level) taking into account the works completed as well as works in progress.

N= Number of years prescribed for completion of the work for which Tenders are invited (3 **months/12**)

B= Updated value (at current price level), of all existing commitments i.e., on going works, works likely to be awarded to be executed during the next 3 **months**(Period of completion for which tenders are invited).

Annual turnover ,cost of completed works and balance works on hand etc., shall be updated by giving weightage of 10% per year to bring them to current price level

No relaxation will be given to any of the qualification criteria.

Note: a)Sub-contractor's experience in his name will be taken in to account in determining the tenderer's compliance to the qualification criteria, if it is as per GO Ms No. 94, dated: 01/07/2003.

b)The experience gained in a registered JV firm to the extent of the tenderer's share shall be considered if the tenderer happens to be the lead partner for similar works criteria also.

7. Even though the tenderers meet the above qualifying criteria, they are liable to be disqualified / debarred / suspended / blacklisted if they have

- Furnished false / fabricated particulars in the forms, statements and /annexures submitted in proof of the qualification requirements and/or
- Not turned up for entering into agreement, when called upon
- record of poor progress such as abandoning the work, not properly completing the contract, inordinate delays in completion, litigation history or financial failures etc. and/or
    - even while execution of the work, if found that the work was awarded to the Contractor based on false / fake certificates of experience, the Contractor will be blacklisted and work will be taken over invoking clause 61 of PS to APSS.

8. **Tenders with any excess over the estimated contract value shall summarily be rejected.**

9. **The contract price is inclusive of all overhead charges and include the following elements:**

Site accommodation, setting up plant, access road, water supply, electricity and general site arrangements.

- Officefurniture, equipment and communications.

Expenditure on

- Corporate office of Contractor.
- Technical agents for site supervision.
- Documentation and "as built" drawings.
- Mobilization/ de-mobilization of resources.
- Labour camps with minimum amenities and transportation to work sites .
- Light vehicles for site supervision including administrative and managerial requirements
- Laboratory equipment and quality control including field and laboratory testing. (For all the works costing more than Rs. 2.00Crores contractors have to establish Quality Control laboratory).
- Minor T & P and survey instruments and setting outworks, including verification of line, dimensions, etc.
- Watch and ward.
- Traffic management/ Safety management during construction.
- Expenditure on safeguarding environment.
- Sundries.
- Financing Expenditure.

10. **Wherever the audit parties of A.G point out that the contractor is unintendedly benefitted, then the Corporation is empowered to recover the same amount from the Contractor and it is binding on the contractor.**

11. For tenders up to **25% less than** the estimated contract value of work, no additional security deposit is required. But for tenders **less than 25%** of the estimated Contract Value of work, the difference between the tendered amount and **75% of the estimated contract value**, shall be paid by the successful tenderer at the time of concluding agreement as an additional security to fulfill the contract through a Bank Guarantee or Demand Draft on a Nationalised Bank / Scheduled bank in the prescribed format valid till completion of the work in all respects

12. a) If the percentage quoted by a tenderer is found to be either abnormally high or within the permissible ceiling limits prescribed but under collusion or due to unethical practices adopted at the time of tendering process, such tenders shall be rejected.

b) A tenderer submitting a Tender which the tender accepting authority considers excessive and or indicative of insufficient knowledge of current prices or definite attempt of profiteering will render himself liable to be debarred permanently from tendering or for such period as the tender accepting authority may decide.

c) The tenderer overall percentage should be based on the controlled prices for the materials, if any, fixed by the Corporation or the reasonable prices permissible for the tenderer to charge a private purchaser under the provisions of clause-6 of the hoarding and profiteering prevention

ordinance of 1943 as amended from time to time and on similar principle in regard to labour supervision on the construction.

13. CONDITIONAL TENDER

Conditional tenders are not accepted. Submission of tender would be construed as acceptance to all the terms and conditions of the tender which include conditions of contract, drawings and accompanying specifications.

14. One Tender per Tenderer:

Each Tenderer shall submit only one Tender for the work. A Tenderer who submits more than one Tender will cause disqualification of all the Tenders submitted by the Tenderer.

15. Cost of Tendering

The Tenderer shall bear all costs associated with the preparation and submission of his Tender and the tender inviting authority will in no case be responsible and liable for those costs.

16. Site Visit.

The Tenderer, at the Tenderer's own responsibility and risk is advised to visit and examine the Site of Work and its surroundings and obtain all information that may be necessary for preparing the Tender for entering into a contract, for construction of the work. The costs of visiting the site shall be at the Tenderer's own expense.

B. TENDER DOCUMENT

17. Contents of Tender document.

One set of Tender document, comprises of the following:

Technical bid

1) Notice Inviting Tenders (NIT)
2) Instruction to Tenderer
3) Forms of Tender and qualification information
4) Conditions of Contract.
5) Specifications.
6) Drawings.
7) Forms of Securities. i.e., EMD, Additional Security etc.

8) Price bid

Bill of Quantities and Price bid.

18. Clarification on Tender Documents

A prospective Tenderer requiring any clarification on Tender documents may contact the Tender inviting Officer at the address indicated in the NIT. The Tender inviting Officer will also respond to any request for clarification, received through post.

19. Amendment to Tender Documents

a. Before the last date for submission of Tenders, the Tender Inviting Officer may modify any of the Contents of the Tender Notice, Tender documents by issuing amendment / Addendum.

b. Any addendum/amendments issued by the Tender Inviting Officer shall be part of the Tender Document and it shall be attached to the Tender Notice on web site (i.e) eprocurement.gov.in

c. To give prospective Tenderers reasonable time to take an addendum into account in preparing their bids, the Tender Inviting Officer may extend if necessary, the last date for submission of tenders.

C. PREPARATION OF TENDERS.

20. Language of the Tender.

All documents relating to the tender shall be in the English Language only.

21. Documents comprising of the Tender.

a. The tenderers who are desirous of participating in e-procurement shall submit their technical bids, price bids etc., in the standard prescribed format in the tender documents, displayed at e market place. The tenderers should upload the scanned copies of all the relevant certificates, documents etc., in the e market place in support of their technical bids. The tenderers shall sign on all the statements, documents, certificates, uploaded by him, owning responsibility for their correctness/authenticity.

b. If any of the certificates, documents etc., furnished by the tenderer are found to be false/fabricated/bogus, the tenderer will be black listed and the EMD forfeited.

c. The technical bids will be opened online by the **Vice Chairman and Managing Director, TGFDC Ltd**or his authorized representative at the time and date as specified in the tender documents. All the statements, documents, certificates, BGs etc., uploaded by the tenderers will be down loaded for technical evaluation. The clarifications, particulars if any required from the tenderers will be obtained in the conventional method by addressing the tenderers. The technical bids will be evaluated against the specified parameters/ criteria, same as in the case of conventional tenders and the technically qualified tenderers will be identified. The result of technical bid evaluation will be displayed on the e market place, which can be seen by all the tenderers who participated in the tenders.

22. Bid Offer:

a) Bill of Quantities called Schedule "A" and the bid offer accompanies the tender document as Volume - II. It shall be explicitly understood that the Tender Inviting Officer does not accept any responsibility for the correctness or completeness of this schedule 'A' and this schedule 'A' is liable to alterations by omissions, deductions or additions at the discretion of the **Vice Chairman and Managing Director, TGFDC Ltd**or as set forth in the conditions of the contract. The Schedule "A" shall contain the items of work indicated as part – I and LS provisions as part –II.

b) The percentage quoted by the contractor shall be applicable only to part –I. However, the provisions contained in the part –II will be operable basing on the conditions provided in the

Tender Document. The tenderers will have to state clearly their willingness to execute the work at certain specific percentage of excess or less or at par of the ECV indicated in Part-I at the space provided therein in Schedule 'A'. The L.S. amounts indicated in part-II are maximum reimbursable amounts. The tenderer should however quote his lump-sum tender based on this schedule of quantities. He should quote his offer as an overall tender percentage. The over all tender percentage should be written both in words and figures. The bid offers i.e., percentage shall be written both in figures and words legibly and free from erasures, over writings or corrections of figures. Corrections where unavoidable should be made by crossing out,rewriting duly initializing with date.

c) The Schedule –A (or Price-bid) contains not only the quantities but also the rates worked out by the Corporation and the amount for each item and total value of the estimated contract. The tenderer should workout his own rates keeping in view the work, site conditions and quote his overall tender percentage with which he intends to execute the work.

i) The bid offer shall be for the whole work and not for individual items / part of the work.

ii) All duties, taxes, and other levies payable by the contractor except GST as per State / Central Corporation rules, shall be included in the tender percentage quoted by the tenderer.

iii) The tendered contract amount as computed based on overall tender percentage is subject to variation during the performance of the Contract in accordance with variation in quantities etc.

23. **Transaction Fees payable to TSTS.**

a) The participating tenderers shall electronically pay the transaction fee @ (0.03% of E.C.V plus 18.00%) (Including special and Higher Education Cess of 1%) GST on 0.03% of ECV in favour of **MD, TSTS, Hyderabad**through Payment Gateway serviceon e- procurement plat form which can be done at any of the ICICI Bank, HDFC bank, Axis Bank or UTI bank for providing online payment service through e-procurement.

b) The payment of transaction fee by the participating Tenderers through the electronic payment Gateway to the service provider is made mandatory as per GO Ms No 13,Information technology & communication Corporation, e-procurement dated 05-07-2006 & GO Ms No 11 IT & C Corporation dated 5-5-2007.

c) If any tenderer fails to submit the hard copies of all the uploaded documents within the stipulated time, the tenderer will be suspended/disqualified from participating in the tenders on "e-procurement platform for a period of 3 years from the date of bid submission. The suspension of tenderer shall be automatically enforced by the e-procurement system." as per the GO Ms No 245 I&CAD (PW. Reforms) Corporation dated 30-12-2005

d) All the tenderers have to pay online the above non-refundable service charges payable to **MD, TSTS, Hyderabad**and it shall be valid for a period of 6 months from the date of NIT.

e) **G.S.T** as levied by the Corporation of India on transaction fee, electronic payment gateway charges are to be borne by the tenderers.

24. Charges payable to TSTS:

The successful tenderer will pay further fee at 0.04% of ECV (Estimated Contract Value) i.e., **Rs.10,000/-** payable to **Managing Director, Telangana State Technology Services** to create a e-procurement corpus fund to be administered by TSTS.

The above fee is payable by the successful tenderer through online or through a DD drawn in favour of **MD, TSTS, Hyderabad** at the time of conclusion of the agreement. The said DD shall be sent to M/s TSTS by the Vice Chairman and Managing Director, TGFDC Ltd who is entering into agreement with the successful tenderer. Suitable provision is made in the estimate of the concerned work to meet the above expensed by the tenderer.

25. Validity of Tenders:

a. Tenders shall remain valid for a period of not less than three months from the last date for receipt of Tender specified in NIT.

b. 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 of misconceptions or mistake or for any reason will be entertained.

c. In exceptional circumstances, prior to expiry of the original time limit, the Tender Inviting Officer may request the tenderers to extend the period of validity for a specified additional period. Such request to the Tenderers shall be made in writing. A Tenderer may refuse the request without forfeiting his E.M.D. A Tenderer agreeing to the request will not be permitted to modify his Tender,but will be required to extend the validity of his E.M.D. for a period of the extension.

26. Earnest Money Deposit

a) E.M.D.amounting to **Rs.9,440/-** shall be paid electronically through Net banking/RTGS/NEFT/Credit Card/Debit Card in the e procurement platform in favour of Vice Chairman and Managing Director, TGFDC Ltd. or unconditional and irrevocable Bank Guarantee / Demand Draft issued by any Nationalized Bank /scheduled bank in the standard format given in tender schedule or **Rs.9,440/-** in favour Vice Chairman and Managing Director, TGFDC Ltd. at 1% of the estimated contract value of work along with bid documents to be valid for 6 months from the date of NIT.

b)The successful tenderer should however pay the E.M.D. at 1½% on Estimated Contract Value / Tender Contract Value whichever is higher plus additional EMD for tenders less than 25% of the Estimate Contract Value in accordance with **Clause 11 of Instructions to bidders**at the time of signing the agreement in the shape of crossed Demand Draft on any Nationalised Bank./Scheduled Bank or unconditional and irrevocable Bank Guarantee in the **form given in "Formats of Securities" from any Nationalised Bank/Scheduled Bank valid upto 3 months + 24 months(defect liability period) + 1month**

c) Online payments / Bank Guarantees furnished towards EMD shall be valid for a period of six months from the date of tender notice.

27. Return of E.M.D. to unsuccessful tenderer.

The earnest money deposit will be refunded to the unsuccessful tenderer at the expiry of the period of validity of tender or the entrustment of the work to the successful tenderer whichever is earlier.

28. Return of EMD to successful tenderer

a) The 1% E.M.D paid by the successful tenderer before opening of the price bid will be discharged if the tenderer furnishes bank guarantee for the full EMD of 2½% at the time of concluding agreement.

b) The earnest money deposited by the successful tenderer will not carry any interest and it will be dealt with as provided in the conditions stipulated in the tender. The E.M.D. given in the form of Bank Guarantee on a Nationalised / Scheduled Bank, shall be valid for the duration of contract period plus defect liability period of two years and in case any valid extension of contract period is granted, the validity of BG shall also be extended for the corresponding period. The Bank Guarantee on Nationalised / Scheduled Bank furnished by the tenderer towards additional security amount shall be valid till the work is completed in all respects.

c) The E.M.D. shall be forfeited.

i. if the Tenderer withdraws the Tender during the validity period of Tender.

ii. in the case of a successful Tenderer, if he fails to sign the Agreement for whatever the reason.

d. In consideration of the Engineer-incharge undertaking to investigate and to take into account each tender and in consideration of the work thereby involved, all earnest monies deposited by the tenderer will be forfeited to the Corporation in the event of such tenderer either modifying or with-drawing his tender at his instance within the said validity period of three months.

29. Signing of Tenders

a) If the tender is made by an individual, it shall be signed with his full name and his address shall be given. If it is made by a firm, it shall be signed with the co-partnership name by a member of the firm, who shall also sign his own name, and the name and address of each member of the firm shall be given, if the tender is made by a Corporation it shall be signed by a duly authorised officer who shall produce with his tender satisfactory evidence of his authorisation. Such tendering Corporation may be required before the contract is executed, to furnish evidence of its corporate existence. Tenders signed on behalf of G.P.A holder will be rejected.

b. The tender shall contain no alterations or additions, except those to comply with instructions issued by the tender inviting officer, or as necessary to correct errors made by the tenderer, in which case all such corrections shall be initialed by the person signing the tender.

c. No alteration which is made by the tenderer in the contract form, the conditions of the contract, the drawings, specifications or statements / formats or quantities accompanying the same will be recognised, and, if any such alterations are made the tender will be void.

D. SUBMISSION OF TENDERS.

30. Submission of Tenders:

a) As per the directions issued by the government in GO MS No.174 I&CAD (PW-REFORMS) dated 1.9.2008, submission of original hard copies of the uploaded scan copies of DD/BG towards EMD by participating tenderers to the tender opening authority before opening of the price bid is dispensed with. All the tenderers shall invariably upload the scanned copies of documents towards EMD in e-procurement system will be the primary requirement to consider the bid as responsive. The Corporation shall carry out the technical bid evaluation solely based on the uploaded certificates/documents, Documents towards EMD and open the price bids of the responsive tenderers. The Corporation will notify the Successful tenderer for submission of

original hard copies of all uploaded documents, Documents towards EMD prior to entering into agreement. The tenderer shall invariably ensure that the following are documents/Certificates are uploaded.

b) The documents towards EMD issued by the nationalized banks/schedule commercial banks which is valid for a period of 6 months from the date of Tender Notice.

31. The tender shall invariably ensure that the following documents are uploaded on line. The technical bid evaluation of tenderers will be done on the certificates /documents /statements uploaded through online towards qualification criteria furnished by them.

a) Check slip to accompany the tender (in Annexure-I).

b) Attested copies of documents relating to the Registration of the firm, Registration as Civil Contractor, Partnership deed, Articles of Association

Note: The Partnership firms, which are registered as Contractors shall intimate the change in partnership deed, if any as per G.O.Ms.No.58, I & CAD dated 2-04-2002 within one month of such change. Failure to notify the change to the registration authority in time will entail the firms to forfeit their registration and their tender will be rejected. The intimation of change of partners if any and the acceptance by the Registration authority may be enclosed.

The tenderer shall have the required registration in Civil from Govt. of Telangana

The tenderer has to furnish the Partnership deed in case of firms & Article of Association in case of registered companies.

c) The bidder should have **satisfactorily completed similar works** of value not less than **Rs 4,71,975** a Prime Contractor in the same name and style in any one year during the financial years 2019-2020 to 2023-2024 updated to 2024-2025 price level. Sub contractor's / GPA holder's experience shall not be taken into account.

The works shall be in any State Govt./Central Govt./Undertakings /CPWD/MES/PSUs and the tenderer has to furnish the experience certificates issued by an officer of rank equivalent to Executive Engineer concerned and countersigned by officer of rank equivalent to superintending Engineer equivalent or higher.

c) The tenderer shall submit details of existing Commitments of works and Statement of works for which tenders are submitted as per the Proforma available in the tender schedules along with supporting documents certified by an officer of rank equivalent to Executive Engineer concerned and countersigned by officer of rank equivalent to Superintending Engineer or higher showing the balance value of work to be done and balance period of completion.

d) The Bidder should have executed the **minimum quantities** of items of work as given below in any one year during the financial years 2019-2020 to 2023-2024.

The bidder shall enclose certificate issued by the Engineer-in-Charge of the State/Central CorporationCorporations/ CPWD/MES/PSUs not below the rank of Executive Engineer or equivalent and countersigned by the officer of the rank of Superintending Engineeror equivalent.

Sl. No	Item	Min. Qty. of item required
1	Plastering in Cement Mortar of any thickness	192 Sqm
2	Painting	192 Sqm

a) The tenderer should further demonstrate availability (either owned or leased) of the following **key and critical equipment**.

Sl. No	Item	Minimum quantity of equipment required
1	Scaffolding	60 Sqm

The tenderer has to submit either a certificate issued by the Executive Engineer not earlier than one year from date of submission of bids in support of owning machinery (or) a declaration on non-judicial stamp paper worth Rs.100/- as prescribed In Statement – V along with sufficient proof of owning such as invoice/certificate of registration by the competent authority in support of the critical equipment or the lease deed along with sufficient proof of owning the machinery.

e) The tenderer has tofurnish the availability of the following key technical personal with adequate experience:
1 Nos. Diploma Engineer with not less than 3 years of experience.

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Availability of the **key technical personal** with adequate experience as per clause 7.2 of conditions of contract.

f) The tenderer shall furnish a copy of valid GST registration.

g) The tenderer should furnish copy of permanent account number (PAN) and copy of latest Income Tax returns submitted along with proof of receipt.

h) The tenderer should submit the particulars preferably in the format specified in the tender schedule along with necessary certificates.

i) The tenderer should submit the particulars of information of litigation history.

j) Liquid assets/credit Facilities/Solvency certificate from Nationalized Bank/Schedule banks of value not less than **Rs.4,71,975 issued not earlier than one year from date of submission of tender document**.

k) Certificate in support of Annual Financial Turnover issued by the Executive Engineer and countersigned by the Superintending Engineer or equivalents (or) from Chartered Accountant supported with Audited balance sheet tallying with ITCC.

l) E.M.D.amounting to **Rs.9,440/-** shall be paid electronically through Net banking/RTGS/NEFT/Credit Card/Debit Card in the e procurement platform in favour of Vice Chairman and Managing Director, TGFDC Ltd. or unconditional and irrevocable Bank Guarantee / Demand Draft issued by any Nationalized Bank /scheduled bank in the standard format given in tender schedule or **Rs.9,440/-** in favourVice Chairman and Managing Director, TGFDC Ltd. at 1% of the estimated contract value of work along with bid documents to be valid for 6 months from the date of NIT.

m) The Tenderer should submit signed undertaking of tender on line.

n) Assessed available Bid capacity as per formula (2AN-B) should be greater than the Estimated Contract Value as specified in the Tender Document.

o) The details and certificates are to be furnished as per the Proforma available in the tender schedules.

p) The particulars of **quality control testing Lab owned / tie up** with established quality control testing laboratories in Statement - VIII.

q) The proposed methodology and program of construction, backed up with equipment, planning and deployment, duly supported with broad calculations, justifying their capability of execution and completion of the work as per technical specifications within the stipulated period of completion as per milestones.

r) The tenderers shall be required to furnish a declaration in online stating that the soft copies uploaded by them are genuine. Any incorrectness / deviations noticed will be viewed seriously and apart from cancelling the work duly forfeiting the EMD, Criminal action will be initiated including suspension of business.

Note 1 : *The certificates in support of Group of works, Similar works, water supply sanitary works experience, experience in electrical works& existing commitments,certificates in support of quantities executed must be in State/Central Governments / Corporations / or State/Central undertakings / CPWD/MES/PSUs only and should be issued by the concerned Executive Engineer and counter signed by the Superintending Engineer or equivalent authority.*

Any incorrectness / deviation noticed in the soft copies will be viewed seriously and apart from cancelling the tender duly forfeiting the EMD, criminal action will be initiated including suspension of business.

32. a) The tenderers who desire to participate in e-procurement should upload the scanned copies in the prescribed formats of tender documents, in support of eligibility in the prescribed formats of tender documents, in support of eligibility for opening of their price bid, as mentioned in the clause **30**. The tenderers shall sign on all the statements, documents, certificates which are uploaded by them owing responsibility for their correctness / authenticity. The documents uploaded online will only be considered for evaluation as per G.O.Ms.No.174, Irrigation & CAD (PW-Reforms) Corporation, Dated 1.9.2008.

b) The Corporation will not hold any risk and responsibility for the loss in transit during uploading of the scanned document, for the invisibility of the scanned document online, and any other problem(s) encountered by the Tenderers while submitting his bids online.

c) Related certificates, documents etc., duly self attested are to be scanned and uploaded on to the e-procurement platform at **https://tender.telangana.gov.in** in support of items mentioned in clause 31.

d) Any other condition regarding receipt of tenders in conventional method appearing in Tender document may be treated as Non-applicable.

33. Last date / time for Submission of the Tenders.

a) Tenders must be submitted online not later than the date and time specified in the Tender Notice / Tender Document.

b) The General Manager, TGFDC Ltd. or his nominee may extend the date for receipt of Tenders by issuing an amendment in which case all rights and obligations of the General Manager,, TGFDC Ltd. and the Tenderers will remain same as previously.

34 Late Tenders.

Tenders will not be received after the last date / time prescribed in NIT / Tender Document.

35 Modification to the Tender.

a) Tenderers can modify their Tender online before the last date/time prescribed in Tender Notice / Tender Document and amendments issued, if any.

b) No tender shall be modified after the last date /time of submission of Tenders.

E. TENDER OPENING AND EVALUATION

36 Tender opening

36.1 The Technical bids will be opened online by the Vice Chairman and Managing Director, TGFDC Ltd. or his nominee at the time and date as specified in the Notice Inviting Tender. All the Statements, documents, certificates, Demand Draft etc., uploaded by the Tenderers will be downloaded for technical evaluation. The technical bids will be evaluated against the specified parameters / criteria same as in the case of conventional tenders and the technically qualified tenderers will be identified.

36.2 The technical bid containing qualification requirements as per Annexure - I & II and Statement I to VIII will be evaluated by the tender opening authority.

37 Clarification on the Technical Bid.

37.1 The tender opening authority may call upon any tenderer for clarification on the statements, documentary proof relating to the technical bid. The request for clarification and response thereto shall be in writing and it shall be only on the qualification information uploaded online by the tenderer. The clarification called for from the tenderers shall be furnished within the stipulated time, which shall not be more than a week.

37.2 The tenderer if so desirous, shall agree in writing to furnish the clarification called for within the stipulated time and, for disqualification and rejection of his tender in the event of failure to do so.

38 Examination of technical Bids and Determination of Responsiveness

38.1 The Vice Chairman and Managing Director, TGFDC Ltd or his nominee will evaluate whether each Tenderer is satisfying the eligibility criteria prescribed in the tender document and declares them as a qualified Tenderer if he satisfies the eligibility criteria.

38.2 If the technical bid of a Tenderer is not satisfying any of the eligibility criteria it will be rejected by the Vice Chairman and Managing Director, TGFDC Ltd. However, the tender accepting authority detects any error in the evaluation of Tenders by Vice Chairman and Managing Director, TGFDC Ltd, the tender accepting authority while returning the tenders may direct the Vice Chairman and Managing Director, TGFDC Ltd as the case may be, to re-evaluate the tenders.

38.3 If any alteration is made by the tenderer in the tender documents, the conditions of the contract, the drawings, specifications or statements / formats or quantities the tender will be rejected.

39 Price Bid Opening:

39.1 Only the Price Bids of qualified Tenderers whose technical Bids are found satisfying the eligibility criteria shall be opened.

39.2 The Price Bid of the Unqualified Tenderers will not be opened.

39.3 Tenders shall be scrutinized in accordance with the conditions stipulated in the Tender document. In case of any discrepancy of non-adherence conditions the Tender accepting authority shall communicate the same which will be binding both on the tender opening authority and the Tenderer. In case of any ambiguity, the decision taken by the Tender Accepting Authority on tenders shall be final.

40 Evaluation and Comparison of Price Bids

40.1 The Vice Chairman and Managing Director, TGFDC Ltd / or his nominee/ Tender evaluation committee will evaluate and compare the price bids of all the qualified Tenderers.

40.2 Negotiations at any level are strictly prohibited. However, good gesture rebate, if offered by the lowest tenderer prior to finalization of tenders may be accepted by the tender accepting authority.

40.3 Selection of Tenderer among the lowest & equally quoted tenderers will be in the following orders:

a) The tenderer whose bid capacity is higher will be selected.

b) In case the bid capacity is also same the tenderer whose annual turnover is more will be preferred.

c) Even if the criteria incidentally become the same, the turnover on similar works and thereafter machinery available for the work and then the clean track record will be considered for selection.

41. Discrepancy in Tender percentage quoted.

In case of any discrepancy between the overall tender percentage quoted in words and figures, the percentage quoted in words shall prevail. In case the tenderer has quoted overall tender percentage only in words and not in figures or vice versa, such tender shall be treated as incomplete and rejected

42 Process to be Confidential.

42.1 Information relating to the examination, clarification, evaluation and comparison of Tenders and recommendations for the award of a contract shall not be disclosed to Tenderers or any other persons not officially concerned with such process until the award to the successful Tenderer has been announced by the tender accepting authority. Any effort by a Tenderer to influence the processing of Tenders or award decisions may result in the rejection of his Tender.

42.2 No Tenderer shall contact the Vice Chairman and Managing Director, TGFDC Ltdor any authority concerned with finalisation of tenders on any matter relating to its Tender from the

time of the Tender opening to the time the Contract is awarded. If the Tenderer wishes to bring additional information to the notice of the Vice Chairman and Managing Director, TGFDC Ltd, he should do so in writing.

42.3 Before recommending / accepting the tender, the tender recommending / accepting authority shall verify the correctness of certificates submitted to meet the eligibility criteria and specifically experience. The authenticated agreements of previous works executed by the lowest tenderer shall be called for.

42.4 Tenders will be finalized by the Vice Chairman and Managing Director, TGFDC Ltd and in case any discrepancy of non-adherence to the conditions, the same will be communicated which will be binding both on the tender concluding authority and contractor. In case of any ambiguity the decision taken by the Vice Chairman and Managing Director, TGFDC Ltd on tenders shall be final.

F. AWARD OF CONTRACT

43 Award Criteria

43.1 The Vice Chairman and Managing Director, TGFDC Ltdwill award the contract to the Tenderer who is found technically qualified as per the Tender conditions and whose price bid is lowest.

43.2 The Vice Chairman and Managing Director, TGFDC Ltd / tender accepting authority reserves the right to accept or reject any Tender or all tenders and to cancel the Tendering process, at any time prior to the award of Contract, without thereby incurring any liability to the affected Tenderer or Tenderers or any obligation to inform the affected Tenderer or Tenderers of the reasons for such action.

44 Notification of Award and Signing of Agreement.

44.1 The Tenderer whose Tender has been accepted will be notified of the award of the work prior to expiration of the Tender validity period by registered letter. This letter (hereinafter and in the Conditions of Contract called "Letter of Acceptance") will indicate the sum that the Corporation will pay the Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Amount").

44.2 When a tender is accepted the concerned tenderer shall attend the office of the Vice Chairman and Managing Director, TGFDC Ltdconcerned on the date fixed in the Letter of acceptance. Upon intimation being given by the VC & MD TGFDCL / or his nominee, of acceptance of his tender, the tenderers shall make payment of the balance E.M.D., and additional security deposit wherever needed by way of Demand Draft or unconditional and irrevocable Bank Guarantee obtained from a Nationalized Bank / Scheduled Commercial Bank with a validity period of duration of Contract period plus defects liability period of 2 years + 1month and sign an agreement in the form prescribed by the Corporation for the due fulfillment of the contract. Failure to attend theVice Chairman and Managing Director's office on the date fixed, in the written intimation, to enter into the required agreement shall entail forfeiture of the Earnest Money deposited.

44.3 The written agreement to be entered into between the contractor and the Corporation shall be the foundation of the rights and obligations of both the parties and the contract shall not be deemed to be complete until the agreement has first been signed by the contractor and then by the proper officer authorised to enter into contract on behalf of the Corporation.

44.4 The successful tenderer has to sign an agreement within a period of 15 days from the date of receipt of communication of acceptance of his tender. On failure to do so his tender will be cancelled duly forfeiting the E.M.D., paid by him without issuing any further notice and action will be initiated for black listing the tenderer, with all Departments in Telangana in respect of conventional tenders also vide G.O Ms No. 259 of T,R&B(R.II) Dept., Dt: 06.09.2008

45 Corrupt or Fraudulent Practices

45.1 The Corporation require that the tenderers / suppliers / contractors under Corporation financed contracts, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, the Corporation

(a) define for the purposes of the provision, the terms set forth below as follows:

(i) "corrupt practices" means the offering, giving, receiving or soliciting of anything of value to influence the action of a Corporation official in procurement process or in contract execution: and

(ii) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Corporation and includes collusive practice among Tenderers (prior to or after Tender submission) designed to establish in Tender prices at artificial non-competitive levels and to deprive the Corporation of the benefits of free and open competition.

(b) Will reject a proposal for award if it determines that the Tenderer recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question.

(c) Will blacklist / or debar a firm, either indefinitely or for a stated period of time, if at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing a Corporation Contract.

(d) Furthermore, Tenderers shall be aware of the provisions stated in the General Conditions of Contract.

FORMS OF TENDER

QUALIFICATION INFORMATION

AND

UNDER TAKING OF TENDERER

QUALIFICATION INFORMATION
CHECKLIST TO ACOMPANY THE TENDER
Documents to be submitted by tenderer on the

e-procurement platform on line

Sl. No.	Document to be uploaded to profile	Description to be given	Scanned documents to be uploaded	Page No. (see Note 6 below)
(1)	(2)	(3)	(4)	(5)
1.a)	Contractors registration as prescribed in condition No 4	Registration	Yes / No Yes/No	
2.	Copy of Permanent Account Number (PAN) card and copy of latest Income Tax returns submitted along with proof of receipt..	ITCC	Yes / No	
3.	Experience certificates in support of annual turnover in Civil Engineering works (Format at Statement-I)	Annual turnover	Yes / No	
4.	Experience certificates in support of satisfactory completion of similar works (Format at Statement II)	Experience Certificate	Yes/No	
5.	Experience certificates in support of execution of quantities of the items specified in previous pages under qualification criteria. (Format at Statement-III)	Prime Quantities	Yes/No	
6.	Statement of existing commitments and ongoing Govt. works along with supporting experience certificates as in Statement IVA	Existing commitments	Yes / No	
7.	Statement of works for which tenders are submitted as in Statement IV - B	Works awarded/likely to be awarded	Yes / No	
8.	Availability of key and critical equipment with supporting documents as mentioned in Statement -V	Key and critical Equipment	Yes / No	
9.	Declaration of critical equipment on non-judicial stamp paper worth of Rs.100/-	Declaration of critical equipment	Yes / No	
10.	Availability of key personnel as in Statement VI	Key personnel	Yes / No	

Tenderer

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Sl. No.	Document to be uploaded to profile	Description to be given	Scanned documents to be uploaded	Page No. (see Note 6 below)
11.	Information of litigation history as in Statement VII	Litigation history	Yes / No	
12	Declaration of lab equipment on a non-judicial stamp paper of Rs.100/- as in the statement – VIII	Lab equipment	Yes / No	
13	Proof of liquid assets/ Credit facilities/solvency certificates from banks in the format given in schedules not earlier than one year from the NIT.	Credit facilities	Yes / No	
14	E.M.D	EMD	Yes / No	
15	GST Registration	GST Registration	Yes / No	
16	Undertaking of Tenderer	Undertaking	Yes / No	
17	List of certificates enclosed			
18	Organizational structure of the firm			

Note: 1. Please upload documents in ZIP format with suitable description as defined above.

2. The scanned documents shall be legible failing which they will not be considered.

3. All experience certificates including those in support of existing commitments shall beissued by an Officer not below the rank of Executive Engineer and should be countersigned by the superintending Engineer or equivalent authority.

4. The format of B.G. towards E.M.D. should be adhered to as per prescribed format. Any deviation will result in making the bid non-responsive. Further all other B.Gs to be submitted at the time of agreement and for advance payment should also be in the formats prescribed in the bid document

5. **All the statements copies of the certificates, documents etc., enclosed tothe Technical bid shall be given page numbers on the right corner of each certificate, which shall be indicated in column (5) against each item.**

6. The information shall be filled-in by the Tenderer in the checklist and statements-I to VIII, and shall be enclosed to the Technical bid for the purposes of verification as well as evaluation of the tenderer's Compliance to the qualification criteria as provided in the Tender document.

7. The tenderer shall sign on all the statements, documents, certificates uploaded by him owning responsibility for their correctness/authenticity.

DECLARATION

I / We …….. have gone through carefully all the Tender conditions and solemnly declare that I / we will abide by any penal action such as disqualification or black listing or determination of contract or any other action deemed fit, taken by, the Corporation against us, if it is found that the statements, documents, certificates uploaded/produced by us are false / fabricated.

I / We hereby declare that, I / We have not been blacklisted / debarred / Suspended / demoted in any Department / Corporation in Andhra Pradesh/Telangana or in any State due to any reasons.

Signature of the Tenderer

STATEMENT – I

Details of value of Civil Engineering works executed in each year during the last five financial years by the Tenderer.

Tenderer

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Sl. No.	Financial Year	Value in Rs.
1.	2019-2020	
2.	2020-2021	
3.	2021-2022	
4.	2022-2023	
5.	2023-2024	

Attach certificate(s) issued by the Executive Engineer concerned and counter signed by Superintending Engineer or equivalent authority showing work wise / year wise value of work done in respect of all the works executed by the Tenderer during last five years.

OR

Certificate from CharteredAccountant supported with Annual Balance sheet tallying with IT clearance certificate.

Signature of the Tenderer

STATEMENT – II

Details of similar building works completed in the name of the Tenderer during the last five financial years.

Details of Similar work completed in the Name of the Tenderer during the last five financial years.

S. No.	Name of the work	Address of Agreement Concluding Authority	Agreement No. & dated.	Value of Contract
1	2	3	4	5

Stipulated period of completion	Actual date of completion	Value of work done year wise during the last 'five' years.					Total value of work done.
		1st Year	2nd Year	3rd Year	4th Year	5th Year	
6	7	9	10	11	12	13	14

Tenderer

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a) The bidder should have **satisfactorily completed similar works** of value not less than **Rs 4,71,975** as a Prime Contractor in the same name and style in any one year during the financial years 2019-2020 to 2023-2024 updated to 2024-2025 price level. Sub contractor's / GPA holder's experience shall not be taken into account.

The works shall be in any *State/Central Governments / Corporations/ or State/Central undertakings / CPWD/MES/PSUs only and* the tenderer has to furnish the experience certificates issued by Executive Engineer concerned and counter signed by Superintending Engineer or equivalent authorityin support of the value of work experience.

STATEMENT – III

Physical quantities executed by the Tenderer in the last five financial years. [work wise / year wise].

S. No	Financial Year	Name of work	Agt.No	Quantities executed / Year wise.					Any other items.
				EWE	Any CC.	VRCC	Masonry	HYSD	
1	2	3	4	5	6	7	8	9	10
1									
2									
3									
4									
5									

The Bidder should have executed the minimum quantities of items of work as given below in any one year during the financial years 2018-2019to 2022-2023.

The bidder shall enclose certificate issued by the Engineer-in-Charge of the *State/Central Governments / Corporations/ or State/Central undertakings / CPWD/MES/PSUs only and* not below the rank of Executive Engineer or equivalent and countersigned by the officer of the rank of superintending Engineer or equivalent.

Sl. No	Item	Min. Qty. of item required
1	Plastering in Cement Mortar of any thickness	192 Sqm
2	Painting	192 Sqm

Signature of the Contractor

STATEMENT – IV

Details of Existing Commitments.

Details of works on hand and, yet to be completed as on the date of submission of the Tender and works for which Tender s have been submitted are to be furnished.

A) Existing Commitments on ongoing works:

Sl.No	Name of work	Address of Agt. Conclu-ding autho-rity	Agt No. & Date	Value of cont-ract	Stipul-ated period of comp-	Value of work done so far.	Balance Value of works to be comple-	Antici-pated date of comp-letion	Updated value of balance work

Tenderer

General Manager
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					letion		ted		
1	2	3	4	5	6	7	8	9	10

Attach certificates issued by the Executive Engineer concerned and countersigned by Superintending Engineer orequivalent authority, indicating the balance work to be done, and likely period of completion.

Signature of the Contractor

B) Details of works for which Tenders are submitted [awarded / likely to be awarded]

Sl. No.	Name of work	Address of Agt. Concluding authority	Estima-ted value of work	Stipulated period of comple-tion	Date on which tender was submitted	Present stage of Tender.
1	2	3	4	5	6	7

Signature of the Contractor

STATEMENT – V

Availability of Critical Equipment

The tenderer should furnish the information required below, regarding the availability of the equipment, required for construction / quality control

Sl. No	Details of Equipment	Number required	Number	
			Owned	Leased
1	2	3	4	5

Signature of the Contractor

A declaration regarding the equipment owned shall be produced by the Tenderer on a non-judicial stamp paper of Rs. 100/- as below along with sufficient proof of owning such equipment through invoice /certificate of registration by the competent authority

DECLARATION

"I, _____ do hereby solemnly affirm and declare that I /we own the following equipment for using on the subject work and also declare that I / We will abide by any action such as disqualification or determination of Contract or blacklisting or any action deemed fit, if the Corporation detects at any stage that I/we do not possess the equipment listed below.

Sl. No.	Details of each Equipment	No.	Year of purchase	Regn. Number	Capacity	Any other data.	Is it in working condition?
1	2	3	4	5	6	7	8

Or

Submit a certificate issued by an officer not below the rank of Executive Engineer issued not earlier than one year from date of submission of tenders in support of owning machinery.

STATEMENT – VI.

Availability of Key Personnel

Qualification and experience of Key Personnel proposed to be deployed for execution of the Contract.

S.No	Name	Designation	Qualification	Total Experience	Working with the Tenderer since

Signature of the Contractor

STATEMENT – VII

Information on litigation history in which Tenderer is the Petitioner.

S. No	Case No. / Year	Court where filed.	Subject Matter / Prayer in the case.	Respondents i.e., SE / CE	Present Stage.
1	2	3	4	5	6

Signature of the Contractor

STATEMENT - VIII

DECLARATION (on a non judicial stamp paper of Rs.100/-)

"I, _____do hereby solemnly affirm and declare that I /we own / leased the following Quality Control equipment for using on the subject work and also declare that I / We will abide by any action such as disqualification or determination of Contract or blacklisting or any action deemed fit, if the Corporation detects at any stage that I/we do not possess the equipment listed below.

Sl. No	**Details of each Equipment**	**Numbers required**	**Own**	**Leased**
1	2	3	4	5
1	Screw gauge 0-25 mm	1 Nos.		

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3	Measurement tapes both Steel (3.0 m, 5.0 m) &Fibre (15.0 m) 30 cm steel scale	2 Nos. each 2 Nos		
4	Weighing Machines 5.0 kg capacity	1 Nos.		
5	Sieves for fine aggregate	1 Nos.		
6	Spirit level	2 Nos.		
7	Plum bobs	2 Nos.		
8	Measuring Jars (2) 250ml	2 Nos.		

SIGNATURE OF THE TENDERER

UNDERTAKING OF TENDERER

Date: ……

To

To
The Vice Chairman and Managing Director,
TGFDC Ltd

Sir,

I / We do hereby tender and if this tender be accepted, under take to execute the following work viz. "as shown in the drawings and described in the specifications deposited in the office of the **The Vice Chairman and Managing DirectorTGFDC**, with such variations by way of alterations or additions to, and omissions from the said works and method of payment as provided for in the "conditions of the contract" for the sum of Rupees **Rs. 9,43,950** or such other sum as may be arrived under the clause of the standard preliminary specifications relating to "Payment on lump-sum basis or by final measurement at unit rates"

I/WE have also quoted percentage excess or less on E.C.V., in Schedule 'A' Part-I, annexed (in words and figures) for which I/We agree to execute the work when the lumpsum payment under the terms of the agreement is varied by payment on measurement quantities.

I/WE have quoted Percentage excess or less on E.C.V., in Schedule 'A' Part – I both in words & figures. In case of any discrepancy between the Percentage excess or less on E.C.V., in words and figures, the rates quoted words only shall prevail.

I/WE agreed to keep the offer in this tender valid a period of Three month(s) mentioned in the tender notice and not to modify the whole or any part of it for any reason within above period. If the tender is withdrawn by me/us for any reasons whatsoever, the earnest money paid by me/us will be forfeited to Corporation

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 A.P.S.S./ T.S.S. and the preliminary specifications therein and the A.P.S.S. / T.S.S. addenda volume and that I/We have made such examination of the contract documents and the plans, specifications and quantities and of the location where the said work is to be done, and such investigation of the work required to be done, and in regard to the material required to be furnished as to enable me/us to thoroughly understand the intention of 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 Corporation based upon or arising out of any alleged misunderstanding or misconception /or mistake on my/or our part of the said requirement, covenants, agreements, stipulations, restrictions and conditions.

I/WE enclosed to my/our application for tender schedule a crossed online (No……..dated:……..) for Rs……..as earnest money not to bear interest.

I/WE shall not assign the contractor or sublet any portion of the same except the conditions in clause 5.1 of General conditions of contract. In case if it becomes necessary such subletting with the permission of the theVice Chairman and Managing Directorshall be limited to (1) Labour contract, (2) Material contract, (3) Transport contract and (4) Engaging specialists for special item of work enjoined in A.P.S.S.

IF MY/OUR tender is not accepted the sum shall be returned to me/us on application when intimation is sent to me/us of rejection or at the expiration of three months from last date of receipt of this tender, whichever is earlier. If my/our tender is accepted the earnest money shall be retained by the Corporation as security for the due fulfillment of this contract. If upon written intimation to me/us by the TGFDC Office, I/We fail to attend the said office on the date herein fixed or if upon intimation being given to me/us by the General Manager or Engineerincharge or acceptance of my/our tender, and if I/We fail to make the additional security deposit or to enter into the required

Tenderer

General Manager
TGFDC Ltd

agreement as defined in condition-3 of the tender notice, then I/We agree the forfeiture of the earnest money. Any notice required to be served on

me/us here under shall be sufficiently served on me/us if delivered to me/us hereunder shall be sufficiently served on me/us if delivered to me/us personally or forwarded to me/us by post to (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 it would be delivered at the address to which it is sent.

I/WE fully understand that the written agreement to be entered into between me/us and Corporation shall be the foundation of the rights of the both the parties and the contract shall not be deemed to be complete until the agreement has first been signed by me/us and then by the proper officer authorised to enter into contract on behalf of Corporation.

I AM/WE ARE professionally qualified and my/our qualifications are given below:

Name	Qualified

I/WE will employ the following technical staff for supervising the work and will see that one of them is always at site during working hours, personally checking all items of works and pay extra attention to such works as required special attention (eg) Reinforced concrete work.

Name of members of technical staff proposed to be employed	Qualification.

I / WE declare that I/WE agree to recover the salaries of the technical staff actually engaged on the work by the Corporation, from the work bills, if I/We fail to employ technical staff as per the tender condition.

TENDERERS / CONTRACTOR'S CERTIFICATE.

(1) I/WE hereby declare that I/We have perused in detail and examined closely theTelangna& Andhra Pradesh Standard Specifications, all clauses of the preliminary specifications with all amendments and have either examined all the standards specifications or will examine all the standard specifications for items for which I/We tender, before I/We submit such tender and agree to be bound and comply with all such specifications for this agreement which I/We execute in the Corporation.

(2) I/WE certify that I/We have inspected the site of the work before quoting my Percentage excess or less on ECV, I /We have satisfied about the quality, availability and transport facilities for stones sand and other materials.

(3) I/WE am/are prepared to furnish detailed data in support of all my quoted rates, if and when called upon to do so without any reservations.

(4) I//WE hereby declare that I/We will pay an additional security deposit in terms of conditions, the difference between **75% of ECV** and my/our tender amount, in case if my / our offer is less than **25%** as per **Clause 11 of Instructions to bidders**

(5) I/WE hereby declare that I am/we are accepting to reject my tender in terms of condition 8 of instructions to bidders

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(6) I/WE hereby declare that I/We will not claim any price escalation beyond the scope of the Corporation orders issued from time to time.

(7) I/WE hereby declare that I am/we are accepting for the defect liability period of 24months from the date of completion of the total work satisfactorily.

(8) a) I/WE declare that I/WE will procure the required construction materials including earth and use for the work after approval of the Engineer-in-Charge. The responsibility for arranging and obtaining the land for borrowing or exploitation in any other way shall rest with me/us for the materials for construction, I/WE shall ensure smooth and un-interrupted supply of materials.

b) I/WE declare that the responsibility for arranging and obtaining the land for disposal of spoil/soil not useful for construction purposes shall rest with me/us.

c) I/WE declare that I/WE shall not claim any compensation or any payment for the land so arranged for disposal of soil and the land for borrow area. My/our quoted percentage excess or less ECV., are inclusive of the land so arranged and I/We will hand over the land so arranged for disposal of soil to; the Corporation after completion of work.

d) I/WE declare that I/WE will not claim any extra amount towards any material used for the work other than the quoted works for respective schedule 'A' items.

(9) I/WE declare that I/WE will execute the work as per the mile stone programme, and if I/WE fail to complete the work as per the mile stone programme I abide by the condition to recover liquidated damages as per the tender conditions.

(10) I/WE declare that I/WE will abide for settlement of disputes as per the tender conditions.

DECLARATION OF THE TENDERER

1) I/WE have not been black listed in any Corporation / Dept. of State / Central Govt due to any reasons.
2) I/WE have not been demoted to the next lower category for not filing the tenders after buying the tender schedules in a whole year and my/our registration has not been cancelled for a similar default in two consecutive years.
3) I/WE agree to disqualify me/us for any wrong declaration in respect of the above and to summarily reject my/our tender.

I / We, _____ have gone through carefully all the Tender conditions and solemnly declare that I / we will abide by any penal action such as disqualification or black listing or determination of contract or any other action deemed fit, taken by, the Corporation against us, if it is found that the statements, documents, certificates produced by us are false / fabricated.

Address of the Tenderer :

Phone No.:
Fax No.:
Mail id :

Signature of the Tenderer

Note: If the tender is made by an individual, it shall be signed with his full name and his address shall be given. If it is made by a firm, it shall be signed with the co-partnership name by a member of the firm, who shall also sign his own name, and the name and address of each member of the firm shall be given, if the tender is made by a Dept. it shall be signed by a duly authorised officer who shall produce with his tender satisfactory evidence of his authorisation. Such tendering Dept. may be required before the contract is executed, to furnish evidence of its corporate existence. Tenders signed on behalf of G.P.A. holder will be rejected

Tenderer

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CONDITIONS OF CONTRACT

A. GENERAL

1. Interpretation:

1.1 In interpreting these Conditions of Contract, singular also means plural, male also means female, and vice-versa. Headings have no significance. Works have their normal meaning under the language of the contract unless specifically defined. The Engineers-in-charge will provide instructions clarifying queries about the conditions of Contract.

1.2 The documents forming the Contract shall be interpreted in the following order of priority:

1) Agreement
2) Letter of Acceptance, notice to proceed with the works
3) Contractor's Tender (Technical bid)
4) Conditions of contract
5) Specifications
6) Drawings
7) Bill of quantities (Price-bid)
8) Any other document listed as forming part of the Contract.

2. Engineer-in-Charge's Decisions:

2.1 Except where otherwise specifically stated, the Engineer-in-charge will decide the contractual matters between the Corporation and the Contractor in the role representing the Corporation.

3. Delegation:

3.1 The Engineer-in-charge may delegate any of his duties and responsibilities to other officers and may Cancel any delegation by an official order issued.

4. Communications:

4.1 Communications between parties, which are referred to in the conditions, are effective only when in writing. A notice shall be effective only when it is delivered (in terms of Indian Contract Act)

5. Sub-contracting:

If the prime contractor desires to sub-let a part of the work, he should submit the same at the time of filing tenders itself or during execution, giving the name of the proposed Sub-contractor, along with details of his qualification and experience. The Tender Accepting Authority should verify the experience of the Sub-contractor and if the Sub-contractor satisfies the qualification criteria in proportion to the value of work proposed to be sub-let, he may permit the same. The total value of works to be awarded on sub-letting shall not exceed 50% of contract value. The extent of subletting shall be added to the experience of the sub-contractor and to that extent deducted from that of the main contractor.

6. Other Contractors:

The Contractor shall cooperate and share the Site with other contractors, Public authorities, utilities, and the Corporation. The Contractor shall also provide facilities and services for them as directed by the Engineer-in-charge.

7. Personnel:

7.1 The Contractor shall employ the required Key Personnel named in the Schedule of Key Personnel to carry out the functions stated in the Schedule or other personnel approved by the Engineer-in-charge. The Engineer-in-charge will approve any proposed replacement of Key Personnel only if their qualifications, abilities, and relevant experience are substantially equal to or better than those of the personnel listed in the Schedule.

7.2 **Schedule of Key Personnel:**

The successful tenderer shall have to employ the following technical staff on full time basis to be available at site.

Cost of work (Technical sanction amount)	**Qualification of Technical Staff**
1	2
From Rs.50,000/- to Rs.1 Lakh	One I.T.I. candidate
Above Rs.1.00 lakh up to Rs.15.00 lakhs	One diploma holder
Above Rs.15.00 lakh up to Rs.50.00 lakhs	One Graduate Engineer
Above Rs.50.00 lakh upto Rs.100.00 lakhs	One Graduate Engineer and One Diploma holder
Rs.100.00 Lakhs to Rs.500.00 lakhs	Two Graduate Engineers
Rs.500.00 Lakhs to Rs.1000.00 lakhs	Two Graduate Engineers and One Diploma holder
Rs.1000.00 lakhs to Rs.5000.00 lakhs	Three Graduate Engineers and two Diploma holders
Rs.5000.00 lakhs and above	Six Graduate Engineers

7.3. Employment of technical personnel shall be with reference to the estimate cost of work put to tender.

7.4 The appointment of technical staff shall be on full time basis.

The Technical staff shall be available at work site for supervising the work including quality checking of all items from time to time. Failure to employ the required technical personnel by the contractor, amounts will be recovered at the following rates from the contractor :

Diploma Engineer : - Rs. 43,470 /- per month.

Graduate Engineer : - Rs. 55,230 /- per month.

The technical personnel shall have minium 3 years of experience and appointed on full time basis to be available at site exclusively for this work. They shall be available at work site for

supervision of all materials, works, quality control, and to take instructions of Engineer-in-charge whenever required by him.

7.5 The names of the technical personnel to be employed by the contractor should be furnished in the statement enclosed separately.

7.6 In case the contractor is already having more than one work on hand and has undertaken more than one work at the same time, he should employ separate technical personnel on each work.

7.7 If the contractor fails to employ technical personnel the work will be suspended or Corporation will engage a technical personnel and recover the cost thereof from the contractor.

7.8 If the Engineer-in-charge asks the Contractor to remove a person who is a member of Contractor's staff or his work force stating the reasons the Contractor shall ensure that the person leaves the site forthwith and has no further connection with the work in the contract.

7.9 The technical personnel appointed by the contractor shall maintain the records and registers required by the Corporation like quality test registers, test reports, calibration records, site order book, check lists etc and sign them in proof of verifications, conduction of tests, compliance to instructions etc.

7.10 All costs and expenses associated with the employment of above Technical personnel at site as above shall be borne by the Contractors.

7.11 If the contractor does not employ the technical person agreed to on the work for 30 days, thereafter it becomes a fundamental breach of contract.

7.12 Engineer-in-charge is the sole judge to decide (a) whether qualified technical personnel is actually supervising the work and (b) the actual period of absence of such staff which requires the recovery and penalty to be enforced and his decision is final and binding on the contractor.

8 Contractor's Risks:

8.1 All risks of loss or damage to physical property and of personnel injury and death, which arise during and in consequence of the performance of the Contract are the responsibility of the Contractor.

9 Insurance:

9.1 The Contractor shall provide at his own cost in the name of the Corporation, insurance cover forpersonal injury or death of persons employed for constructionto the Engineer-in-charge at the time of concluding agreement of the work

10 Site Inspections:

10.1 The contractor should inspect the site and also proposed quarries of choice for materials source of water and quote his percentage including quarrying, conveyance and all other charges etc.

10.2 The responsibility for arranging the land for borrow area rests with the Contractor and no separate payment will be made for procurement or otherwise. The contractor's quoted rate includes all such costs.

11. Contractor to Construct the Works:

The Contractor shall construct and Commission the Work in accordance with the specifications and Drawings.

12. Diversion of streams / Vagus / Drains.

12.1 The contractor shall at all times carry out construction of cross drainage works in a manner creating least interference to the natural flow of water while consistent with the satisfactory execution of work. A temporary diversion shall be formed by the contractor at his cost where necessary. No extra payment shall be made for this work.

12.2 No separate payment for bailing out of sub-soils, water drainage or locked up rain water for diversion , shoring , foundations , bailing of pumping water either from excavation soils from foundations or such other incidental will be paid. The percentage to be quoted by the contractor are for the finished item of work in situ and including all the incidental charges. The borrow pits are also to be dewatered by the contractor himself at his expense , if that should be found necessary.

12.3 The work of diversion arrangements should be carefully planned and prepared by the contractor and forwarded to the Engineer-in-charge technically substantiating the proposals and approval of the Engineer-in-charge obtained for execution.

12.4 The contractor has to arrange for bailing out water, protection to the work in progress and the portion of works already completed and safety measures for men and materials and all necessary arrangements to complete the work.

12.5 All the arrangements so required should be carried out and maintained at the cost of the contractor and no separate or additional payments is admissible..

12.6 Coffer Dams.

Necessary Coffer Dams and ring bunds have to be constructed at the cost of contractor and the same are to be removed after the completion of the work. The contractor has to quote his percentage keeping the above in view.

13. Power Supply.

13.1 The contractor shall make his own arrangements for obtaining power from the Electricity dept., at his own cost. The contractor will pay the bills to electricity department for the cost of power consumed by him.

13.2 The contractor shall satisfy all the conditions and rules required as per Indian Electricity Act 1910 and under Rule-45(I) of the Indian Electricity Rules, 1956 as amended from time to time and other pertinent rules.

13.3 The power shall be used for bona fide Dept. work only.

13.4 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 reenactment's of state or central govt., and other local authorities and any other enactment's, notification and acts that may be passed in future either by the state or the central Corporation or local authority including Indian workmen's compensation Act- 192, Control labour (Regulation and Abolition) Act- 1970, The child labour prohibition and regulation Act-1986 and equal remuneration Act- 1976, Factories Act, minimum wage Act- 1948, provident fund regulations, Employees provident fund Act- 1952 schedules 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 benefit and shall keep Corporation indemnified in case any action is commenced by competent authorities for contravention by the contractor.

13.5 The electrical contractor has to keep his license in currency till the work is completed. If the license is suspended during the period in which the work is in progress the contract will be terminated and awarded to some other agency recovering the extra cost if any.

13.6 The materials used in the work should be as per the list of materials enclosed. The Corporation reserves the right to insist upon using any of the materials from this list of approved materials.

13.7 The work shall be carried out strictly in conformity with (i)code of practice for Electrical wiring and fittings in Corporation Buildings, (ii) The Indian standard specification (iii) The Corporation specification. If the work carried out does not comply with the code of practice and the Corporation specifications and if the workmanship is unsatisfactory it will be binding on the contractor to redo the job without any extra cost and pay penalty as decided by the Corporation towards inconvenience caused if any.

13.8 The work should be carried out under the direct supervision of persons holding a certificate of competency for the type of work involved.

13.9 After completion of work a plan of building installation should be prepared and furnished indicating the location of various main and sub boards and also the fittings together with a circuit diagram duly numbered (in the diagram). The final bill will not be paid till the above plan and the diagram is submitted and approved after verification. Such completion drawings shall be signed by the licenced electrical contractor through whom the work is executed.

13.10 Lugs should be provided for all earth connections.

13.11 The contractor himself should arrange for the transportation of men and materials to the work spot.

13.12 Concreting to the pole and providing independent earthing should be done in presence of Corporation staff.

13.13 On completion of the Electrical Installation a certificate shall be furnished by the Contractor countersigned by a licensed supervisor, that under direct supervision the installation was carried out. This certificate shall be in the prescribed from as required by the local supply authority. The contractor shall be responsible for getting the Electrical Installation inspected and approved by the local authority concerned.

13.14 The contractor shall pay for any inspection fees and for permits required for the installation of the work wherever necessary. The corporation shall arrange only for payment of service connection charges and any other security deposit for getting electrical supply. On completion of the work, the contractor shall obtain and deliver to the., certificates of final inspection and approval by the local Electric Authority as may require. The corporation. shall have full powers to test the materials or work to be tested by an independent agency at the Electrical contractor's expense in order to prove their soundness and adequacy.

13.15 Contractor shall provide everything necessary for the proper execution of works according to the intent and meaning of the drawings, specifications, schedule of quantities. Any discrepancy in the documents shall be brought to the notice of the corporation. and got clarified prior to taking up the installation.

13.16 Materials and Workmanship:
All materials and workmanship shall confirm to the specifications, relevant IS standards and code of practice and comply with APSEB/CEIG requirements as the case may be. Any work

that is not up to the standards shall be dismantled and reconstructed by the contractor to the satisfaction of the corporation.

14. **Liaison Work(If any)**

a. The Contractor shall be responsible for all liaison work with CEIG and also to obtain approval of drawing from CEIG.
b. The Contractor shall get all the approvals from the municipal authorities for which necessary statutory fees will be paid by the Corporation.
c. The Contractor shall get all the approvals from the fire authorities for which necessary statutory fees will be paid by the Corporation.
d. The Contractor shall get all the installation of the lifts through reputed manufactures i.e., M/s Schindler, M/s Kone elevators, M/s Jhonson Lifts & M/s OTIS elevators & lifts as per BoQ items.
e. Fire fighting works shall be got executed through experienced fire fighting contractor.
f. The Contractor shall be responsible for obtaining the power supply from Electricity Board for which necessary statutory fees will be paid by the Corporation.

15. a) Ramps:

Ramps required during execution may be formed wherever necessary and same are to be removed after completion of the work. No separate payment will be made for this purpose.

b) Monsoon Damages:

Damages due to rain or flood either in cutting or in banks shall have to be made good by the contractor till the work is handed over to the Corporation. The responsibility of de-silting and making good the damages due to rain or flood rests with the contractor. No extra payment is payable for such operations and the contractor shall therefore, have to take all necessary precautions to protect the work done during the construction period.

16. The works to be Completed by the Intended Completion Date:

16.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the programme submitted by the Contractor, as updated with the approval of the Engineer-in-Charge, and complete the work by the Intended Completion Date.

17. Safety:

17.1 The Contractor shall be responsible for the safety of all activities on the Site.

18. Discoveries:

18.1 Anything of historical or other interest or of significant value unexpectedly discovered on the Site is the property of the Corporation. The Contractor is to notify the Engineer-in-charge of such discoveries and carry out the Engineer-in-Charge's instructions for dealing with them.

19. Possession of the Site.

The Corporation shall give possession of the site to the Contractor. If possession of a part site is given, the Corporation will ensure that the part site so handed over is amenable to carryout the work at site by the Contractor.

20. Access to the Site:

The Contractor shall provide the Engineer-in-Charge and any person authorised by the Engineer-in-Charge, access to the site and to any place where the work, in connection with the Contract, is being carried out or is intended to be carried out.

21. Instructions:

The Contractor shall carry out all instructions of the Vice chairman and Managing Director TGFDC Ltd., General Manager TGFDC, Engineer-in-charge TGFDC and comply with all the applicable local laws where the Site is located.

22. Settlement of disputes:

22.1 If any dispute or difference of any kind whatsoever arises between the Corporation and the Contractor in connection with, or arising out of the Contract, whether during theprogress of the works or after their completion and whether before or after the termination, abandonment or breach of the Contract, it shall in the first place, be referred to and settled by the General Manager TGFDC/ Engineer-in-charge TGFDC who shall, within a period of thirty days after being requested by the Contractor to do so, give written notice of his decision to the Contractor. Upon receipt of the written notice of the decision of the General Manager TGFDC / Engineer-in-Charge TGFDC the Contractor shall promptly proceed without delay to comply with such notice of decision.

22.2 If the General Manager TGFDC / Engineer-in-Charge TGFDC fails to give notice of his decision in writing within a period of thirty days after being requested or if the Contractor is dissatisfied with the notice of the decision of the Engineer-in-Charge, the Contractor may within thirty days after receiving the notice of decision appeal to the VC & MD TGFDC which shall offer an opportunity to the contractor to be heard and to offer evidence in support of his appeal, the Corporation shall give notice of his decision within a period of thirty days after the Contractor has given the said evidence in support of his appeal, subject to arbitration, as hereinafter provided. Such decision of the Corporation in respect of every matter so referred shall be final and binding upon the Contractor and shall forthwith be given effect to by the Contractor, who shall proceed with the execution of the works with all due diligence whether he requires arbitration as hereinafter provided, or not. If the Corporation has given written notice of his decision to the Contractor and no claim to arbitration has been communicated to him by the Contractor within a period of thirty days from receipt of such notice, the said decision shall remain final and binding upon the Contractor. If the Corporation fail to give notice of his decision, as aforesaid within a period of thirty days after being requested as aforesaid, or if the Contractor be dissatisfied with any such decision, then and in any such case the contractor within thirty days after the expiration of the first named period of thirty days as the case may be, require that the matter or matters in dispute be referred to arbitration as detailed below:-

22.3 SETTLEMENT OF CLAIMS:

Settlement of claims for Rs.50,000/- and below by Arbitration.

All disputes or difference arising of or relating to the Contract shall be referred to the adjudication as follows:

Claims up to Rupees 50,000/-.

Vice Chairman and Managing Director TGFDC

22.4 The arbitration shall be conducted in accordance with the provisions of Indian Arbitration and Conciliation Act 1996 or any statutory modification thereof.

22.5 The arbitrator shall state his reasons in passing the award.

22.6 Claims above Rs.50,000/-.

All claims of above Rs.50,000/- are to be settled by a Civil Court of competent jurisdiction by way of civil suit and not by arbitration.

22.7 A reference for adjudication under this clauses shall be made by the contractor 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.

22.8 Overall Progress of work for the total work and Rate of progress for individual mile stones shall be maintained throughout by the contractor and any reference of any dispute or difference to the authorities or arbitration under these clauses shall not suffer the program of the work.

B. TIME FOR COMPLETION

24. Program:

24.1 The total period of completion is 3 **months**from the date of entering with agreement to proceed including rainy season. Keeping in view, the schedule for handing over of site given in condition 24.4 below, the work should be programmed such as to achieve the mile-stones as in "Rate of progress.

24.2 The attention of the tenderer is directed to the contract requirement at the time of beginning of the work, the rate of progress and the dates for the whole work and its several parts as per milestones. Time is the essence of the contract. The rate of progress and proportionate value of work done from time to time as will be indicated by the Engineer-in-charge's Certificate for the value of work done and completion of mile-stones will be required. Date of commencement of their programme will be the date for concluding agreement.

24.3 After signing the agreement, the contractor shall forthwith begin the work, shall regularly and continuously proceed with them.

24.4 The following rate of progress will be required to be maintained by the contractor as a minimum. Contractor may give a separate time schedule for the completion of the whole work and the consideration will be given for accelerated programme. It is imperative that the work progress shall be ahead of the rate of progress given below.

Work programme of achieving the milestones (Statement)

Mile stone No.	**Period from the date of signing agreement**	**Minimum percentage of work to be completed (Cumulative)**
Milestone-1	1 Month	Scarping, water proofing
Milestone-2	1 Month	Electrical, Plumbing and Sanitary works
Mile stone -3	1 Month	Plastering and painting and completion of all works

Note: The percentage of work to be completed is based on the contract lump sum amount

ii) Site, schedule of programme of handing over site to the Contractor **:**

Site will be handed over to the contractor immediately.

24.5 The contractor shall commence the works on site within the period specified under condition 24.1 to 24.3 above after the receipt by him of a written order to this effect from theGeneral Manager /ViceChairman and Managing Director, TGFDC Ltdand shall proceed with the same with due expedition and without delay, except as may be expressly sanctioned or ordered by the General Manager / Vice Chairman and Managing Director, TGFDC Ltd,or be wholly beyond the contractor's control.

24.6 Save in so far as the contractor may prescribe, the extent of portions of the site of which the contractor is to be given possession from time to time and the order in which such portions shall be made available to him and, Subject to any requirement in the contract as to the order in which the works shall be executed, the General Manager / Vice Chairman and Managing Director, TGFDC Ltdwill, with the Engineer-in-charge written order to commence the works, give to the contractor possession of so much of the site as may be required to enable the contractor to commence proceed with the execution of the works in accordance with the programme if any, and otherwise in accordance with such reasonable proposals of the contractor as he shall by written notice to theGeneral Manager / VC & MD TGFDC, make and will from time to time as the works proceed, give to the contractor possession of such further portions of the site as may be required to enable the contractor to proceed with the execution of the works with due dispatch in accordance with the said programme or proposals as the case may be; if the contractor suffers delay or incurs cost from failure on the part of the Vice Chairman and Managing Director, TGFDC Ltdto give possession in accordance with the terms of this clause, the Vice Chairman and Managing Director, TGFDC Ltd shall grant an extension of time for the completion of works.

24.7 The contractor shall bear all costs and charges for special or temporary way leases required by him in connection with access to the site. The contractor shall also provide at his own cost any additional accommodation outside the site required by him for the purposes of the work.

24.8 Subject to any requirement in the contract as to completion of any section of the works before completion of the whole of the works shall be completed in accordance with provisions of clauses in the Schedule within the time stated in the contract calculated from the last day of the period named in the statement to the tender as that within which the works are to be commenced or such extended time as may be allowed.

24.9 **Delays and extension of time:**

No claim for compensation on account of delays or hindrances to the work from any cause whatever shall lie, except as hereafter defined. Reasonable extension of time will be allowed by the General Manager or by the office competent to sanction the extension, for unavoidable delays, such as may result from causes, which in the opinion of the General Manager, are undoubtedly beyond the control of the contractor. The General Manager shall assess the period of delay or hindrance caused by any written instructions issued by him, at twenty five per cent in excess or the actual working period so lost.

In the event of the General Manager failing to issue necessary instructions and thereby causing delay and hindrance to the contractor, the latter shall have the right to claim an assessment of such delay by the Vice Chairman and Managing Director TGFDC whose decision will be final and binding. The contractor shall lodge in writing with the General Manager / Engineer-in-charge, a statement of claim for any delay or hindrance referred to above, within fourteen days from its commencement, otherwise no extension of time will be allowed.

Whenever authorised alterations or additions made during the progress of the work are of such a nature in the opinion of the Engineer-in-charge as to justify an extension of time in consequence thereof, such extension will be granted in writing by the VC & MD TGFDC or other competent authority when ordering such alterations or additions.

25. Construction Programme:

25.1 The Contractor shall furnish programme showing the sequence in which he proposed to carry out the work, monthly progress expected to be achieved, also indicating date of procurement of materials plant and machinery. The schedule should be such that it is practicable to achieve completion of the whole work within the time limit fixed and in keeping with the Mile stone programme specified and shall obtain the approval of the General Manager / Engineer-in-charge. Further rate of the progress as in the program shall be kept up to date. In case it is subsequently found necessary to alter this program, the contractor shall submit sufficiently in advance the revised program incorporating necessary modifications and get the same approved by the Engineer-in-charge. No revised program shall be operative with out approval of Engineer-in-charge.

25.2 The Vice Chairman and Managing Director, TGFDC Ltdshall have all times the right, without any way violating this contract, or forming grounds for any claim, to alter the order of progress of the works or any part thereof and the contractor shall after receiving such

directions proceed in the order directed. The contractor shall also report the progress to the Vice Chairman and Managing Director, TGFDC Ltd within 7 days of the Engineer-in-charge's direction to alter the order of progress of works.

25.3 The Contractor shall give written notice to the General Manager / Engineer-in-Charge whenever planning or progress of the works is likely to be delayed or disrupted unless any further drawings or order including a direction, instruction or approval is issued by the General Manager / Engineer-in-Charge within a reasonable time. The notice shall include details of the drawing or order required and of why and by when it is required and of any delay or disruption likely to be suffered if it is late.

26. Speed of Work:

26.1 The Contractor shall at all times maintain the progress of work to conform to the latest operative progress schedule approved by General Manager/ the Engineer-in-Charge. The contractor should furnish progress report indicating the programme and progress once in a month. The General Manager / Engineer-in-Charge may at any time in writing direct the contractor to slow down any part or whole of the work for any reason (which shall not be questioned) whatsoever, and the contractor shall comply with such orders of the General Manager /Engineer-in-Charge. The compliance of such orders shall not entitle the contractor to any claim of compensation. Such orders of the General Manager / Engineer-in-Charge for slowing down the work will however be duly taken into account while granting extension of time if asked by the contractor for which no extra payment will be entertained.

26.2 Delays in Commencement or progress or neglect of work and forfeiture of earnest money, Security deposit and withheld amounts:

If, at any time, the General Manager / Engineer-in-Charge shall be of the opinion that the Contractor is delaying Commencement of the work or violating any of the provisions, the Contractor is neglecting or delaying the progress of the work as defined by the. "Rate of progress" in the Articles of Agreement, he shall so advise the Contractors in writing and at the same time demand compliance in accordance with conditions of Tender notice. If the Contractor neglects to comply with such demand within seven days after receipt of such notice, it shall then or at any time thereafter, be lawful for the General Manager /Engineer-in-Charge to take suitable action in accordance with Clause.60 of APSS.

27. Suspension of works by the Contractor:

27.1 If the Contractor shall suspend the works, or sublet the work without sanction of the General Manager /Engineer-in-Charge, or in the opinion of the General Manager /Engineer-in-Charge shall neglect or fail to proceed with due diligence in the performance of his part of the Contract as laid down in the Schedule rate of progress, or if he shall continue to default or repeat such default in the respects mentioned in clause 27 of the APSS, the VC & MD TGFDCL / General Manager /Engineer-in-Charge shall take action in accordance with Clause 61 of APSS.

27.2 If the Contractor stops work for 28 days and the Stoppage has not been authorised by the General Manager /Engineer-in-Charge the Contract will be terminated under Clause 61 of APSS.

27.3 If the Contractor has delayed the completion of works the Contract will be Terminated under Clause.61 of APSS.

28. Extension of the Intended Completion Date:

28.1 The VC & MD TGFDCL shall extend, in accordance with the delegation of powers in force, the Intended Completion Date, if a Variation is issued, which makes it impossible for Completion to be achieved by the Intended Completion Date.

28.2 The VC & MD TGFDCL shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Contractor asking the Engineer for a decision upon the effect of a Variation and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.

29. Delays Ordered by the Engineer-in-Charge:

29.1 The VC & MD TGFDCL / General Manager /Engineer-in-Charge may instruct the Contractor to delay the start or progress of any activity within the Work.

30. Early Warning:

30.1 The contractor is to warn the General Manager /Engineer-in-Charge at the earliest opportunity of specific likely future events or circumstances that may adversely affect the Execution of Works.

30.2 The Contractor shall co-operate with the General Manager /Engineer-in-Charge in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Engineer-in-Charge.

31. Management Meetings:

31.1 The VC & MD TGFDCL /General Manager /Engineer-in-Charge may require the Contractor to attend a management meeting. The business of a management meeting shall be to review the programme for remaining work and to deal with matters raised in accordance with the early warning procedure.

C. QUALITY CONTROL

32 Identifying Defects:

32.1 The General Manager / Engineer-in-Charge shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Engineer-in-Charge may instruct the Contractor to verify the Defect and to uncover and test any work that the Engineer considers may be a Defect.

33 Tests:

33.1 If the General Manager / Engineer-in-Charge instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the Contractor shall pay for the test and any samples.

34. Correction of Defects:

34.1 The VC & MD TGFDCL /General Manager / Engineer-in-Charge shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins on Completion. The defect liability period shall be extended for as long as defects remain to be corrected by the Contractor.

34.2 Every time notice of a Defect is given, the Contractor shall correct the notified defect within the length of time specified by the General Manager / Engineer-in-Charge's notice.

35. Uncorrected Defects:

35.1 If the contractor has not corrected the defect within the time specified in the General Manager /Engineer-in-Charge's notice, the Engineer-in-Charge will assess the cost of having the defect corrected and the contractor will pay this amount.

35.2 The Engineer-in-Charge shall introduce O.K. cards and prescribed the formats there of. O.K. cards shall relate to all major components of the work. The contractor / his authorised representative shall be required to initiate and fill in and present the O.K. card to the construction staff who would check the respective items and send to the quality control staff for final check and clearance / O.K. Any defects pointed out by the construction supervision staff or by the Quality Control staff shall promptly be attended to by the contractors and the fact of doing so be duly recorded on the back of O.K. card.

35.3 The Engineer-in-Charge may also introduce checklists, which shall be kept in Bound registers by the construction supervision staff. The contractor may be required to fill up these lists in the first instance and shall be subsequently checked by the Construction / Quality Control engineers.

36. Quality Control

37 Quality policy:

37.1 The quality of construction shall be of highest standards.

The materials, equipment, tools and plants and workmanship should be of high standards and acceptable quality conforming to the specifications.

The contractor attention is directed to the requirements of materials under the clause "Materials and Workmanship" in the preliminary specifications of APSS. Materials conforming to the latest relevant I.S. Specifications and other approved Codes and Specifications shall be used on the work

38 **Quality plan:**

The contractor shall draw quality plan based on the Quality Management System of ISO 9001-2000 and submit the same to the Vice Chairman and Managing Director, TGFDC Ltd before starting the workfor his approval and corporation may also engage third party for quality control.

Quality plan for raw materials/ construction materials/ finished products/works:

It shall be responsibility of the contractor to arrange for testing of all materials procured for the works under such consignment or at regular intervals as may be specified in APSS at his

cost and only after the engineer is satisfied fully with the test results the materials of those consignments will be allowed to be utilized on the work. The contractor shall maintain a record of test results which shall be made available to the engineers for the inspection.

The contractor shall collect various raw materials, construction materials well in advance before its use and shall get them tested as per the approved quality plan. No material shall be used unless it passes all the check/tests as per the acceptance criteria given and a record of all checks/tests/ verifications shall be maintained at site.

All the materials used in the works including electrical, Sanitary and water supply works should be as per the list of approved materials, makes and suppliers enclosed. The Corporation reserves the right to insist upon using any of the materials from these lists of approved materials.

For all fittings of electrical, sanitary and water supply items, fixtures to doors and windows, supply of steel windows and flush wood doors, paints etc,., the product marked ISI should be used and shall be of reputed and approved brand/make.

Tests required to be conducted at outside laboratories shall be done at those labs which have availability of required instruments traceable to national standards and which are approved by the Engineer-In-Charge. Reports obtained from such labs should indicate the calibration status and traceability to national standards of their equipments for accepting the results.

39. **Quality control:**

Establishment of Quality Control Laboratory: The contractor shall establish a quality control laboratory, at the site of work, equipped with calibrated equipment (as per list given below) to perform field tests, batch wise, for various materials, then and there itself, as per quality plan and standards.

The following minimum equipment should be made available at site by the contractor for testing of materials, samples, cubes etc.

Sl. No	**Details of each Equipment**	**Numbers required**	**Own**	**Leased**
1	2	3	4	5
1	Screw gauge 0-25 mm	1 Nos.		
2	Measurement tapes both Steel (3.0 m, 5.0 m) &Fibre (15.0 m) 30 cm steel scale	2 Nos. each 2 Nos		
3	Weighing Machines 5.0 kg capacity	1 Nos.		
4	Sieves for fine aggregate	1 Nos.		

5	Spirit level	2 Nos.		
6	Plum bobs	2 Nos.		
7	Measuring Jars (2) 250ml	2 Nos.		

Calibration of Equipment: All the equipment maintained by the contractor at site shall be calibrated from time to time according to the calibration frequency mentioned, with calibrations traceable to National Standards. Records for proof of such calibrations done for each instrument, with instrument number shall be maintained by the contractor and shall be made available for verification / counter signature by the Engineer-in-charge. Proper storage, handling and use of these instruments shall be ensured so that their calibration does not get disturbed due to weather factors etc., Frequency of the calibration shall be as decided by the Engineer-in-charge.

40. **Quality Registers**

The contractor shall maintain the Quality Test Registers at site in the format specified and record therein the results of all the tests conducted. The relevant reports of the tests conducted shall be maintained in a separate file.

Return of Site documents:

All the site records/ documents mentioned therein shall be returned to the General Manager / Engineer-in-charge in full shape after the satisfactory completion of the work.

41. **Quality Control Inspections :**

In addition to the normal inspections by the regular staff in charge of the construction of work, periodical inspection by the Vice Chairman and Managing Director or his nominees, the work will also be inspected the National Academy of Construction / authorized third party quality control,Architects and Project Management consultants for this project and any other authorized external quality control agencies. If any sub-standard materials, work or workmanship is noticed, action will be taken based on their observations and these will be affected by the Engineer-in-charge of the execution of the work.

42. **Quality Audit:**

The Corporation may engage external agencies for conducting quality audit in which case the following methodology would be adopted:

i) The external agencies shall conduct quality control tests as per the standard procedures in the presence of Construction and Quality Control Engineers and the Contractor.

ii) The observations of the external agencies on the quality of work should be recorded then and there and signatures of all the concerned obtained as a token of acceptance of the observations.

iii) If any sub-standard materials, work or workmanship is noticed, action will be taken based on their observations and these will be affected by the Engineer-in-charge of the execution of the work.

D. COST CONTROL

43. Bill of Quantities:

43.1 The Bill of Quantities shall contain items for the construction work to be done by the Contractor.

43.2 The Contractor is paid for the quantity of the work done at the estimate rate in the Bill of Quantities for each item plus or minus Tender percentage.

44. Changes in the quantities :

44.1 The contractor is bound to execute all supplemental works that are found essential, incidental and inevitable during execution of main work.

44.2 The payment of rates for such supplemental items of work will be regulated as under;

Supplemental items directly deducible from similar items in the original agreement.

44.2.1 The rates shall be derived by adding to or subtracting from the agreement rate of such similar item the cost of the difference in the quantity of materials,labour between the new items and similar items in the agreement worked out with reference to the Schedule of Rates adopted in the sanctioned estimate with which the tenders are accepted plus or minus over all tender percentage.

44.2.2 (a) Similar items but the rates of which cannot be directly deduced from the original agreement.

(b)Purely new items which do not correspond to any item in the agreement.

44.2.3 The rates of all such items shall be Estimated Rates plus or minus overall Tender premium.

45. Extra Items:

45.1 Extra items of work shall not vitiate the contract. The contractor shall be bound to execute extra items of work as directed by the Vice chairman and Managing Director TGFDC /General Manager TGFDC / Engineer-in-Charge. The rates for extra items shall be worked out by the Engineer -in charge as per the conditions of the Contract and the same are binding on the Contractor.

45.2 The contractor shall before the 15th day of each month, submit in writing to the VC &MD TGFDCGeneral Manager, Engineer-in-charge a statement of extra items if any that they have executed during the preceding month failing which the contractor shall not be entitled to claim any.

45.3 Entrustment of additional items:

45.3.1 Where ever additional items not contingent on the main work and outside the scope of original agreement are to be entrusted to the original contractor dispensing with bids and if the value of such items exceeds the limits up to which the officer is empowered to entrust works initially to contractor without calling for tenders, approval of **next higher authority** shall be obtained. Entrustment of such items on nomination shall be at rates not exceeding the estimated rates.

45.3.2 Entrustment of the additional items contingent on the main work will be authorised by the officers up to the monetary limits up to which they themselves are competent to accept items in the original agreement so long as the total amounts up to which they are competent to accept in an original agreement rates for such items shall be worked out in accordance with the procedure (I) For all items of work in excess of the quantities shown in the Bill of Quantities of the Tenders, the rate payable for such items shall be estimate rates for the items (+) or (-) over all tender percentage accepted by the competent authority.

45.3.3 Entrustment of either the additional or supplemental items shall be subject to the provisions of the agreement entered into by a Competent Authority after the tender is accepted. TheGeneral Manager, TGFDC Ltd, who entered into the agreement approves the rate for the items / variation in quantity in the current agreement. The items shall not be ordered by an officer on his own responsibility if the revised estimate or deviation statement providing for the same requires the sanction of higher authority.

Note: It may be noted that the term Estimate Rate used above means the rate in the sanctioned estimate with which the tenders are accepted, or if no such rates is available in the estimate, the rate derived will be with reference to the Standard Schedule of Rates adopted in the sanctioned estimate with which tenders are accepted.

Cash flow forecasts:

When the program is updated, the contractor is to provide the Engineer-in-charge with an updated cash flow forecast.

46. Payment Certificates:

46.1 The Contractor shall submit to the Divisional Manager /General Manager / Engineer-in-charge monthly statements of the estimated value of the work completed less the cumulative amount certified previously.

46.2 The Divisional Manager /General Manager / Engineer-in-charge shall check the Contractor's monthly statement within 14 days.

46.3 The value of work executed shall be determined by the Divisional Manager/ Engineer-in-charge.

46.4 The value of work executed shall comprise the value of the quantities of the items in the Bill of Quantities completed.

46.5 The Divisional Manager /General Manager /Engineer-in-charge may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.

47. **Procedure:**

Application and format of the Computerized Measurement Books

(1) The conventional Measurement Books shall be replaced by a bound volume of computerized measurements to be furnished by the contractor, duly machine numbered for the pages, and with the Measurement Book number given by the Division Office. The pages of these Measurement Books shall be of A-4 size. All these Computerized Measurement Books belonging to a Division shall be serially numbered, and a record of these Computerized Measurement Books shall be maintained in a separate Register in the prescribed form.

(2) The same format as in the existing Measurement Books shall be used for the Computerized Measurement Books. The Measurements shall be carried forward from the previous recorded measurements as per the existing procedure.

(3) These measurement books will be retained by the Corporation and will be the property of the Corporation.

47.1.1 Mode of measurements

(1) The measurements shall be recorded and entered in computerized format in the first instance by the contractor, and a hard copy shall be submitted to the Divisional Manager General Manager / Engineer incharge of Corporation. All entries shall be made exactly as per the existing procedures.

(2) These measurements shall then be 100% checked by the Divisional Manager / Engineer-in-Charge. The contractor shall incorporate all such changes or corrections, as may be done during these checks, to his draft computerized measurements, and submit to the Corporation the corrected computerized measurements in the form of a book, duly hard bound in red colour on the lines of the conventional Measurement Books now in use, and with its pages machine numbered.

(3) The General Manager / Engineer-in-charge shall test check these computerized measurements as per the existing instructions. This book shall be treated as a Computerized Measurement Book.

(4) The Engineer-in-charge shall record the necessary certificates for their checks as per the existing procedure in this Computerized Measurement Books.

(5) The Computerized Measurement Books shall be allotted a serial number as per the Register of Computerized Measurement Books, separately.

47.1.2 Cutting or over-writing in the computerized Measurement Books not allowed.

(1) The Computerized Measurement Books given by the contractor, duly bound, with its pages machine numbered, shall have no cutting or over-writing without any loose sheets.

(2) It is the responsibility of the Divisional Manager/ General Manager / Engineer-in-charge as the case may be to ensure that the checks and tests checks done by them in the initial draft measurements are correctly incorporated in the Computerized Measurement Books before they record their certificates.

(3) In case of any error, the Computerized Measurement Books shall be cancelled, and the contractor shall re-submit a fresh Computerized Measurement Book. This should be done before the corresponding computerized bill is submitted to the office for payment.

(4) The contractor shall submit as many copies of Computerized Measurement Books as may be required for the purpose of reference and record in the offices of the Corporation.

47.1.3 Computerized bill to be submitted by the contractor

(1) The contractor shall submit his running and final bills in a computerized form in the same format as the existing conventional bills, with all the pages machine numbered, and hard bound, and with all the entries made as per the existing procedure.

(2) The contractor shall submit as many copies of the computerized bills as required for the purpose of reference and record in the various offices of the Corporation.

(3) The bill shall be carried forward from the previous running account bills as per the existing procedure.

(4) These computerized bills shall be processed by the various offices for payment ,as per the existing procedure.

i) When a payment is based on Standard Measurements, the following certificate should invariably be recorded on the bill, in his own handwriting, by the Divisional Manager / General Manager / Engineer-in-Charge preparing, examining or verifying it:

"Certified that the whole of the work billed for herein has been actually done, and that no portion thereof has been previously billed for in any shape."

47.2 a) The actual volume of stone and aggregates shall be computed after deducting the Following percentages from the volume computed by stack measurements.

Sl. No.	Standard size of aggregate and stone	Percentage reduction in volume computed by stack measurements to arrive at the volume to be paid for
1	Stone	40
2	40mm and 25 mm	10
3	20mm, 12mm, 10mm and 6 mm	5
4	Fine aggregate	NIL
5	Gravel	20

(Note: *The above Table maybe modified depending on the type of work)*

Unless otherwise directed, measurements shall not be taken until sufficient materials for use on work have been collected and stacked. Immediately after measurement, the stack shall be marked by white wash or other means as directed by the Engineer-in-charge.

48. Payments and Certificates:

48.1.A Payments shall be adjusted for recovery of advance payments, liquidated damages in terms of tender conditions and security deposit for the due fulfillment of the contract. Payment will be made to the Contractor under the certificate to be issued at reasonably frequent intervals by the Divisional Manager /General Manager / Engineer-in-Charge, and intermediate payment will be the sum equal to 92½% of the value of work done as so certified and balance of 7½% will be withheld and retained as security for the due fulfillment of the contractor under the certificate to be issued by the Divisional Manager/ General Manager / Engineer-in-Charge. On completion of the entire works the contractor will receive the final payment of all the moneys due or payable to him under or by virtue of the contract except earnest money deposit retained as security and a sum equal to 2½ percent of the total value of the work done. The amount withheld from the final bill will be retained under deposits and paid to the contractor together with the earnest money deposit retained as security after a period of 24 months as all defects shall have been made good according to the true intent and meaning there of.

48.1.B In case of over payments or wrong payment if any made to the contractor due to wrong interpretation of the provisions of the contract, APSS or Contract conditions etc., such unauthorized payment will be deducted in the subsequent bills or final bill for the work or from the bills under any other contracts with the Corporation or at any time there after from the deposits available with the Corporation.

48.1.C Any recovery or recoveries advised by the Corporation either state or central, due to non-fulfillment of any contract entered into with them by the contractor shall be recovered from any bill or deposits of the contractor.

48.1.D No claim shall be entertained, if the same is not represented in writing to the Engineer-in-Charge within 15 days of its occurrence.

48.1.E. The contractor is not eligible for any compensation for inevitable delay in handing over the site or for any other reason. In such case, suitable extensions of time will be granted after considering the merits of the case.

48.2 **Intermediate Payments:**

48.1.A For earthwork in cutting, 10% of the quantity will be with-held for intermediate payments and the same will be released after completing the work to the profiles as per drawings and disposal of the spoil material at the specified places and handing over the balance useful stone. For this purpose a length of 25 m. will be taken as a Unit.

48.1.B For earth work, embankment formation work, 10% of the quantity will be withheld for intermediate payments and the same will be released after completing the bund to the profiles as per drawings including trimming of side slopes and all other works contingent to the bund profile. For this purpose, 25 m of length will be taken as a Unit.

48.1.C For the structure works either with masonry or concrete where the height of structure is more than three meters, the quantities executed in the lower level will be withheld at the rate of one percent for every three meters height, if the balance height o the structure work is more than three meters in being over the executed level and the same will be released only after the entire work is completed as certified by the Engineer-in-Charge.

48.1.D For C.M. & C.D. works and for lining works, spread over more than 2 Km. In length 5 percent of the concrete and Masonry quantities will be with held and the same will be released after completion of all C.M. & C.D. works and lining for the entire length certified by the Engineer-in-Charge.

48.1.E Where payment is intended for aggregates by Bill of Quantities item based on stack measurements, 10% of the quantity measured will be withheld. No payment or advance will be made for unfixed materials when the rates are for finished work in site.

48.2 Recovery towards useful materials like earth, stone etc recovered from earthwork excavation:

Recovery shall be made from the bills payable to the contractor towards the value of useful materials like sand, stone, clay, ballast, earth, trees and shrubs or other materials obtained in the excavation made or lying on the site of the work, either useful for reuse on the work or elsewhere.

48.3 Interest on Money due to the Contractor:

No omission by the General Manager TGFDC or the Engineer-in-charge to pay the amount due upon certificates shall vitiate or make void the contract, nor shall the contractor be entitled to interest upon any guarantee fund or payments in arrear, nor upon any balance which may, on the final settlement of his accounts, found to be due to him.

49 Certificate of Completion of works:

50.1 Certificate of Completion of works:

49.1.A When the whole of the work has been completed and has satisfactory passed any final test that may be prescribed by the Contract, the Contractor

may give a notice to that effect to the Divisional Manager/ General Manager TGFDC, accompanied by an undertaking to carryout any rectification work during the period of maintenance, such notice and undertaking shall be in writing and shall be deemed to be request by the Contractor for the Divisional Manager/ General Manager TGFDC to issue a Certificate of completion in respect of the Works. The Divisional Manager / General Manager TGFDC shall, within twenty one days of the date of delivery of such notice either issue to the Contractor, a certificate of completion stating the date on which, in his opinion, the works were completed in accordance with the Contract or give instructions in writing to the Contractor specifying all the Works which, in the Divisional Manager / General Manager TGFDC opinion, required to be done by the Contractor before the issue of such Certificate. The Divisional Manager / General Manager TGFDCshall also notify the Contractor of any defects in the Works affecting completion that may appear after such instructions and before completion of the Works specified there in. The Contractor shall be entitled to receive such Certificate of the Completion within twenty one days of completion to the satisfaction of the Divisional Manager / General Manager TGFDCof the Works so specified and making good of any defects so notified.

49.1.B Similarly, the Contractor may request and the Divisional Manager / General Manager TGFDC shall issue a Certificate of Completion in respect of:

a) Any section of the Permanent works in respect of which a separate time for completion is provided in the Contract, and

b) Any substantial part of the Permanent Works which has been both completed to the satisfaction of the Divisional Manager /General Manager TGFDC and occupied or used by the Corporation.

c) If any part of the Permanent Works shall have been completed and shall have satisfactorily passed any final test that may be prescribed by the Contract, the Divisional Manager / General Manager TGFDC may issue such certificate, and the Contractor shall be deemed to have undertaken to complete any outstanding work in that part of the Works during the period of Maintenance.

50 Taxes:

a. The percentage quoted by the contractor shall be deemed to be exclusive of GST on all materials that the contractor will have to purchase for performance of this contract.The contractor shall be responsible for the payment of taxes, duties, fees etc., wherever payable.

b.Any Central or State sales and other taxes on completed items of works of this contract as may be levied and paid by the contractor shall be reimbursed by the Corporation to the contractor on proof of payment to the extent indicated in Part-II of Schedule-A.

51 Price Adjustment :

No price adjustment is applicable.

52 Retention:

The Corporation shall retain from each payment due to the contractor @ the rate of 7.5% of bill amount until completion of the whole of the works.

1. On completion of the whole of the works , 5% of the total amount retained is re-paid to the Contractor along with final bill and 2 ½% when the Defects Liability Period has passed and the Engineer-in-Charge has certified that all the Defects notified by the Engineer-in-Charge to the Contractor before the end of this period have been corrected.

53.Liquidated Damages:

53.1 If for any reason, which does not entitle the contractor to an extension of time, the rate of progress of works, or any section is at any time, in the opinion of the Vice Chairman and Managing Director, TGFDC Ltd too slow to ensure completion by the prescribed time or extended time for completion **Vice Chairman and Managing Director, TGFDC Ltd OR his representatives** shall so notify the contractor in writing and the contractor shall there upon take such steps as are necessary and the **Vice Chairman and Managing Director, TGFDC Ltd**may approve to expedite progress so as to complete the works or such section by the prescribed time or extended time. The contractor shall not be entitled to any additional payment for taking such steps. If as a result of any notice given by the **Vice Chairman and Managing Director, TGFDC Ltd**under this clause the contractor shall seek the **Vice Chairman and Managing Director, TGFDC Ltd** permission to do any work at night or on Sundays, if locally recognized as days or rest, or their locally recognized equivalent, such permission shall not be unreasonably refused.

53.2 If the contractor fails to complete whole of the works or any part thereof or section of the works within the stipulated periods of individual mile stones (including any bonafide extensions allowed by the competent authority without levying liquidated damages), the Vice Chairman and Managing Director, TGFDC Ltdmay 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 the contractor. The payment or deductions of such damages shall not relieve the contractor from his obligation to complete the works, or from any other of his obligations and liabilities under the contract.

53.3 The liquidated damages for the whole of the work will be filled up at the time of concluding agreement.

Mile stone No.	Period from the date of signing agreement	Minimum percentage of work to be completed (Cumulative)
Milestone-1	1 Month	Scarping, water proofing
Milestone-2	1 Month	Electrical, Plumbing and Sanitary works
Mile stone -3	1 Month	Plastering and painting and completion of all works

54. 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.

55.Mobilisation Advance: DELETED

56. Repayment of advance payment for mobilization.: DELETED

57. Securities:

The Earnest Money Deposit and Additional Security (for discount tender percentage beyond 25%) shall be provided to the Corporation not later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and by a bank acceptable to the Corporation. The Earnest Money Deposit shall be valid until a date 28 days from the date of

expiry of Defects Liability Period and the additional security shall be valid until a date 28 days from the date of issue of the certificate of completion.

58. Cost of Repairs:

Loss or damage to the Works or materials to the Works between the Start Date and the end of the Defects Correction Periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.

E. FINISHING OF THE CONTRACT

59. Completion:

a. The Contractor shall request the Divisional Manager/ General Manager / Engineer-in-Charge to issue a Certificate of completion of the Works and the General Manager / Engineer-in-Charge will do so upon deciding that the work is completed.

60. Taking Over:

a. The Corporation shall takes over the Site and the Works within seven days of the Engineer-in-Charge issuing a certificate of Completion.

61. Final Account:

61.1 The Contractor shall supply to the Divisional Manager /General Manager / Engineer-in-Charge a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Engineer-in-Charge shall issue a Defects Liability Certificate and certify any final payment that is due to the Contractor within56 days of receiving the Contractor's account if it is correct and complete. If it is not, the Engineer-in-Charge shall issue within 56 days a schedule that states the scope of the corrections or additions that are necessary. If the final Account is still unsatisfactory after it has been resubmitted, the Engineer-in-Charge shall decide on the amount payable to the Contractor and issue a payment certificate with in 56 days of receiving the Contractor's revised account.

62. Termination:

a. The Corporation may terminate the Contract if the contractor causes a fundamental breach of the Contract.

b. Fundamental breaches of Contract include, but shall not be limited to the following.

a) The Contractor stops work for 28 days when no stoppage of work is shown on the current program and the stoppage has not been authorised by the Engineer-in-Charge.

b) The Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation.

c) The Divisional Manager/ General Manager / Engineer-in-Charge gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Engineer-in-Charge; and General Manager

d) The Contractor does not maintain a security which is required and

e) The Contractor has delayed the completion of works by the number of days for which the maximum amount of liquidated damages can be paid as defined.

f) If the contractor, in the judgement of the Corporation has engaged in corrupt or fraudulent practices in competing for or in the executing the contract.

g) The contractor has contravened Sub-Clause 5 of Conditions of Contract and sublet the work.

h) The contractor does not adhere to the agreed construction program (Clause 24.1, 24.2, 24.3, 24.4 of Conditions of contract) and also fails to take satisfactory remedial action as per agreements reached in the managerial meeting (Clause 31) for a period of 15 days.

i) The Contractor fails to carry out the instructions of Divisional Manager/ Engineer-in-charge within a reasonable time determined by the Engineer-in-charge.

For the purpose of this paragraph: "corrupt practice" means the offering, giving, receiving or soliciting of any thing of value to influence the action of a public official in the procurement process or in contract execution. "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment o the Corporation and includes collusive practice among Tenderers (prior to or after Tender submission) designed to establish Tender prices at artificial non-competitive levels and to deprive the Corporation of the benefits of free and open competition.

c. Notwithstanding the above, the Corporation may terminate the contract for convenience.

d. If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secured leave the Site as soon as reasonably possible.

63. Payment upon Termination:

a. If the Contract is terminated because of a fundamental breach of Contract by the Contractor, theVC & MD TGFDCL /Genral Manager/ Engineer-in-Charge shall/Divisional Manager issue a certificate for the value of the work done less advance payments received upon the date of the issue of the certificate, less other recoveries due in terms of the Contract, less taxes due to be deducted at source as per applicable law and less the percentage to apply to the work not completed. Additional Liquidated Damages shall not apply. If the total amount due to the Corporation exceeds any payment due to the Contractor the difference shall be a debt payable to the Corporation.

b. In case of default for payment within 28 days from the date of issue of notice to the above effect, the contractor shall be liable to pay interest at 12% per annum for the period of delay.

64. Property:

a. All materials on the Site, Plant, Equipment, Temporary Works and Works are deemed to be the property of the Corporation if the Contract is terminated because of Contractor's default.

65. Release from Performance:

a. If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Corporation or the Contractor the Engineer-in-Charge shall certify that the contract has been frustrated. The Contractor shall make the site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all works carried out before receiving it and for any work carried out after wards to which commitment was made.

F. SPECIAL CONDITIONS

66. Water Supply:

The Contractor has to make his own arrangements for water required for the work and to the colonies and work sites, which are to be established by the Contractor.

67. Electrical Power:

The Contractors will have to make their own arrangements for drawing electric power from the nearest power line after obtaining permission from the Telangana Electricity Board at his own cost. In case of failure of electricity, the Contractor has to make alternative arrangements for supply of electricity by Diesel Generator sets of suitable capacity at place of work. If the supply is arranged by the Corporation, necessary Tariff rates shall have to be paid based on the prevailing rates.

The contractor will pay the bills of Electricity Board for the cost of power consumed by him.

The contractor shall satisfy all the conditions and rules required as per Indian Electricity Act 1910 and under rule –45(I) of the Indian Electricity Rules, 1956 as amended from time to time and other pertinent rules.

The power shall be used for bonafide Corporation works only.

a. Electric Power for Domestic Supply:

a) The contractor has to make his own arrangements for the supply of electric power for domestic purposes and the charges for this purpose have to be paid by him at the rates as fixed by the Telangana State Electricity Board from time to time.

b) The contractor will have to make his own arrangements to lay and maintain the necessary distribution lines and wiring for the camp at his own cost. The layout and the methods of laying the lines and wiring shall have the prior approval of the Engineer-in-Charge. All camp area shall be properly electrified. All lines, streets, approaches for the camp etc., shall be sufficiently lighted for the safety of staff and labour of the contractor, at the cost of the Contractor and it will be subject to the approval of the Engineer-in-Charge.

68. Land:

a. Land for Contractor's use:

The contractor will be permitted to use Corporation land for execution of work and Contractor has to submit acknowledgement to the Divisional Manager/ General Manager / VC &MD TGFDC with specifying the date of site handed over The contractor shall have to make his own arrangements for acquiring and clearing the site, leveling, providing drainage and other facilities for labour staff colonies, site office, work-shop or stores and for related activities. The Contractor shall apply to the Corporation within a reasonable time after the award of the contract and at least 30 days in advance of its use, the details of land required by him for the work at site and the land required for his camp and should any private land which has not been acquired, be required by the contractor for his use. The same may be acquired by the contractor at his own cost by private negotiations and no claim shall be admissible to him on this account.

The TGFDC reserves the right to refuse permission for use of any Corporation land for which no claim or compensation shall be admissible to the contractor. The contractor shall, however, not be required to pay cost or any rent for the Corporation land given to him.

b. Surrender of Occupied Land:

a) The Corporation land as here in before mentioned shall be surrendered to the Engineer-in-Charge within seven days, after issue of completion certificate. Also no land shall be held by the contractor longer than the Engineer-in-Charge shall deem necessary and the contractor shall on the receipt of due notice from the Engineer-in-Charge, vacate and surrender the land which the Engineer-in-Charge may certify as no longer required by the Contractor for the purpose of the work.

b) The contractor shall make good to the satisfaction of the Engineer-in-Charge any damage to areas, which he has to return or to other property or land handed over to him for purpose of this work. Temporary structures may be erected by the contractor for storage sheds, offices, residences etc., for non-commercial use, with the permission of the engineer on the land handed over to him at his own cost. At the completion of the work these structures shall be dismantled site cleared and handed over to the Engineer. The land required for providing

amenities will be given free of cost from Corporation lands if available otherwise the contractor shall have to make his own arrangements.

c. Contractor not to dispose off Spoil etc. :-

The contractor shall not dispose off or remove except for the purpose of fulfillment of this contract, sand, stone, clay ballast, earth, trees and shrubs or other materials obtained in the excavation made or lying on the site of the work, and all such materials and produce shall remain property of the Corporation. The Corporation may upon request from the contractor, or if so stipulated in the conditions of the contract allow the contractor to use any of the above materials for the works either free of cost or after payment as may be specifically mentioned or considered necessary during the execution of the work.

69. Roads:

In addition to existing public roads and roads Constructed by Corporation, if any, in work area all additional approach roads inside work area and camp required by the Contractor shall be constructed and maintained by him at his own cost. The layout design, construction and maintenance etc. of the roads shall be subject to the approval of the Engineer-in-Charge. The contractor shall permit the use of these roads by the Corporation free of charge.

It is possible that work at, or in the vicinity of the work site will be performed by the Corporation or by other contractors engaged in work for the Corporation during the contract period. The contractor shall without charge permit the Corporation and such other contractor and other workmen to use the access facilities including roads and other facilities, constructed and acquired by the contractor for use in the performance of the works.

The contractor's heavy construction traffic or tracked equipment shall not traverse any public roads or bridges unless the contractor has made arrangement with the authority concerned. In case contractor's heavy construction traffic or tracked equipment is not allowed to traverse any public roads or bridges and the contractor is required to make some alternative arrangements, no claim on this account shall be entertained.
The contractor is cautioned to take necessary precautions in transportation of construction materials to avoid accidents.

70. Payment for Camp Construction:

No payment will be made to the contractor for construction, operation and maintenance of camp and other camp facilities and the entire cost of such work shall be deemed to have been included in the tendered rate for the various items of work in the schedule of quantities and bids.

71. Explosive And Fuel Storage Tanks:

No explosive shall be stored within ½ (half) KM of the limit of the camp sites. The storage of gasoline and other fuel oils or of Butane, Propane and other liquefied petroleum gases, shall confirm to the regulations of Andhra Pradesh/Telangana State Corporation and Corporation of India. The tanks, above ground and having capacity in excess of 2000 liters, shall not be located within the camp area, nor within 200m, of any building.

72. Labour:

The contractor shall, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding and transport.

Labour importation and amenities to labour and contractor's staff shall be to the contractor's account. His quoted percentage shall include the expenditure towards importation of labour amenities to labour and staff;

The contractor shall, if required by the Engineer-in-Charge, deliver to the Engineer-in-Charge a written in detail, is such form and at such intervals as the Engineer-in-Charge may prescribe, showing the staff and the numbers of the several classes of labour from time to

time employed by the contractor on the Site and such information respecting Contractor's Equipment as the Engineer-in-Charge may require.

a. Transportation of Labour:

I. The contractor shall make his own arrangement for the daily transportation of the labour and staff from labour camps colonies to the work spot and no labour or staff of the contractor shall stay at the work spot. No extra payment will be made to the contractor for the above transportation of the labour and his quoted percentage to the work shall include the transportation charges of labour from colonies to work spot and back.

II. The contractor will at all times duly observe the provisions of employment of children Act XXVI of 1938 and any enactment or modification of the same and will not employ or permit any person to do any work for the purpose under the provisions of this agreement in contravention of said Act. The contractor here by agrees to indemnify the Corporation from and against all claims, penalties which may be suffered by the Corporation or any person employed by the Corporation by any default on the part of the contractor in the observance and performance of the provisions of the employment of children Act. XXVI of 1938 or any enactment or modification of the same.

As per Govt. memo No.721/Gr.(1)/81-35, dt:17.11.87. The contractor shall obtain the insurance at his own cost to cover the risk on the works to labour engaged by him during period of execution against fire and other usual risks and produce the same to the Engineer concerned before commencement of work.

73. Safety Measures:

1. The contractor shall take necessary precautions for safety of the workers and preserving their health while working in such jobs, which require special protection and precautions. The following are some of the measures listed but they are not exhaustive and contractor shall add to and augment these precautions on his own initiative where necessary and shall comply with directions issued by the Engineer or on his behalf from time to time and at all times.

2. Providing protective foot wear to workers situations like mixing and placing of mortar or concrete sand in quarries and places where the work is done under much wet conditions.

3. Providing protective head wear to workers at places like under ground excavations to protect them against rock falls.

4. Providing masks to workers at granulates or at other locations where too much fine dust is floating about and sprinkling water at frequent intervals by water hoses on all stone crushing area and storage bins abate to dust.

5. Getting the workers in such jobs periodically examined for chest trouble due to too much breathing in to fine dust.

6. Taking such normal precautions like fencing and lightening in excavation of trenches, not allowing rolls and metal parts of useless timber spread around, making danger areas for blasting providing whistles etc.

7. Supply work men with proper belts, ropes etc., when working in precarious slopes etc.

8. Avoiding uninsulated electrical wire etc., as they would electrocute the works.

9. Taking necessary steps towards training the workers concerned on the machinery before they are allowed to handle them independently and taking all necessary precautions in around the areas where machines hoists and similar units are working.

74. Fair Wage Clause:

1. The contractor shall pay not less than fair wages to labourers engaged by him on the work.

2. "Fair" wages means wages whether for time of piecework notified by the Corporation from time in the area in which the work is situated.
3. The contractor shall not with-standing the revisions of any contract to the contrary cause to be paid to the labour, in directly engaged on the work including any labour engaged by the sub-contractor in connection with the said work, as if the labourers had been directly employed by him.
4. In respect of labour directly or indirectly employed in the works for the purpose of the contractors 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 Corporation. He shall maintain his accounts and vouchers on the payment of wages to the labourers to the satisfaction of the Engineer -in-charge.
5. The Engineer-in-charge shall have the right to call for such record as required to satisfy himself on the payment of fair wages to the labourers and shall have the right to deduct from the contract amount a suitable amount for making good the loss suffered by the worker or workers by reason of the "fair wages" clause to the workers.
6. The contractor shall be primarily liable for all payments to be made and for the observance of the regulations framed by the Govt. from time to time without prejudice to his right to claim indemnity from his sub-contractors.
7. As per contract labour (Regulation and abolition) Act. 1970 the contractor has to produce the license obtained from the licensing officers of the labourCorporation along with the tender or at the time of agreement.
8. Any violation of the conditions above shall be deemed to be a breach of his contract.
9. Equal wages are to be paid for both men and women if the nature of work is same and similar.
10. The contractor shall arrange for the recruitment of skilled and unskilled labour local and imported to the extent necessary to complete the work within the agreed period as directed by theEngineer-in-charge in writing.

75. Indemnity Bond:

Name of work: **Renovation of TGFDC Camp Office at Kaghaznagar Division Office complex**

_____contractor S/o._____ aged _____ Resident of _____ do hereby bind myself to pay all the claims may come (a) under Workmen 's Compensation Act. 1933 with any statutory modification there of and rules there under or otherwise for or in respect of any damage or compensation payable in connection with any accident or injury sustained (b) under Minimum wages Act 1948 (c) under payment of wages Act.1936 (d) under the Contractor labour (Regulation and Abolition) Act. 1970 by workmen engaged for the performance of the business relating to the above contract ie., Failing such payment of claims of workmen engaged in the above work, I abide in accepting for the recovery of such claims, effected from any of my assets with the Corporations.

76. Compliance With Labour Regulations:

During continuance of the contract, the contractor and his sub contractors shall abide at all times by all existing labour enactment and rules made there under, regulations,
notifications and bye laws of the State or Central Corporation or local authority and any other labour law (including rules), regulations, bye laws that may be passed or notifications that may be issued under any labour law in future either by the State or the Central Corporation or the local authority and also applicable labour regulations, health and sanitary arrangements for workmen, insurance and other benefits. Salient features of some of the major labour laws that are applicable to construction industry are given below. The contractor shall keep the Corporation indemnified in case any action is taken against Corporation by the competent authority on account of contravention of any of the provisions of any Act or rules made there-under, regulations or notifications including amendments. If the Corporation is caused to pay or reimburse, such amounts as may be necessary to cause or observe, or for non-observance of the provision stipulated in the notifications/bye laws/Acts/Rules/regulations including amendments, if any, on the part of the contractor, the Engineer-in-charge /Corporation shall have the right to deduct any money due to the contractor including his amount of performance security. The Corporation/Engineer-in-

Charge shall also have right to recover from the contractor any sum required or estimated to be required for making good the loss or damage suffered by the Corporation.

The employees of the Contractor and the Sub-contractor in no case shall be treated as the employees of the Corporation at any point of time.

77. Salient features of some major labour laws applicable to establishment engaged in buildings and other construction work:

(a) Workmen compensation Act 1923: The Act provides for compensation in case if injury by accident arising out of and during the course of employment.

(b) Payment of Gratuity Act 1972: Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if any employee has completed 5 years service or more, or on death, the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments, employing 10 or more employees.

(c) Employees P.F. and Miscellaneous provision Act 1952: The Act provides for monthly contributions by the department plus workers @ 10% or 8.33%. The benefits payable under the Act are:

(i) Pension or family pension on retirement or death, as the case may be.

(ii) Deposit linked insurance on the death in harness of the worker.

(iii) Payment of P.F. accumulation on retirement/death etc.,

(d) Maternity Benefit Act 1951: The Act provides for leave and some other benefits to women employees in case of confinements or miscarriage etc.

(e) Contract Labour (Regulation & Abolition) Act 1970: The Act provides for certain welfare measures to be provided by the contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided by the Principal departmental by Law. The Principal department is required to take certificate of Registration and the contractor is required to take license from the designated Officer. The Act is applicable to the establishments or Contractor of Principal Department if they employ 20 or more contract labour.

(f) Minimum wages Act 1948: The department is supposed to pay not less than the Minimum wages fixed by appropriate Corporation as per provisions of the Act if the employment is a scheduled employment construction of Buildings, Roads, Runways are scheduled employment.

(g) Payment of wages Act 1936: It lays down as to by what date the wages are to be paid, when it will be paid and what deductions can be made form the wages of the workers.

(h) Equal Remuneration Act 1979: The Act provides for payment of equal wages for work of equal nature to Male or Female workers and for not making discrimination against Female employee in the matters of transfers, training and promotions etc.

(i) Payment of Bonus Act 1965: The Act Is applicable to all establishments employing 20 or more employees. The Act provides for payment of annual bonus subject to a minimum of 8.33% of wages and maximum of 20% of wages to employees drawing Rs. 3500/- per month or less. The bonus to be paid to employees getting Rs.2500/- per months or above and up to Rs.3500/- per month shall be worked out by taking wages as Rs.2500/- per monthly only. The Act does not apply to certain establishments. The newly set-up establishments are exempted for five years in certain circumstances. Some of the State Corporations have reduced the employment size from 20 to 10 for the purpose of applicability of this Act.

(j) Industrial Disputes Act 1947:The Act lays down the machinery and procedure for resolution of Industrial disputes, in what situations a strike or lock- out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.

(k) Industrial Employment (Standing Orders) Act 1946: It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the State and Central Corporation to 50). The Act provides for laying down rules governing the conditions of employment by the department on matters provided in the Act and get the same certified by the designated Authority.

(l) Trade Unions Act 1926: The Act lays down the procedure for registration of trade unions of workmen and Corporations. The Trade Unions registered under the act have been given certain immunities from civil and criminal liabilities.

(m) Child Labour (Prohibition & Regulation) Act 1986: The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes; Employment Child Labour is prohibited in Building and Construction Industry.

(n) Inter-State Migrant workmen's (Regulation of Employment & Conditions of service) Act 1979: The Act applicable to an establishment, which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another State). The inter State migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, travelling expenses from home up to the establishment and back, etc.

(o) The Building and Other Construction workers (regulation of Employment and conditions of service) Act 1996 and the Cess Act of 1996: All the establishments who carryon any building or other construction work and employs 10 or more workers are covered under this Act. All such establishments are required to pay cess at the rate not exceeding 2% of the cost of construction as may be modified by the government. The department on of the establishment is required to provide safety measures at the Building or construction work and other welfare measures, such as Canteens, First-aid facilities, Ambulance, Housing accommodations for workers near the work place etc. The department to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Corporation.

(p) Factories Act 1948: The Act lays down the procedure for approval of plans before setting up a factory, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous occurrences to designated authorities. It is applicable to premises employing 10 person or more with aid of power or 20 or more persons without the aid of power engaged in manufacturing process.

78. Liabilities of the Contractor:

a. Accident Relief and workmen compensation:

The contractor should make all necessary arrangements for the safety of workmen on the occurrence of the accident, which results in the injury or death of any of the workmen employed by the contractor, the contractor shall within 24 hours of the happenings of the accident and such accidents should intimate in writing to the concerned Engineer of the Corporation the act of such accident. The contractor shall indemnify Corporation against all loss or damage sustained by the Corporation resulting directly or indirectly from his failure to give intimation in the manner aforesaid including the penalties or fines if any payable by corporation. as a consequence of corporation. failure to give notice under workmen's compensation Act or otherwise conform to the provisions of the said Act in regard to such accident.

b. In the event of an accident in respect of which compensation may become payable under the workmen's compensation Act VIII 23 whether by the contractor, by the

Corporation it shall be lawful for the VC & MD to retain such sum of money which may in the opinion of the VC & MD be sufficient to meet such liability. The opinion of the VC & MD TGFDCL shall be final in regard to all matters arising under this clause.

c. The contractor shall at all times indemnify the Govt. of T.S. against all claims which may be made under the workmen's compensation act or any statutory modification thereafter or rules thereunder or otherwise consequent of any damage or compensation payable in consequent of any accident or injuries sustained or death of any workmen engaged in the performance of the business relating to the contractor.

79. Contractor's Staff, Representatives and Labour:

(a) The contractor shall, at all times, maintain on the works, staff of qualified Engineers, and Supervisors of sufficient experience of similar other jobs to assure that the quality of work turned out shall be as intended in the specifications. The contractor shall also maintain at the works, a Work Manager or sufficient status, experience and office and duly authorize him to deal with all aspects of the day-today work. All communications to any commitments by the Work Manager shall be considered as binding on the Contractor.

(b) The Contractor shall at all times submit details of skilled and unskilled labour and equipment employed to the Engineer-in-Charge in prescribed proforma as he may require to assess and ensure the proper progress of work.

(c) If the contractor does not employ the technical person agreed to on the work a fine of **Rs.25,000**/- will be imposed. If he does not employ for 30 days, thereafter it becomes a fundamental breach of contract.

80. Accommodation and food:

The contractor should arrange accommodation he needs, at his own cost. The contractor shall make his own arrangements for supply of food grains, fuel and other provision to his staff and labourers including controlled commodities.

81. Relationship :

Contractor shall have to furnish information along with tender, about the relationship he is having with any officer of the Department, Department of Andhra Pradesh/Telangana of the rank Assistant Engineer and above engaged in the work and any officer of the rank of Assistant Secretary and above of the Department of Government of Andhra Pradesh/Telangana

82. Protection of adjoining premises:

The contractor shall protect adjoining sites against structural, decorative and other damages that could be caused by the execution of these works and make good at his cost any such damages.

83. Work during night or on Sundays and holidays:

The works can be allowed to be carried out during night, Sundays or authorised holidays in order to enable him to meet the schedule targets and the work shall require MORT&H round the clock working keeping in view:

(i) The provisions of relevant labour laws being adhered to:

(ii) Adequate lighting, supervision and safety measures are established to the satisfaction of the Engineer-in-Charge and

(iii) The construction programme given by the Contractor and agreed upon by the Engineer-in-Charge envisages such night working or working during Sundays or authorised holidays.

84. Layout of materials stacks:

The contractor shall deposit materials for the purpose of the work on such parts only of the ground as may be approved by the Engineer-in-Charge before starting work. A detailed survey, clearly indicating position and areas where materials shall be stacked and sheds built is to be conducted by the contractor at his own cost and only after obtaining necessary approval of the plan for use of sites by the Engineer-in-Charge, the Contractor can use the sites accordingly.

85. Use of blasting materials:

Procurement of blasting materials and its storage is the responsibility of the contractor. The contractor shall engage licensed blaster for blasting operation. The contractor is to act in accordance with Indian Explosive Act and other rules prevailing, during the execution of work. It is the responsibility of the contractor to see, that works by other agencies in the vicinity are not hampered, in such cases if any claim is made by other agencies that should be borne by the contractor. Carriage of blasting materials, from the magazine to the work site, is the responsibility of the contractor.

86. Plant and Equipment:

a. 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.

b. 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 the Corporation does not undertake responsibility towards their supply.

c. The Corporation shall supply such of the machinery that may be available on hire basis but their supply cannot be demanded as matter of right and no delay in progress can be attributed to such non-supply of the plant by the Corporation and the Corporation cannot be made liable for any damage to the contractor. The Contractor shall be responsible for safe custody of the Corporation machinery supplied to him (which will be delivered to contractor at the machinery yard at site of work) and he has to make good all damages and losses if any other than fire, wear and tear to bring it to the conditions that existed at the time of issue to the contractor before handing over the same to the Corporation. The hire charges for the machinery handed over to the contractor will be recovered at the rate prevalent at the time of supply. The contractor will have to execute supplemental agreement with Vice Chairman and Managing Director TGFDC Ltd at the time of supply of the machinery.

d. The acceptance of Corporation machinery on hire is optional to the contractor.

87. Steel forms (Acrow Steel forms)

Acrow Steel forms or equivalent forms approved by Engineer-in-charge should be used for all items involving and use of centering and shuttering shall be leak proof and single plane without any dents and undulations.

88. Inconvenience to public:

The contractor shall not deposit materials at any site, which will cause inconvenience to public. The Engineer-in-Charge may direct the contractor to remove such materials or may undertake the job at the cost of the contractor.

89. Conflict of interest:

Any bribe, commission, gift or advantage given, promised or offered by on behalf of contractor or his partner, agent or servant or any one on his behalf to any officer, servant, representatives, agents of Engineer-in-Charge, or any persons on their behalf, in relation to the obtaining or to execution of this, or any other contract with Engineer-in-Charge shall in addition to any criminal liability, which it may occur, subject to the cancellation of this or all other contracts and also to payment of any loss or damage resulting from any such cancellation. Engineer-in-Charge shall then be entitled to deduct the amount, so payable from any money, otherwise due to the contractor under this or any other contract.

90. Contract documents and materials to be treated as confidential:

All documents, correspondences, decisions and orders, concerning the contract shall be considered as confidential and/or restricted in nature by the contractor and he shall not divulge or allow access to them by any unauthorized person.

91. General obligations of Contractor:

a. The contractor shall, subject to the provision of the contract and with due care and diligence, execute and maintain the works in accordance with specifications and drawings.

b. The contractor shall promptly inform the Corporation and the Engineer-in-Charge of any error, omission, fault and such defect in the design of or specifications for the works which are discovered when reviewing the contract documents or in the process of execution of the works.

c. If Contractor believes that a decision taken by the Engineer-in-Charge was either outside the authority given to the Engineer-in-Charge by the Contract or that the decision was wrongly taken, the decision shall be referred to the technical expert within 14 days of the notification of the Engineer-in-Charge's decisions.

d. Pending finalisation of disputes, the contractor shall proceed with execution of work with all due diligence.

92. Security measures:

a) Security requirements for the work shall be in accordance with the Corporation's general requirements including provisions of this clause and the Contractor shall conform to such requirements and shall be held responsible for the actions of all his staff, employees and the staff and employees of his sub-contractors.

b) All contractors' employees, representatives and sub-contractor's employees shall wear identifications badges provided by the contractor. Badges shall identify the contractor, showing and employee's number and shall be worn at all times while at the site. Individual labour will not be required to wear identification badges.

c) All vehicles used by the contractor shall be clearly marked with contractor's name.

d) The contractor shall be responsible for the security of the 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 flagmen 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 holidays for duration of the contract.

e) Other contractors working on 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

f) Separate payment will not be made for provision of security services and its cost shall be deemed to have been included in the offer of tender / contract.

93. Fire fighting measures:

a) The contractor shall provide and maintain adequate fire fighting equipment and take adequate fire precaution measures for the safety of all personnel and temporary and permanent works and shall take action to prevent damage to destruction by fire of trees shrubs and grasses.

b) Separate payment will not be made for the provision of fire prevention measures.

94. Provisions of Health and Sanitation:

94.1 The contractor shall implement the sanitary and watch and ward rules and regulations for all forces employed under this contract and if the Contractor fails to enforce these rules, the Engineer-in-Charge may enforce them at the expenses of the Contractor.
The contractor's special attention is invited to clause 37, 38, 39 and 51 of the preliminary specification to the A.P.S.S. and he is required to provide at his own expenses the following amenities to the satisfaction of Engineer-in-charge concerned.

First Aid: At the work site there shall be maintained in a readily accessible place, first aidappliances and medicine including adequate supply of sterilized dressing and sterilized on 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.

94.2Drinking water:

Water of good quality for drinking purpose shall be provided for the worker on a scale of not less than 2 gallons 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 water proof.

c) A reliable pump shall be fitted to each inner well. The trap door shall be keep locked and opened only for inspection or cleaning which shall be done at least once a month.

94.3 **Washing and bathing place:**

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

94.4 **Latrine and Urinals:**

There shall be provided within the area of every work site latrines and urinals in an accessible place to men and women separately. For each of them shall be on the following scales or the scale as directed by Engineer-in-charge in any particular case.

(i).	Where the number of persons employed does not exceed 50	2
(ii)	Where the number of persons employed exceeds 50 but does not exceed 100	3
(iii)	For every additional 100	3

If women are employed, separate 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 latrine shall be cleaned at least four times daily and at least twice during working hours and kept in a strict sanitary condition. The receipt scales shall be tarred inside and outside at least once a year.

The excrete from the latrines shall be disposed off at the contractors expenses in a way approved by the local public health authority. The contractor shall also employ adequate number of scavengers and conservancy shall to keep the latrines and urinals in a clean condition.

90.6 **Shelters during Rest:**

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

90.7 **Crèches:**

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

1. Thatched roots
2. Mud floors and wall
3. Planks spread over the mud floor and covered with matting. The use of huts shall be restricted to children their attendants and mothers of the children.

94.8 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 expenses

90 Training of personnel:

The contractor, shall, if and as directed by the Engineer-in-Charge provide free of any charge adequate facilities, for vocational training of Corporation Officers, students, Engineers, supervisors, foremen, skilled workmen etc. not exceeding six in number at any one time on the contractor's work. Their salaries, allowances etc. will be borne by the Corporation and the training schemes will be drawn up by the Engineer-in-Charge in consultation with the contractor.

91 Ecological balance:

a) The contractor shall maintain ecological balance by preventing de-forestation, water pollution and defacing of natural landscape. The contractor shall so conduct his construction operation as to prevent any unnecessary destruction, scarring, or defacing of the natural surrounding in the vicinity of the work. In respect of the ecological balance, Contractor shall observe the following instructions.

i) Where unnecessary destruction, scarring, damage or defacing may occur, as result of the operation, the same shall be repaired replanted or otherwise corrected at the contractor's expense. The contractor shall adopt precautions when using explosives, which will prevent scattering of rocks or other debris outside the work area. All work area including borrow areas shall be smoothened and graded in a manner to conform to the natural appearances of the landscape as directed by the Engineer-in-Charge.

ii) All trees and shrubbery which are not specifically required to be cleared or removed for construction purposes shall be preserved and shall be protected from any damage that may be caused by the contractor's construction operation and

equipment. The removal of trees and shrubs will be permitted only after prior approval by the Engineer-in-Charge. Special care shall be exercised where trees or shrubs are exposed to injuries by construction equipment, blasting, excavating, dumping, chemical damage or other operation and the contractor shall adequately protect such trees by use of protective barriers or other methods approval by the Engineer-in-Charge. Trees shall not be used for anchorages. The contractor shall be responsible for injuries to trees and shrubs caused by his operations. The term "injury" shall include, without limitation bruising, scarring, tearing and breaking of roots, trunks or branches. All injured trees and shrubs be restored as nearly as practicable without delay to their original condition at the contractor's expense.

(iii) The contractor's construction activities shall be performed by methods that will present entrance or accidental spillage of solid matter contaminants, debris and other objectionable pollutants and wastage into river. Such pollutant and waste include earth and earth products, garbage, cement concrete, sewage effluent, industrial wastes, radio-active substances, mercury, oil and other petroleum products, aggregate processing, mineral salts and thermal pollution. Pollutants and wastes shall be disposed off in a manner and at sites approved by the Engineer-in-Charge.

(iv) In conduct of construction activities and operation of equipments the contractor shall utilise such practicable methods and devices as are reasonably available to control, prevent and otherwise minimise the air pollution. The excessive omission of dust in to the atmosphere will not be permitted during the manufacture, handling and storage of concrete aggregates and the contractor shall use such methods and equipment as a necessary for collection and disposal or prevention of dust during these operation. The contractor's methods of storing and handling cement shall also include means of eliminating atmospheric discharges of dust, equipment and vehicles that give objectionable omission of exhaust gases shall not be operated. Burning of materials resulting from clearing of trees, bushes, combustible construction materials and rubbish may be permitted only when atmospheric conditions for burning are considered favorable.

b) Separate payment will not be made for complying with the provisions of this clause and all cost shall be deemed to have been included in the unit rates and prices included in the contract if any provision is not complied with within a reasonable time even after issue of a notice in this respect, the necessary operations would be carried out by the Engineer-in-Charge at the cost of the Contractor, Orders of the Engineer-in-Charge in this respect would be final and binding on the contractor.

92 Preservation of existing vegetation:

a) The contractor will preserve and protect all existing vegetation such as trees, on or adjacent to the site which do not unreasonably interfere with the construction as may be determined by the Engineer-in-Charge. The contractor will be held responsible for all unauthorized cutting or damage of trees, including damage due to careless operation of equipment, stockpiling of materials or trecking of grass areas by equipment. Care shall be taken by the Contractor in felling tressauthorised for removal to avoid any unnecessary damages to vegetation and tress that are to remain in place and to structures under construction or in existence and to workmen.

b) All the produce from such cutting of trees by the contractor shall remain the property of Corporation and shall be properly stacked at site, approved by the Engineer-in-Charge. No payment whatsoever shall be made for such cutting and its stacking by the Contractor. If any produce from such cutting is not handed over to the Corporation by the contractor, he shall be charged for the same at the rates to be decided by the Engineer-in-Charge. The recovery of this amount shall be made in full from the intermediate bill that follows.

c) The contractor shall also make arrangements of fuel deposits for supply of required fuel for the labourer to be employed for cooking purpose at his own cost in order to prevent destruction of vegetation growth in the surrounding area of the work site.

93 Possession prior to completion:

The corporation shall have the right to take possession of or use any completed part of work or works or any part there of under construction either temporarily or permanently. Such possession or use shall not be deemed as an acceptance of any work either completed or not completed in accordance with the contract with in the interest of Clause 28 of APSS except where expressly otherwise specified by the Engineer-in-charge.

94 Payment upon termination:

If the contract is terminated because of a fundamental breach of contract by the contractor, theVC & MD TGFDCL/ General Manager / Engineer-in-Charge shall issue a certificate for the value of the work done less advance payment received upon the date of the issue of the certificate and less the percentage to apply to the work not completed as indicated in the contract data. Additional liquidated damages shall not apply. If the total amount due to the Corporation exceeds any payment due to the contractor the difference shall be a debt payable to the Corporation. In case of default for payment within 28 days from the date of issue of notice to the above effect, the contractor shall be liable to pay interest at 12% per annum for the period of delay.

95 Access to the contractor's books:

Whenever it is considered necessary by the VC & MD TGFDCL /General Manager/ Engineer-in-Charge to ascertain the actual cost of execution of any particular extra item of work or supply of the plant or material on which advance is to be made or of extra items or claims, he shall direct the contractor to produce the relevant documents such as payrolls, records of personnel, invoices of materials and any or all data relevant to the item or necessary to determine its cost etc. and the contractor shall when so required furnish all information pertaining to the aforesaid items in the mode and manner that may be specified by the Engineer-in-Charge.

96 Drawing to be kept at site:

One copy of the drawings furnished to the contractor shall be kept by the contractor on the site and the same shall at all reasonable time be available for inspection and use by the Engineer-in-Charge and the Engineer-in-Charge's representative and by any other persons authorised by the Engineer-in-Charge in writing.

97 B.I.S. [I.S.I.] books and APSS to be kept at site:

A complete set of Indian Standard specification referred to in "Technical Specifications" and A.P.S.S. shall be kept at site for reference.

98 Site Order Book:

An order book shall be kept at 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 Corporation Officer in direct charge of the work and by the contractor or by his representative. In important cases, the Engineer-in-charge will countersign the entries, which have been made. The order book shall not be removed from the work, except with the written permission of the Vice Chairman and Managing Director TGFDC, OR Engineer – in - Charge.

99 Variations by way of modification, omissions or additions:

For all modifications, omissions from or additions to the drawings and specifications, the Vice Chairman and Managing Director TGFDC / Engineer-in- Charge will issue revised plans, or written instructions, or both and no modification, omission or addition shall be made unless so authorised and directed by the Vice Chairman and Managing Director TGFDC / Engineer-in- Charge Engineer in writing.

The Vice Chairman and Managing Director TGFDC 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.

Engineer-in-Charge's Decision:

It shall be accepted as in separable part of the contract that in matters regarding materials, workmanship, removal of improper work, interpretation of the contract drawings and contract specification, mode of the procedure and the carrying out o the work, the decision of the Engineer-in-Charge, which shall be given in writing, shall be binding on the contractor.

100 Care and diversion of river/stream:

The contractor shall submit details regarding the diversion and care of river or stream during construction of the work along with a separate print-out of the time table showing earliest and latest start and finish dates of various activities. He should submit a detailed layout plan with drawings for the diversion and care of river during construction of work. The above arrangements shall be at contractor's cost.

101 Income tax:

a) During the currency of the contract deduction towards income tax as per applicable GO's plus educational cess or as amended from time to time will be made from the gross value of each bill of the contract, as per section 194-C of the Income Tax Act. . For deduction of tax at rates lower than 2.24% procedure stipulated under section 194-C(4) of Income Tax Act, 1961 shall be followed
b) Income Tax clearance certificate should be furnished before the payment of final bill.

The contractor's staff, personnel and labour will be liable to pay personnel income taxes in respect of their salaries and wages as are chargeable under the laws and regulations for the time being in force, and the contractor shall perform such duties in regard to such deductions thereof as may be imposed on him by such laws and regulations.

102Seigniorage charges:

102.1 The Rates of agreement items of works are exclusive of Seigniorage charges. Seigniorage charges will be recovered as per rules from the work bills of the contract or based on the theoretical requirement of materials, at the following rates:

RATES OF SEIGNIORAGE FEE: G.O.Ms No.67, I & C(M1) Dept., Dt.26.09.2015

Seigniorage charges will be recovered as per rules from the work bills of the contract or based on the theoretical requirement materials at the following rates.

S. No.	Material	Seigniorage
1.	Sand	Rs: 40.00 / Cum
2.	Metal	Rs: 75.00 / Cum
3.	R.R stone for masonry	Rs: 75.00 / Cum
4.	C.R.S stone	Rs: 75.00 / Cum
5.	Gravel./ Earth	Rs: 30.00 / Cum

102.2 The rates are liable to be revised and amended from time to time by the State government, by notification in the 'Telangana Gazette'.

102.3 The Seigniorage charges are to be recovered as provided above in the agreement. Any escalation in these charges beyond the provisions of the agreement is to be borne by the Corporation debiting such escalated amount to the works estimate concerned.

102.4 In case of decrease in seignorage charges, the rate provided in the agreement will be recovered from the contractor and the difference amount will be credited to the work estimate.

102.5 The funds from DMF Trust is linked to the production of minerals & payment of seignorage fee i.e., 30% of contribution on seignorage fee for quarry leases on application basis @ 10% of contribution on seignorage fee for quarry leases granted through action rates w.e.f 12/01/2015 as

per industries & commerce (mines-I) Dept., Lr No. 3573/M.I(1)/2015, DT: 13.05.2015 & Govt Memo 2939/Blgs(2)/2016-1, Dt: 26.05.2016. It is started that all Goverment Engineering Departments executing civil works shall in addition to seignorage charges also recover 30% contribution towards DMF from contractors bills & remit the scheduled banks & specified in 2nd schedule to RBI Act, 1934 & authorized by District Collector & Magistrate as chair person of managing committee and as per the Government instructions from time to time.

103. Goods and Services Tax (GST) On works contract:

GST for the works contract shall be as per latest GST Act and will be implemented as per the orders of the Govt., from time to time.
At present GST applicable 18% of works contract will be applicable. It is the liability of the contractor to pay GST as applicable. The contractor will be reimbursed of the GST paid at applicable 18% of each bill amount.

104. LabourCESS: As per the Building and other Construction Workers Welfare CESS Act, 1996, Section 3 of CESS Act, read with rule 4(3) of the cases rules and in accordance with S.O.No.2899, dt.28-03-1996 of Corporation of India, 1% CESS will be deducted from the bills paid for works from the contractor.

106. Supply of construction materials and allowable brands of Steel :

i) The contractor has to make his own arrangements for procurements, supply and use of construction materials.
ii) All materials so procured should confirm to the relevant specifications indicated in the bidding documents.
iii) The contractor shall follow all regulations of the Corporation/Corporation of India in respect of import licences etc., of the procurement of the materials is through imports and he shall be responsible for the payment of applicable duties and taxes, port clearances, inland transportation etc.
iv) The contractor shall make his own arrangements for adequate storage of the materials.

107. The contractor shall procure steel from **TATA / SAIL/VSP/Jindal** brands only. They shall not be permitted to use steel bought from other manufactures.

108. For Wall and floor tiles, Doors, windows & Fixtures, Paints, Watersupply& Sanitary arrangements, the list of approved manufactures/suppliers specified in SOR 2023-24 only shall be used.

TECHNICAL SPECIFICATIONS

[TO BE INCORPORATED AS PER REQUIREMENT OF THE WORK PUT TO TENDER DULY QUOTING THE RELEVANT SPECIFICATION NUMBER OF APSS. BSI Code No., MORT&H, etc. STANDARD SPECIFICATION NO.]

STANDARD SPECIFICATION FOR BUILDING WORK (AS PER A.P.S.S./T.S.S)

All the items of work shall be executed as per the Standard Specifications laid down in APSS,TSS the relevant I.S Codes of the Special Specification as indicated in Schedule - 'A' of the tender

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1.08	Broken Stone/Coarse Aggregate for Concrete	108
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1.11	Lime	111
1.12	Portland Cement of not less than '43' glade	112
1.13	Lime Mortar	113
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1.16	Cement Lime Mortar	116
1.17	Sebara Putty (Lime Putty)	117
1.18	Pan Tiles	118
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1.20	Clay Roofing Tiles, Mangalore pattern	120
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1.30	Teak Wood	130
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4.03	Reinforced cement concrete work	403
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4.05	Prestressed concrete work.	405
5.	**STANDARD SECIFICATIONS FOR BRICK MASONRY**	
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LIST OF SPECIFICATIONS FOR THE VARIOUS ITEMS OF WORKS SUPPLEMENTING THOSE DESCRIBED IN SCHEDULE 'A' BY S.S. NUMBERS

GENERAL SPECIFICATIONS

Sl.No.		Short title/ Description	IS.No. and as amended from time to time
A) LIST OF INDIAN STANDARDS			
I.	**CEMENT**		
	1	Specifications for 43 Grade ordinary portland cement	**IS 8112:1989**
	2	Methods of physical tests for hydraulic comments	**IS 4031 (part 1 to 15) :1988**
	3	53 Grade cement	**IS 12269:1989**
II.	**AGGREGATES**		
	1	Specifications for Coarse and Fine aggregates from Natural resources for concrete	**IS 383:1970**
	2	Specification for Sand for Masonry	**IS 2116:1980**
	3	Methods of tests for aggregates for concrete. Part-1 Particleseize and shape	**IS 2386:1963 (Part I to IV)**
		Schedule - B Estimation of deleterious materials & Organic impurities	
		Part-III – Soundness	
	4	Specification for test sieves. Part-I Wire cloth test sieves	**IS 460:1978 (Part-I)**
III.	**BRICKS**		
	1	Specifications for Common burnt clay building bricks	**IS 1077:1992**
	2	Methods of test for burnt clay building bricks	**IS 3495:1992 (Part I to IV)**
	3	Pulverized Fuel Ash-Lime Bricks - Specification	**IS 12894:2002**
	4	Specification for concrete masonry units Part 3 Autoclaved cellular Aerated concrete blocks	**IS 2185:1984 (Part-III)**
IV	**BUILDING STONES:**		

Sl.No.		Short title/ Description	IS.No. and as amended from time to time
	1	Method of Tests for determination of strength properties of natural building stones (compressive strength, Transverse strength, Tensile Strength, Shear Strength.	**IS 1121 (Part –1 to Part 4): 1974**
	2	Schedule of properties and availability of stones for construction purposes	**IS 7779:1975 (Part 1 to Part 5)**
	3	Quarrying stones for construction purposes, recommended practice	**IS 8381:1977**
	4	Stone Masonry: Specifications for dressing natural building stones	**IS 1129:1972 (Part-IV)**
V.	**STEEL**		
	1	Specification of Mild steel and medium tensile steel bars and hard drawn steel wires for concrete reinforcement. Part-I Mild Steel & Medium tensile steel bars	**IS 432:1982 (Part I & II)**
	2	Specifications for Cold-worked steel, High strength deformed steel bars and wires for concrete reinforcement.	**IS 1786:1985**
	3	Specification for steel for General structural purposes	**IS 2062:1999**
	4	Specification for structural steel (Standard quality)	**IS 226:1975**
	5	Specification for steel tubes for structural purposes	**IS 1161:1998**
	6	Hand Drawn Wire	**IS432:1953**
VI	**CERAMIC TILES**		**IS 13712:2006**
VII	**STACKING AND STORAGE OF MATERIALS**		
	1	Recommendation of stacking and storage of construction materials and components at site	**IS 4082:1996**
VIII	**MASONRY**		
	1	Brick Masonry	**IS 2212:1962**
	2	Code of practice for construction of Stone Masonry Part-1 (Rubble stone masonry)	**IS 1597:1992**
	3	Code of practice for permeability test for masonry (during and after construction)	**IS 11216:1985**
	4	Code of practice for brick work	**IS 2212:1991**
	5	Construction of hallow and solid concrete block masonry	**IS 2572:2005**
	6	Code of practice for construction of autovlaved cellular concrete block masonry	**IS 6041:1985**
IX	**CONCRETE**		
	1	Code of practice for Plain and reinforced concrete	**IS 456:2000**
	2	Method of Sampling and analysis of concrete	**IS 1199:1959**
	3	Method of test for strength of concrete	**IS 516:1959**
	4	Recommended guide lines for Concrete Mix Design	**IS 10262:1982**
	5	Code of practice for Ready-Mixed Concrete	**IS 4926:2003**

Sl.No.		Short title/ Description	IS.No. and as amended from time to time
	6	Specification for Admixtures for concrete	**IS 9103:1999**
	7	Guidelines for false work for concrete structures.	**IS:14687:1999**
	8	Code of practice for use of immersion vibrators for consolidating concrete	**IS 3558:1983**
	9	Specifications for Pre-cast concrete coping blocks	**IS 5751:1984**
	10	Laying in situ cement concrete flooring	**IS 2571:1970**
	11	Code of practice for concrete structures for the storage of liquids	**IS 3370:1965 (Part 1 & 2) IS 3370-1967 (Part 3 & 4)**
	12	Code of practice for concrete roads	**IRC: 15-2002**
X	**REINFORCEMENT/ STRUCTURAL STEELWORK**		
	1	Code of Practice for Bending and fixing of bars for concrete reinforcement	**IS 2502:1963**
	2	Recommendations for detailing of reinforcement in reinforced cement concrete works	**IS 5525:1969**
	3	Mils steel wire for General Engineering purposes	**IS 280:2006**
	4	Recommendation for welding of cold worked bars for Reinforced concrete construction	**IS 9417:1989**
	5	Code of practice for general construction in steel	**IS 800:1984**
	6	Code of practice for use of metal arc welding for general construction in mild steel	**IS 816:1969**
	7	Safety code for erection of structural steel work	**IS 7205:1974**
	8	Tolerance for fabrication of steel structures	**IS 7215:1974**
XI.	**JOINERY:**		
	1	Specifications for timber paneled and glazed door, window and ventilator shutters	**IS 1003-Pat 1-2003 and IS1003-Part2-1994**
	2	Specifications for cut size timber	**IS 1331:1971**
	3	Code of practice for Glazing in Buildings	**IS 3548:1988**
	4	Specification for aluminium doors, windows and ventilators	**IS 1948:1961**
XII	**EARTH WORK:**		
	1	Code of Safety for excavation works	**IS 3764:1966**
	2	Safety code for piling and other deep foundations	**IS 5121:1969**
	3	Code of practice for earth work on canals	**IS 4701:1982**
	4	Methods of Test for soils	**IS 2720**
XIII	**OTHER SUBJECTS:**		

	1	Code of practice for design and insulation of joints in buildings.	**IS 3414:1968**
	2	Code of practice for design and construction of foundations in soils : general requirement	**IS 1904:1986**
		Colours for Ready mixed paints & enamels	**IS 5: 2004**
XIV.	**MACHINERY**		
	1	Batch type concrete mixer	**IS 1791:1968**
	2	Concrete Vibrators – Immersible type	**IS 2505:1980**
	3	Specifications for moulds for use in tests of cement and concrete	**IS 10086:1982**
	4	Compression testing machine used for testing of concrete and mortar	**IS 14858:2000**
	5	Sheep foot roller	**IS 4616:1968**
XV.	**SAFETY**		
	1	Code of practice for fire safety of buildings (general): Details of construction	**IS 1642:1989**
	2	Criteria for earthquake resistant design of structures.	**IS 1893:2002 Part-1**
	3	Code of practice for earthquake resistant design and construction of buildings.	**IS 4326:1993**
	4	Safety code for scaffolds and ladders	
		Part-I – Scaffolds	**IS 3696:1987 (Part-I)**
		Part-I – Ladders	**IS 3696:1991 (Part-II)**
XVI	**DRAWINGS:**		
	1	Code of practice for general engineering drawings	**IS 696:1972**
	2	Code of practice for architectural and building drawings (First revision).	**IS 962: 1989**
XVII	**MEASUREMENT**		
	1	Methods of measurement of building and civil engineering works.	**IS : 1200**

Note:- The above I.S specifications mean latest over and above with amendments if any.

SPECIFICATIONS

1.0 PREAMBLE

The technical specifications for various items of work contained here in shall be read in conjunction with the specifications mentioned for each item of work in bill of quantities part-I (Schedule – A) and also plans and drawings in part III.

2.0 GENERAL TECHNICAL SPECIFICATIONS

2.1 The following are the general technical specifications to be adopted for construction of buildings. Each item of work shall be executed according to the relevant standard specification number as described in the "Andhra Pradesh Standard Specification" (APSS) and Indian Standard (I.S) Specifications, including Water supply, Sanitary and Electrical Installations. In the absence of any definite provisions on any particular item of work in the aforesaid specifications in A.P.S.S., reference may be made to the latest codes and specifications of Indian Standards or Indian Roads congress (IRC in case of Roads). Where even these are silent, the construction and completion of works shall conform to sound engineering practice as approved by Engineer-in-charge and in case of dispute arising out of the interpretation of the above, the decision of Engineer-in-charge shall be final and binding on the contractor.

3.0 GENERAL INSTRUCTIONS

3.1 Drawings, Instructions, Measurements

All works shall be done according to the detailed drawings and specifications. Figured dimensions shall be followed. Measurement shall be taken of the actual work done but shall not exceed those marked on the drawings for payments.

3.2 Site Clearance and Demolition

The site shall be cleared of all trees, stumps, roots, brush wood, bushes and other objectionable materials. Useful and saleable material shall be the property of the Owner (A.P.S.F.C.) and shall be stacked properly as directed by the Engineer-in-charge. The areas to be covered with embankments shall be stripped of top soil to required depths to expose acceptable founding strata. Top soil unsuitable for use in embankment construction and other fills shall be disposed off as directed. All combustible materials shall be stacked and burnt in locations sufficiently remote to eliminate all danger of fire hazards. All old concrete, brick works and drains which interfere with construction works shall be dismantled with the approval of the Engineer-in-charge duly taking all necessary precautions prescribed in safety specification. Top soil which is suitable for use in construction work shall be stockpiled for later use. Other objectionable materials such as trash, debris, stones, brick, broken concrete, scrap metal etc., shall be disposed off as directed by the Engineer. Payment for cutting and removal of trees, stumps, dismantling existing structures and stripping shall be regulated by the description in the Schedule of Items or Section 2 of A.P.S.S.

3.3 Precision: The works shall be set to the highest precision of dimensions, levels, grades and lines as per designs and drawings using precise scientific equipments and measuring instruments.

3.4 Quality of work:

***To be the best quality*:** All the materials, workmanship, articles, Equipment, tools and plants should be of high and acceptable quality conforming to the standard specifications.

All materials shall be new and of the kinds and qualities described in the contract.

3.5 Testing of works and materials

3.5.1 All materials used and works done shall be subject to approval of the Engineer-in-charge.

3.5.2 The contractor shall arrange sufficiently in advance to test materials and portions of works in order to prove their soundness and efficiency if required, including samples and supporting test results from the approved laboratory and other documentary evidence from the manufacturer, wherever applicable, and indicate the types of materials and their respective sources. The delivery of materials at site shall commence only after the approval of the quality, grading and sources of the materials by the Engineer-in-charge.

3.5.3 The quality of all materials approved shall be maintained throughout the period of construction and periodical tests shall be carried out to ensure that it is maintained. The contractor shall conduct tests at work site/approved laboratories and shall maintain test reports at site for cement, coarse aggregates, fine aggregates, water, steel, bricks and concrete at the following frequency :-

Sl. No.	Description of material	Frequency of test	Allowable limits
1.	CEMENT : (IS : 8112-1989) a) Fineness	One for each source of supply in a month	Shall not be less than 3500 sqcm / gm
	b) Setting time	-do-	Initial setting time shall not be less than 30 minutes and final setting time shall not be more than 60 minutes.
	c) Soundness	-do-	Expansion (unaerated) shall be not more than 10mm by "Le Chatelier" method; if it fails, expansion of aerated sample shall be not more than 5 mm.
	d) Compressive strength of cement mortar cubes 1:3 (1 cement :3 standard sand) by mass	-do-	Compressive strength for 7 days shall not be less than 330 kg/cm^2 and compressive strength for 28 days shall not be less than 430 kg/cm^2
2.	Coarse aggregate : (IS383-1970) a) Gradation b) Aggregate impact value	One test for 15 Cum or at least on the day of concrete if concrete quantity is less than 15 cum. Once for each source of supply or when ever change in texture is noticed.	40mm Metal : a)Seive analysis : -63mm – 100% 40mm-85 to 100% 20mm-0-2-%; 10mm-0.5% b) FlakenessIndex : shall be less than 30% by weight 20mm Metal : a)Sieve analysis : -Limits : 40mm – 100%; 20mm-95 to 100%; 10mm-25 to 55%; 4.75-0 to 10% b) Flakiness Index : less than 25% c) Aggregate impact value: 20-40(IS 2386-1963)
3.	FINE AGGREGATE (IS383 –m1970) a) Gradation for concrete	One test for every 15 cum.	Fineness modules : Fine sand limit 2.2 to 2.6

Sl. No.	Description of material	Frequency of test	Allowable limits
	b) Gradation for masonry	At least once on the day of work	Medium sand limit 2.6 to 2.9
	c) Gradation for finishing	-do-	Coarse sand limit 2.9 to 3.2
	d) Bulkage	Three for each day of work i.e. morning noon and evening	b) Silt Content : shall be less than 4% by weight
	e) Silt content	At least once on the day of work	
4.	WATER : Chemical test	One test for each source	The water quantity shall be as per clause 5.4 of ISI 456-2000. The PH value of water shall not be less than 6.
5.	STEEL : (F2415 (IS1786-1985)) a) 0.2% proof stress	One for each source of supply and once in six months for fresh supply	4150 kg/cm^2 (Minimum)
	b) Elongation	-do-	Percentage of elongation 14.5% minimum
	c) Tensile strength	-do-	Ultimate tensile strength 4900 kg/cm^2 (Minimum)
6.	BRICKS : (IS:1077-1976) a) Compressive strength	One for each source of supply and once in two months when change in texture is noticed	Shall not be less than 40 Kg/cm^2
	b) Water absorption	-do-	Shall not be greater than 20% by weight
7.	CONCRETE : (IS456:2000) a) Cube strength	Frequency of testing as per clause 15.2 of IS 456-2000 for example 6 cube specimens, 3 each for 7 days & 28 days strength for every 15 cum. Cube shall be prepared, cured and tested in accordance with the requirement of IS 516.	a) Compressive strength (7 days) M15-100 Kg/cm^2 (Minimum) M20-135 KG.cm^2 (Minimum) b) Compressive strength (28 days) M15-150 Kg/cm^2 (Minimum) M20-200 Kg/cm^2 (Minimum) M25-250 Kg/cm^2 (Minimum) M30-300 Kg/cm^2 (Minimum)
	b) Slump	Thrice in a day of concrete in morning, noon and evening	a) Foundation footing – 10mm to 25mm b) Column beams and slabs – 25mm to 40mm (with normal reinforcement) c) Beams, slabs – 40mm to 50mm (with congested reinforcement)

A Register of record of material testing and Register of daily events showing materials received, labour engaged, out turn of work etc. shall be maintained at site and shall be signed by the contractor or his authorised representative and the Engineer

3.6 Rejection of Materials/works

3.6.1 Any material brought to site which in the opinion of the Engineer is defective, sub-standard, damaged, contaminated, deteriorated or does not comply with the requirement of the specification shall be rejected. The contractor shall remove from site such materials within 4 hours of notice from site.

3.6.2 If the work or portion of the work which in the opinion of the Engineer is found to be defective or unsound, the contractor shall pull it down and re-execute the same work at his own cost.

3.7 Measurement Materials

For the Controlled Concrete where site mixing is permitted shall be with concrete mixtures fitted with weigh batching scale. Materials shall be weighed and batched in mechanical weigh batchers as per the specified proportions of the approved design mix.

Materials requiring Volumetric mixing, wherever permitted, should be measured separately in boxes of appropriate size before being mixed in the specified proportions.

3.8 Storage of Materials

3.8.1 Adequate safe, dry storage shall be provided for all materials particularly cement.

3.9 Codes

3.9.1 Unless mentioned otherwise, current versions of all codes, specifications and standards issued by the Indian Standards Institution and Indian Roads Congress shall be fully applicable to these specifications. In the absence of appropriate publications by ISI or IRC, adoptable specification of the International Organization for Standardization shall apply.

3.9.2 In case of any conflict in meaning between the specifications mentioned hear in and those of ISI or IRC, the provisions of these specifications shall prevail.

3.9.3 The following codes shall be applicable for the purpose. However the latest revision of these codes shall only be used.

3.10 PERFORMANCE OF WORK

3.10.1 Execution of Works

3.10.1.1 All the works shall be executed in strict conformity with the provisions of the contract documents, explanatory detailed drawings and specifications.

3.10.1.2 The site should be cleared of all obstructions, vegetation, loose stones and materials before start of work.

3.10.1.3 The Engineer in charge, Supervisor will inspect the work on a Day-to-Day basis.

3.10.2 Work in Monsoon

3.10.2.1 The construction may entail working in monsoon also. The contractor must maintain a minimum labour force and execute the construction according to the prescribed schedule.

3.10.2.2 Contractor is responsible for keeping the construction work site free from water.

3.10.3 Plinth Levels

3.10.3.1 A proper level should be maintained, in terms of horizontal and vertical alignment. A minimum acceptable plinth level above road level shall be maintained. The plinth level shall be agreed with the Engineer's representative.

4.0 DETAILED SPECIFICATIONS OF MATERIALS

4.1 Water (APSS No. 129)

4.1.1 Water should be clean, fresh and free from all chemicals, oils, salts and deleterious materials and vegetable growth. Water has to meet the requirements mentioned in Cl. 5.4 of IS:456-2000. Storage for water should be sufficient and adequate for the regular consumption of works and for the use of labour on site.

4.2 Earth (APSS No. 309 & 310)

4.2.1 For filling, the soil shall be free from all rubbish, organic or vegetable growth including roots, weeds etc. Black Vice Chairman and Managing Director, TGFDC Ltdton soil should not be used for basement filling.

4.3 Sand/ fine aggregate (APSS No. 110)

4.3.1 Sand to be used shall be composed of hard siliceous material and shall be clean, sharp, hard, strong and angular type. Sand shall be clean river or pit sand of approved quality and free from salts, earth, dust or other impurities. Sand for plain and reinforced concrete shall confirm to IS : 383-1970. Sand for various purposes shall confirm grading as below.
Sand for Masonry --- table 110-A of APSS No.110
Sand for Plastering --- table 110-B & 110-C of APSS No. 110

Sand for Plain and Reinforced concrete Zone I to III of table 110-D of APSS No.110

For concrete works –50 % of river sand and 50 % of Robo sand can be used as per the instruction of the Engineer-In-Charge and as per the rules in vogue.

TABLE – II

4.3 FINE AGGREGATE (SAND)

Percentage passing by Mass

L.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	30-70	55-90	75-100	90-100
600.00 microns	15-34	35-59	60-79	80-100
300.00 microns	5-20	8-30	12-40	15-50
150.00 microns	0-10	0-10	0-10	0-15

4.4 Stone for Masonry (APSS No. 107)

4.4.1 Stones used shall be strong, durable, dense, compact, close grained, homogeneous, fire resistant and shall be obtained from sources approved by Engineer. Stones shall additionally be hard, sound, free from cracks, decay and other flaws or weathering and shall be easily workable. Stones with round surfaces shall not be made use of.

4.4.2 Stones shall have a crushing strength of not less than 1000 Kg/cm^2. Stones with lesser crushing strength may be used in works with prior approval of the Engineer. Stones shall be non-porous and when tested in accordance with IS: 1124-"Method of Test for Determination of Water Absorption" etc., shall show water absorption of less than 5% of its dry weight when soaked in water for 24 hours. Tests for durability and weathering shall be done in accordance with ARE: 1126 and IS: 1125 respectively. The working of stones to required sizes and their dressing shall be as per IS: 1127 "Recommendations for dimensions and workmanship of natural building stones for Masonry work" and IS: 1129 "Dressing of Natural Building Stones". Stones especially limestones and sand stones, shall be well seasoned by exposure to air before use in construction works.

4.5 Cement(APSS No. 112)

4.5.1 Cement should comply with the requirements of IS:8112-1989 and should be 43 grade ordinary Portland Cement, for making plain and reinforced concrete, mortar etc. The quality of cement shall be inconformity to the performance characteristics given in IS : 8112 - 1989.

4.5.2 The contractor shall procure bulk cement required for the works only from reputed cement factories (main producers) acceptable to the Engineer and should obtain, furnish from suppliers of cement a test certficate for every consignment of cement. The cement bag shall bear the manufacturer's name or their registered trade mark. Cement shall be tested in accordance with IS: 4031-1988 and IS: 4032-1988.

4.5.3 The cement should be delivered to the site in sound dry bags and shall be stored properly. Cement packed in LDPE Bags may be preferred to ensure protection from moisture and dampness.

4.5.4 The contractor has to make his own arrangements for the procurement of cement of required specification for works subject to the following:

a) The contractor shall procure bulk cement required for the works, only from cement factories (Main producers) of approved make and brand only as approved by the Engineer-in-charge. The contractor shall make own arrangements for adequate storage of cement.

b) The contractor shall procure cement in standard packing (50 Kg per bag) from the authorised manufacturers. The contractor shall make necessary arrangement at his own cost to the satisfaction of Engineer-in-charge for actual weighment of random sample 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 Engineer-in-charge at least once in a month in advance before the use of cement bags brought and kept at site godown.

c) Cement bags required for testing shall be supplied by the contractor free of cost.

d) 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 not remove the same without the written permission of the Engineer-in-charge.

e) The contractor shall forthwith remove from the works area any cement that the Engineer-in-charge may disallow for use on account of failure to meet with required quality and

standard. Damaged or reclaimed or partly set cement will not be permitted to be used and shall be removed from the site.

f) The contractor will have to construct sheds for storing cement having capacity not less than the cement required for 90 days use at appropriate locations at the work site. The Engineer-in-charge or the representatives shall have free access to such stores at all times.

g) The contractor shall further at all times satisfy the Engineer-in-charge 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 Engineer-in-charge for the purpose and the contractor shall at all times keep his records up to date to enable the Engineer-in-charge to apply such checks as he may desire.

h) Cement which has been unduly long in storage with the contractor or alternatively has deteriorated due to inadequate storage and thus become unfit for use on the work shall be rejected by the Corporation and no claims will be entertained. The contractor shall forthwith remove from the work area any cement the Engineer-in-charge may disallow for use on work and replace it by cement complying with the relevant Indian Standards.

STORAGE OF CEMENT

4.5.5.1 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 the strength. If the absorption exceeds 5% the cement is for all ordinary purposes ruined.

4.5.5.2 American, Spanish and German experiments have shown that on average the strength of cement stress in bags is reduced.

After 3 months by 15 to 20 percent.

After 6 months by 20 to 30 percent.

After 12 months by 30 to 50 percent.

After 2 years by 40 to 50 percent.

These figures prove that special attention should be paid to the storage of cement, even when its strength is equal to or suspense's the specified normal strength.

4.5.5.3 As a general principle the cement must be protected as far as possible from any form of moisture prior to mixing concrete mortar.

4.5.5.4 The cement should be stored in a well constructed dry godown or shed. The cement store should be weather tight construction with a sound wooden or ground to ensure that it is damp proof building. The storage place required for a given quantity of cement can be calculated at the rate of 2.50 sqm for a ton of cement. 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 or false floor a sheet of water proof paper should be provided.

If none of these is possible, then floor should be covered with straw, hay, cinder or ash or such other material densely and uniformly packed to a thickness of at least one inch and over a laid worth tarpaulin of old cement. Large 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.

4.5.5.5 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 0.3M all round should be made between the exterior walls and piles. At least 0.6M wide should be left for each access and delivery.

When storing the bags, the floor should be raised 30 cms. above the ground and stacked in rows not exceeding 10 bags high. The cement is to be stored in such a manner that easy access and proper inspection and counting is possible.

Successive consignments covered with some water proof cover as a both measure of protection and prevent the free circulation of air as each lot of proper fresh air will bring in more moisture. Once the cement has been properly stored should not be disturbed until it is to be used. There is no advantage in moving and stacking the bags to reduce where 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.

4.5.5.6 Even during the dry weather and when the relative humidity of the atmosphere even in nights is low (that is to say when there is very little moisture in the air) the cement in its stock shall be protected with a tarpaulin through for the stack. When the atmosphere is damp at any time of day or night, greater care has to be taken of the cement and proper strength provided it from the damp.

4.5.5.7 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 Ties of bags and must be sloped for rapid drainage in case of showers.

4.5.5.8 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 twins or cord to the end bags in the bottom most tier of the days pile, tacking the two places of card up the sides and along the top of pile an tying the main the center. The date of receipt in the store being clearly written on a bin card high from the card. Dead storage where the cement remains in place for a long time which other consignments of cement come in and out should be avoided.

4.5.5.9 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 stoppage space.

4.5.5.10 As a rule cement should not be stored longer than three months. Cement held in storage for a period of 90 days or longer shall be re-tested. 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.

4.5.5.11 Cement that has become supply due to storage in damp positions due to exposure to the weather is generally useless for making concrete and should be removed from the site.

4.6 Bricks(APSS No. 102)

4.6.1 Bricks for masonry shall be common burnt clay building bricks having minimum crushing strength of 40 Kg/cm^2 and shall conform the relevant specifications of IS 1077-1992.

4.6.2 They shall be sound, hard and thoroughly well burnt, but not over-burnt, with uniform size having rectangular faces with parallel sides and sharp straight right angled edges and be of uniform colour with fine compact uniform texture. Bricks shall be of uniform deep red cherry or copper colour. They shall be free from flaws, cracks and nodules of free lime.

4.6.3 Water absorption after 24 hours immersion in cold water shall be not more than 20% by weight. They shall not absorb more than 10% by weight of water after immersion for six hours.

4.6.4 They shall emit a clear metallic ringing sound when struck by a mallet and shall not break when dropped on their face, from a height of 60 cm.

4.6.5 Fractured surface shall show homogeneous, fine grained uniform texture, free from cracks, air holes, laminations, grits, lumps of lime, efflorescence or any other defect

which may impair their strength, durability, appearance and usefulness for the purpose intended. Under-burnt or vitrified bricks shall not be used.

4.6.6 Samples of bricks brought to the site shall be tested periodically for compression and other tests according to IS: 3495, Parts-I, II & III - "Method of Test for Burnt Clay Building Bricks".

4.7 Coarse Aggregate (APSS No. 108)

The coarse aggregate shall be from hard granite crushed stone conforming to IS 383 **:**1970. The pieces of aggregate shall be non porous, hard, strong durable clean and free from clay, rounded in shape and shall have granular or crystalline non powdery surfaces. The aggregate shall be well graded. Tests where required shall be carried out in accordance with IS : 2386 - 1963.

I.S. 383 / 1970 Table – I

4.7.1 Coarse Aggregate

I.S. Sieve designation	Percent passing for single-seized aggregate of metal size			Percentage passing for graded-aggregate of nominal size		
mm	40 mm	20 mm	12.50 mm	10 mm	40 mm	20 mm
(1)	(3)	(4)	(6)	(7)	(8)	(9)
80 mm	---	---	---	---	100	---
63 mm	100	---	---	---	---	---
40 mm	85-100	100	---	---	95-100	100
20 mm	0-20	85 - 100	---	---	30-70	95-100
16 mm	---	---	100	---	---	---
12.50 mm	---	---	85 - 100	100	---	---
10 mm	0-5	0-20	0-45	85 - 100	10-35	25-55
4.75 mm	---	0-5	0-10	0-20	0-5	0-10
2.36 mm	---	---	---	0-5	---	---

TABLE – III

ALL-IN AGGREGATE GRADING

L.S. Sieve Designation	40mm Nominal	20mm Nominal
80.00 mm	100	---
40.00 mm	95-100	100

20.00 mm	45-75				95-100	
4.75 mm	25-45				30-50	
600.00 microns	8-30				10-35	
150.00 microns	0-6				0-6	

4.8 Steel Reinforcement(APSS No. 126)

STEEL

4.8.1 Mild steel bars shall conform to Grade I of IS: 432.

4.8.2 High yield steel strength deformed bars shall conform to IS:1786-1985. Binding wire shall conform to IS:280. The various types of steel shall conform to the relevant IS specification as provided in A.P.S.S. No.126.

4.8.3 The contractor has to make his own arrangements for procurement of tested steel required for the work. He shall also make his own arrangements for transportation and storage.

4.8.4 **The contractor shall procure steel from TATA/ SAIL/VSP/Jindal brands only. They shall not be permitted to use steel bought from other manufactures.**

4.8.5 The contractor should invariably obtain necessary ISI test certificates from the suppliers of steel for each and every consignment and furnish them to the Engineer-in-charge, before use on works. Test certificates conforming to IS 1786-1985 are to be furnished. The HYSD steel (IS 1786-1985) bars should have TOR mark.

The original bills of procurement should be submitted to the Engineer-in-charge for making payment of the item. The contractor shall purchase the steel on the name of the work, number and the name of the contractor and furnish the same to the Engineer-In-Charge. The steel without the above two names will not be accepted on the works. Vendors test certificates and weighment bills are to be furnished to the Engineer-In-Charge and any quantity purchased without test certificates will not be accepted for use on the works.

4.8.6 If any difference is observed on carriage inwards, carriage outwards and theoretical requirement of steel for finished work, the contract will be cancelled and the contractor will be blacklisted.

4.8.7 The diameter and weight of steel should be as per IS 1786-1985 or relevant IS specification with subsequent revisions from time to time:

S.No.	Diameter of rod	Sectional weight in Kg/ RM both for Plain and HYSD steel
1	6 MM	0.22
2	8 MM	0.39
3	10 MM	0.62
4	12MM	0.89
5	14 MM	1.21

6	16 MM	1.58
7	18 MM	2.00
8	20 MM	2.47
9	22 MM	2.98
10	25 MM	3.85
11	28 MM	4.83
12	32 MM	6.31
13	33 MM	6.71
14	36 MM	7.99
15	40 MM	9.86
16	42 MM	10.88

Note: If any rods other than those diameters specified above are procured the weights shall be as per standard steel tables.

4.8.8. Quality control: The contractor shall furnish the samples for testing for each batch and consignment along with the test certificates issued by the vendors to the Engineer-In-Charge immediately after receipt of the steel in the stockyard at site of work for verification and testing.

No steel procured by the contractor shall be used in any work until the Engineer-In-Charge has given notice that the test results are satisfactory.

4.8.9. STEEL STORAGE:

a) Reinforcement steel and binding wire shall be stored above ground surface upon platform, skids or other supports protected as for as possible from surface deterioration by direct contact with undesirable elements or by exposure to conditions producing rust and corrosion. Bars shall be so supported as to avoid distortion and sagging of long lengths. All the reinforcement of same designation shall be stacked separately and distinctly marked.

b) Steel shall be stacked and stored in accordance with IS 4082: 1996 as per Recommendations on stacking and storage of construction materials.

c)

d) If the reinforcing rods have to be stored for a long duration, they shall be coated with cement wash before stacking and/or be kept under cover.

4.8.10 Reinforcement shall be free from pitting due to corrosion and free from loose rust, dirt, dust, mill scale, paint, oil, grease, adhering earth etc.

4.8.11 Erected and secured reinforcement after fabrication shall be inspected and approved by the Engineer-in-Charge prior to placement of concrete.

4.9.1 TEAK WOOD FOR JOINERY/ DOORS

The wood shall be well seasoned, uniformly coloured and shall be free from knots, cracks, shakes, splits, cross grains etc.

The wood shall be durable and of reasonably straight grains.

Moisture content of wood used shall be as near as possible to the following values:

Recommended values of moisture content in timber at the time of assembly or framing:

Type of work	Coastal area	Inland area
Frames for doors and windows	16 to 18%	14 to 15%
Shutters of doors and windows etc	15 to 16%	12 to 14%

4.9.2 GLAZED TILES (APSS No. 121)

The tiles shall be covered by a glaze on the top and under side. The edges shall be free from glaze in order that the tiles may adhere properly to the base. The glaze shall be uniform in quality and free from welts, ships, craze, specks, crawlings, or other imperfections visible from a distance of one meter. The glazed tiles shall be white or color and size of 300mm x 200 mm with a thickness of 7mm. The tiles shall be true to shape and conform to the performance requirements of IS 13712:2006 and supplier shall submit a certificate with respect to the quality of tiles and detailed there in.

5.0 DETAILED SPECIFICATION OF WORKS

5.1 Standard

A high standard of workmanship in all trades will be required. The Contractor shall ensure that only skilled and experienced workmen are employed.

5.2 Supervision

5.2.1 The Contractor's supervising staff shall be fully qualified and experienced in the types of work being carried out under the supervision and shall be capable of ensuring that they are done well and efficiently.

5.3 Temporary works

Where required, the Contractor shall furnish such details of his temporary works as may be called for by the Engineer and the Contractor shall satisfy the Engineer as to their safety and efficiency. The Engineer may direct that temporary works, which he considers unsafe or insufficient, shall be removed and replaced in a satisfactory manner.

5.4 Codes

5.4.1 Unless mentioned otherwise, current versions of all codes, specifications and standards issued by the Indian Standards Institution and Indian Roads Congress, wherever mentioned, shall be fully applicable to these specifications. Where standards are not yet published by the ISI or IRC, adaptable British Standards or Specifications of the International Organization for standardization shall apply.

5.4.2 In case of any conflict in meaning between the specifications mentioned herein and those of ISI or IRC, the provisions of these specifications shall be prevail.

5.5 Base lines and bench marks

5.5.1 The Contractor shall establish and maintain, to the satisfaction of Engineer, the base lines and bench marks, based on which the works are set out. Where such base lines and bench marks are provided by the Engineer, the Contractor shall maintain these throughout the period of construction without causing any disturbance to them.

5.6 Setting out

5.6.1 The Contractor shall set out all the works to be executed by him, in line with the standard base lines, position and bench marks and truly as per drawings within the accepted tolerance limits at no extra cost to Owner. The Contractor shall be solely responsible for the correct setting out of all the works, to be executed by him and the approval of such setting out by the Engineer shall in no way absolve the Contractor of his responsibility for carrying the work to the true lines, levels and positions as per drawings.

5.7 Dewatering

5.7.1 The Contractor shall carryout all the works, in dry and workable condition and maintain the same in dry condition till the final handing over of works at no extra cost to the Owner. For this the Contractor shall make at his cost all the necessary provisions of dewatering, wherever necessary, to the full satisfaction of the Engineer.

5.8 Safety of existing work

5.8.1 Before taking up any construction adjoining other property or existing work, the Contractor shall take all steps necessary for the safety and protection of such property or work.

5.9 Protection of existing services

5.9.1 The Contractor shall take all precautions necessary to prevent damage to or interference with under-ground or over-ground services such as cables, drains, piping or piles, whether shown on drawings or not. Equipment etc., mounted in position shall be protected against falling debris etc., by means of tarpaulin or such other material.

5.10 Handing over of work site

5.10.1 On completion of work, the Contractor shall remove all rubbish, debris, surplus materials, temporary work etc., from the site. The site shall be handed over in a tidy and workmanlike manner.

5.11 CRS Masonry in CM (1:8) in 1st sort (APSS 107 & APSS 611)

5.11.1 The work shall consist of a facing of selected stones hammer dressed at faces and joints with only a small proportion of smaller stones in the hearting.

5.11.2 The face stones shall be set in regular courses of uniform thickness from bottom to the top throughout. The height of the course should be uniform throughout by using stones of same height. The face stones shall be laid in headers and stretchers alternately so as to break joint by atleast 75mm and headers shall project atleast 100mm beyond stretchers. The stones shall be solidly bedded, set full in mortar with joints not exceeding 12mm in thickness and shall extend well back into the hearting.

5.11.3 Bond stones shall be placed in the wall @ interval of 2m in length and 600mm in height and shall run through the wall if the wall is not more than 600mm thick. If the wall is more than 600mm thick line of headers shall be laid from face to back each header overlapping the other by atleast 150mm.

5.11.4 The heart portion shall be filled with good flat bedded stones set as close as possible, well set in mortar.

5.11.5 The work on interior face shall be precisely the same as on the exterior face unless the work is to be plastered in which case the side joints need not be vertical.

5.12 Coursed Rubble Masonry in CM (1:8) 2nd sort: (APSS NO. 612)

5.12.1 This work shall be executed similar to the specifications for C.R.S. masonry 1st sort with the exception that the hearting and backing shall conform to the standard specification for random rubble masonry and bond with the face stones being carried up continuously with the face work.

5.13 RRS Masonry in CM (1:8) (APSS 107 & APSS 615)

5.13.1 The face stone is hammered dressed on the face, side and the beds to enable to come into close proximity with the neighboring stone. Face stone shall be of not less width in plan than 150mm for walls of 400mm thick, 200mm for walls of 450mm thick. The face stone shall be laid in headers and stretchers alternatively so as to break joints by at least 75mm. Care is to be taken to break joints vertically.

5.13.2 Bond stones should built in the wall at intervals of 2m in length and 600mm in height and shall run through the wall if the wall is not more than 600mm thick. The heart portion shall be filled with good flat bedded stone set as close as possible, well set in mortar.

5.14 Brick Work: (APSS 102 APSS 501 & 504)

5.14.1 All bricks to be used in the work shall be thoroughly soaked in water before use to prevent absorption of water from the mortar.

5.14.2 The bricks shall be set in cement mortar of **1:8** proportions by adopting a proper bond (preferably either English bond or a Flemish bond) throughout the wall.

5.14.3 The walls shall be taken up truly plumb. All courses shall be truly horizontal (level) and truly vertical. Vertical joints of consecutive courses shall not come directly over one another. Vertical joints, in alternate course shall come directly over one another. Joint's shall be fully filled with

mortar and raked. Every brick shall be laid with full joints of cement mortar on its bed, ends and side in one operation. No feeding of mortar by using excess water shall be allowed.

5.15 Reinforced Half Brick Partition Walls (APSS 102, 501, 504, 509)

5.15.1 All bricks to be used in the work shall be thoroughly soaked in water before use to prevent absorption of water from the mortar.

5.15.2 The cement mortar used for reinforced brick work shall be in cm (1:4) and mortar used shall conform APSS No. 113. Reinforcement for half brick walls shall be in the form of MS Bars and shall be of specified qualities. The brick shall be constructed only in stretcher bond. The reinforcement shall be well embedded in cement mortar at every third course and half the joint thickness of mortar shall first be laid and the other half laid after the reinforcement is placed in the position. The free ends of the reinforcement where ever possible shall be pegged into the mortar joints of main brick walls.

5.16 NOTES ON MASONRY

5.16.1
i) All stones, bricks etc., used in the masonry work shall be thoroughly soaked in water before use to prevent absorption of water from the mortar.
ii) Stones shall be laid on their broadest faces which give better opportunity to fill the faces between stones.
iii) To give sufficient lateral bond a stone in any course shall overlap the stone in the course below i.e. joints parallel to the pressure in two adjoining course shall not lie too closely in the same vertical line. A minimum overlap of 6" shall be maintained.
iv) To give sufficient transverse bond, prescribed no. of headers shall be used.
v) The practice of building two thin faces, tying width occasionally through stones and filling up the middle with small stones or dry packing shall be strictly guarded against.

vi) Jambs for door and window opening shall be formed with quoins of the full height of the course. The quoins shall be of breadth at least one and a half times the depth for the course and in length at least twice the depth.

vii) It is advisable to erect the door and window frames first and build the masonry around.

viii) Thickness of the joint should not be more than 12mm.

ix) Every course of the masonry shall be truly vertical. Use of plumb bob to check verticality by the mason shall be encouraged.

x) Care should be taken to keep all corners and sides including door and window opening truly vertical.

5.16.2Theoretical requirement of cement should be as follows: -

		Cement bags of 50 kgs.
a.	C.R.S. Masonry in C.M. (1:6)	1.54 bags per Cum
b.	C.R.S. Masonry in C.M. (1:8)	1.15 bags per Cum
c.	Brick Masonry in C.M. (1:4)	1.44 bags per Cum
d.	Brick Masonry in C.M. (1:6)	0.96 bags per Cum
e.	Brick Masonry in C.M. (1:8)	0.72 bags per Cum

5.17 Plain and Reinforced cement concrete (A.P.S.S. 402 & 403)

5.17.1 All R.C.C. work shall be carried out in strict accordance with latest IS specification. No concrete work shall be cast in the absence of the works-in-charge/Engineer. All the materials used should be of good quality as mentioned in **Sec. 4.0** above.

5.17.2 Cast-in-place concrete for the structures shall conform to the requirements of the section. The structures shall be built to the lines, grades and dimensions as per the designs and drawings.

5.18 Controlled concrete: Controlled concrete shall be used on all concrete works. Reinforced cement concrete shall correspond to **M20** grade as per **IS 456**-2000 equivalent to (1:1.5:3) nominal mix proportion.

5.18.1 For all major concrete pours like RCC slabs, roofs, beams etc Ready Mix Concrete of specified grade from approved suppliers shall be used.

5.19 Mix Proportions & Strength requirement of concrete: The proportions of various ingredients to be used in the concrete for different parts of the work shall be established by proper mix through design mix. The contractor shall produce concrete mix design and establish the strength of concrete with this concrete mix design for 3 days, 7 days and 21 days as per IS 456-2000. For controlled concrete, the mix design shall be so designed as to attain in preliminary tests a strength atleast 33 percent higher than that required on work tests. The design mix shall be got approved by the Engineer-in-charge before proceeding with the concreting. The contractor is required to carryout the mix design and the design mix shall be got approved by the Engineer-in-charge, APSFC within the limitations of parameters and other stipulations laid down in IS-456/2000.

The specified characteristic compressive strength of 150 mm size cube at 28 days attained for M20, M25 and M30 grades of concrete shall be 20 N/sqmm, 25N/sqmm and 30 N/sqmm respectively. The mix shall be designed to produce the grade of concrete having the required workability and a characteristic strength at 28 days not less than the appropriate values mentioned in Table-2 of IS-456**:**2000 The target mean strength of the concrete mix should be equal to the characteristic strength plus 1.65 times the standard deviation.

TABLE

MINIMUM COMPRESSIVE STRENGTH OF 15 CM. CUBES AT 7 AND 28 DAYS AFTER MIXING, CONDUCTED IN ACCORDANCE WITH IS.516

Class	Preliminary test N/mm²		Works test N/mm²		Maximum size of aggregate mm
	at 7 days	at 28 days	at 7 days	at 28 days	
M40	33.50	50.00	27.00	40.00	20
M35	30.00	44.00	23.50	35.00	20
M30	25.00	38.00	20.00	30.00	40 or 20
M25	22.00	32.00	17.00	25.00	40 or 20
M20	17.50	26.00	13.50	20.00	40 or 20
M15	13.50	20.00	10.00	15.00	40 or 20

Whenever the grade of concrete such as M30 etc., is specified it shall be Contractor's responsibility to ensure the minimum crushing strength stipulated for the respective grade of concrete is obtained at works.

In the case of M30 grade concrete minimum cement content of 340Kgs/ Cum shall be used to obtain a minimum cube strength of 30N/ mm² at 28 days age.

The contractor shall maintain the test results on regular basis as indicated in I.S.456/2000 and subsequent amendments thereon.

In all cases, the 28 days compressive strength specified shall be the criterion for acceptance or rejection of the concrete.

The sample of water taken for testing shall be typical of the water proposed to be used for concreting.

The contractor shall be responsible for production of controlled concrete as per design mix to ensure the required works cube strength is attained and maintained. In the designation of concrete mix, letter 'M' refers to the Mix and the number to the specified 28 days works cube compressive strength in Newton per sq.mm.

The concrete where site mixing is permitted shall be with concrete mixtures fitted with weigh batching scale. All measuring equipment shall be maintained in a clean serviceable condition and their accuracy periodically checked.

5.19.1 The proportions of cement concrete, if specified in volumetric proportions i.e., nominal mixes shall be as follows which are indication of approximate proportion of cement, fine aggregate and coarse aggregate which may have to be altered suitably at site to obtain desired strength and workability. However, the quantity of cement shall not be less than specified below.

Nominal Mix	Cement in bags of 50 kgs / 1Cum (net) of cement concrete
a) 1:3:6	4.42 bags of 50 Kgs
b) 1:4:8	3.31 bags of 50 Kgs
c) 1:5:10	2.65 bags of 50 Kgs

As per sanctioned estimate the design mix are proposed for all RCC members with the following design mix mentioned in Bill of Quantities towards the cement quantity required for attaining such design which is specified below.

Design Mix	Cement in Kgs
a) M20	330 Kgs
b) M25	380 Kgs

The contractor shall ensure the tests of Design Mix from the Reputed Agencies / University or any Research Lab for ensuring the strength of Design Mix with the provided quantity of cement in the estimate. Any plus or minus will be allowed in payments.

5.19.2 The quantity of water shall be varied to suit the moisture content of the aggregate and shall be just sufficient in produce a dense concrete with workability. Workability should be checked at frequent intervals as per **IS: 1199.** An accurate and strict control shall be kept on the quantity of mixing water.

5.20 ConcretequalitycontrolmeasuresandconcretequalityAssuranceTestProgramme

a) Concrete quality control measures: The contractor shall be responsible for providing quality concrete to ensure compliance of the bid requirements.

b) Concrete quality Assurance Programme: The concrete samples will be taken by the Corporation and its quality will be tested in any other recognized laboratory per the relevant Indian Standard Specifications IS 516:1959 and LS. 1199-1959.

Samples shall be drawn on each day for each type of concrete.

Tests: The Corporation will obtain samples and conduct tests as specified in B.I.S. 456- 2000, I.S. 1199- 1959 and I.S. 416 - 1959.

Test Facilities : The contractor shall furnish free of cost samples of all ingredients of concrete for testing and obtain approval from the Engineer-in-Charge. He should also supply free of cost, the samples of all the ingredients of concrete for conducting the required tests.

Test results: The Engineer-in-charge will pass the concrete if average strength of the specimens tested is not less than the strength specified. Concrete not meeting requirements of specification in all respects may be rejected by the Engineer-in-charge in which case it shall be removed and reconstructed entirely at the expense of the contractor.

5.21 Preparation for placing: No concrete shall be placed until preparation of surface involved, all form work, reinforcement, installation of items to be embedded have been approved by the Engineer-in-charge.

5.21.1 All surfaces, forms, embedded material shall be free from dried mortar, dirt, foreign substances, waste papers etc. Temporary openings shall be provided to facilitate inspection, especially of bottoms of columns and wall forms, to permit removal of sawdust, wood shavings, binding wire, dirt etc. Such openings/holes shall be suitably plugged later.

5.21.2 Foundation surface: Rock surfaces shall be free from oil, objectionable coatings, loose, semi- detached 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 condition.

5.21.3 Concrete shall not be placed in standing water or on a water-covered surface. Any concrete that has been washed away by heavy rains shall be entirely removed, if there is any sign of cement and sand having been washed away from the concrete mixture.

5.21.4 Starters: Before proceeding with erection of form work for RCC columns, Starters shall be cast with 25 mm thick concrete with string lines placed in position as per the layout.

5.21.5 Slots, openings, holes, pockets etc shall be provided in the concrete work in the positions specified or required or as directed by Engineer-in-charge.

5.21.6 Reinforcement and other items to be cast in concrete shall have clean surfaces that will not impair bond.

5.21.7 Approval by the Engineer-in-charge of any materials and work as required herein shall not relieve the contractor from his obligation to produce finished concrete in accordance with the requirements of the specifications.

5.22 Placing of Concrete: The contractor shall notify the Engineer–in-charge before batching begins. Batching , mixing and placing of concrete shall be performed only in the presence of an authorized representative of the Engineer-in-charge.

5.23Weather: Concrete shall not be placed in rain sufficiently heavy or prolonged to wash mortarfrom concrete.

The contractor is not entitled for any additional payment over the unit prices bid in the schedule for concrete, by reason of any limitation in placing of concrete under the above paragraphs.

5.24 Mixing: All cement concrete shall be machine mixed and machine vibrated.

5.24.1 The mixer machines should comply with IS 1971-1968 (IS specifications for batch type concrete mixers).

5.24.2 The mixers with other accessories shall be kept in first class working condition and so maintained throughout the construction.

5.24.3 Any mixer that at any time produces unsatisfactory mix, shall not be used until repaired. If repair attempts are not successful, the defective mixer shall be replaced.

5.24.4 The Cement and aggregates shall be mixed thoroughly in the specified proportion in a mechanical mixer until the mixture is of uniform colour. Where machine mixing is done the concrete shall be mixed, until the mixture is of uniform colour and, in no case, for less than two minutes.

5.25 Transportation, placing and compaction of concrete:

5.25.1 Equipment & methods: Equipment for conveying concrete shall be of such size and design as to ensure a practically continuous flow of concrete during depositing without segregation of materials. The entire placing programme consisting of equipment, layout, proposed procedures and methods shall be submitted to the Engineer-in-charge for approval

5.25.2 After mixing, the concrete shall be transported from the mixer to the position of placing as rapidly as possible by appropriate mean without causing separation or segregation of concrete, maintaining the required workability.

5.25.3 Concrete shall only be placed after the Engineer has inspected the shuttering and reinforcement. The concrete shall be placed and compacted before initial setting of concrete commences and should not be subsequently disturbed.

5.25.4 The concrete shall be deposited as nearly as practicable directly in its final position and shall not be rehandled in a manner which will cause segregation, loss of materials, displacement of reinforcement, shuttering or embedded inserts, or impair its strength. Concrete shall be placed in the shuttering by approved implements and shall not be dropped into place from a height exceeding 1 meter or handled in a manner which will cause segregation.

5.25.5 Concrete shall be deposited in successive horizontal layers to a compacted depth of not more than 0.45 meters. These shall be placed as rapidly practicable to prevent the formation of cold joints or planes of weakness between each succeeding layer within the pour.

5.25.6 When concrete is conveyed by chutes, the plant shall be of such size and design as to ensure practically continuous flow. Slope of the chute shall be so adjusted that the concrete flows without the use of any excessive quantity of water and without segregation of its ingredients. The delivery end of the chute shall be as close as possible to the point of deposit. The chute shall be thoroughly flushed with water before and after each working period and the water used for this purpose shall be discharged outside the form work.

5.26 Compaction: All concrete shall be compacted to produce a dense homogeneous mass. Concrete after depositing should be compacted thoroughly by means of a mechanical vibration. Vibrators shall conform to IS specifications. Vibrators of the surface, form or Immersion type shall be used and the concrete shall be thoroughly worked out around the reinforcement, around embedded fixtures and into corners of form work. The hardened concrete shall be free from voids or cavities. Over vibration and under vibration of concrete are harmful and should be avoided. Use of polythene sheet is recommended above the shuttering to arrest the slurry loss through the shuttering joints while placing and compacting the concrete.

5.26.1 Vibrators shall be operated by experienced men. Immersion vibrators shall be inserted vertically at points not more than 45 cms apart. Immersion vibrators shall be withdrawn slowly. Blending and melding of the concrete between successive layers shall be ensured. Vibrations shall not be applied through reinforcement and where vibrators of the immersion type are used, contact with reinforcement and all inserts shall be avoided.

5.26.2 Prior to beginning concrete placement the contractor shall make ready sufficient number of properly operating vibrators & operators and shall have readily available additional vibrators to replace defective ones during the progress of concrete placement.

5.27 Finishing : When the structure is in service all the surfaces shall receive no special finish except removal of fine and abrupt irregularities and clean up of loose debris. Unless varied by the Engineer-in-charge, the type of finish for formed concrete shall be as follows. The concrete surfaces shall be consolidated, smooth screeded, and leveled to produce even surfaces. Floating shall be done only after the screeded surface has attained a stiffness to permit finishing operations. The surface shall be uniform is texture and free from screed marks or other imperfections.

5.27.1 Concreting shall be carried out continuously up to construction joints already planned. Joint shall be kept where shear force is minimum. The work shall be resumed at the earliest by scrubbing the wet surface with wire brush and coating the surface with neat cement slurry. The prepared surface shall be approved by the Engineer-in-charge. Special care shall be taken to obtain thorough compaction and to avoid segregation of the concrete along the joint plane.

5.28Protection of works: The contractor shall protect all concrete against damage until final acceptance by Engineer-in-Charge. The fresh concrete shall be protected from defacements and damage due to construction operations, rain, sun and winds. The contractor shall provide protection to prevent erosion to fresh concrete whenever precipitation either periodic or sustaining is imminent or occurring. All fresh concrete surfaces shall be protected from contamination and from foot traffic until the concrete has hardened.

5.29 Replacement of unsatisfactory concrete: Immediately after the shuttering is removed, the surface of the concrete shall be very carefully gone over and all defective areas called to the attention of Engineer-in-charge. If reinforcement is exposed or the honey combing occurs the work may be rejected. Rejected concrete shall be removed and replaced by the contractor. Superficial honey combed surfaces and rough patches if permitted by the Engineer-in-charge shall be made good and finished neatly as per specifications and as directed.

5.30 Curing of concrete:. Rigid supervision shall be maintained for curing the concrete after laying for complete hydration and hardening to take place. The set concrete shall be cured

by ponding with clean water. All exposed faces of concrete shall be kept continuously moist for a minimum period of 28 days by spraying water or by covering with gunny bags which shall be constantly sprinkled with water. The curing operation should be done by using stirrup pump, or by any other methods given code IS 456-1984. For curing floors, flat roofs, concrete pavements and other level surfaces the ponding method of curing shall be adopted.

5.31 CENTERING (FORM WORK) AND SHUTTERING

5.31.1 **Steel Formwork:** Only steel forms of approved make (Acrow steel centering) shall be used. Forms with surface dents, bulges, undulations or holes shall not be used on the work and shall be removed from the site.

5.31.2 Form work shall be substantially and rigidly constructed of steel and shall be true to the dimensions described. Form work shall be constructed to confine and shape the concrete to the required shape, lines and dimensions described. Liners and cores shall be provided where necessary and shall be due to space and securely fixed.

5.31.3 Shuttering shall be erected true to line and securely braced, cross braced, strutted and supported to prevent deformation under the weight of pressured wet concrete and constructional loads, wind pressure and other forces.

5.31.4 The surfaces of the forms shall be clean and free encrustation of mortar, grout or other foreign materials.

5.31.5 The variation in 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 in drawing or as instructed.

5.31.6 All joints shall be sufficiently tight to prevent leakage of cement slurry. All faulty joints shall be adequately caulked.

5.32.1 **Mould Oil**: Before laying the reinforcement, all faces of shuttering and moulds in contact with wet concrete shall be treated with a coat of oil to prevent adherence to concrete. Release agent should be applied so as to provide thin uniform to the forms without coating the reinforcement.

5.32.2 The mould oil (The de-bonding agent) to be applied shall be standard shuttering oil, engine oil or filtered waste oil (Carbon particles and impurities should not be present).

5.32.3 Plumb and string lines in sufficient numbers shall be installed before and maintained during concrete placement. During concrete placement the contractor shall continuously monitor plumb, string line and form positions.

5.32.4 In case of columns, retaining walls and vertical structural components suitable arrangement shall be made for securing the form to the already poured concrete.

5.33 Reinforcement for RCC works:

5.33.1 Unless shown otherwise in 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 IS 1786-1985.

5.33.2 Reinforcement shall be steel and shall be free from corrosion, oil, grease, paint or dirt at the time of fixing in position and subsequent concreting.

5.33.3 Reinforcing steel bars shall conform accurately to the sizes, dimensions and shapes given as per designs and drawings. Bars shall be bent cold to the specified shape and dimensions and the bars shall be hooked or bent accurately and placed in exact position as per designs and drawings. Bars having kinks or bends other than those required by design shall not be used.

5.33.4 Bars of full length shall be used. Reinforcement shall be lap jointed or spliced only if unavoidable. The overlaps shall be staggered for different bars and located at points, along the span where neither shear nor bending moment is maximum. Not more than 33% of the bars as specified in drawing shall be lapped at one section.

5.33.5 The reinforcement shall be securely held in position and bound together tight by annealed binding wire, and by using stays, blocks or metal chairs, spacers, metal hangers, supporting wires or other approved devices at sufficiently close intervals.

5.33.6 Bars shall not be allowed to sag between supports. Layers of bars shall be separated by spacer bars, pre-cast blocks or other approved devices. Binders, stirrups, links should be securely wired to the main ring.

5.34.1 **Binding Wire:** Wire for binding reinforcement shall be soft and annealed mild steel of 16 SWG and shall conform to IS: 280-2006. Binding wire shall have tensile strength of not less than 5600 Kg/Cm^2 and a yield point of less than 3850 Kg/Cm ^{2}.

5.34.2 Proper cover shall be maintained between the reinforcement and the shuttering as per approved drawings and IS codes.

5.34.3 The contractor shall ensure that the bars are not displaced during concreting or any other operation over the work. The contractor shall also ensure that there is no disturbance is caused to the reinforcing bars in concrete that has already been placed.

5.35 All bars protruding from concrete and to which other bars are to be spliced and which are likely to be exposed for an indefinite period shall be protected by a thick coat of neat cement grout.

5.35 Measurement and payment

a. Measurement:

Measurement for payment for the reinforcing bars will be made only on the calculated weight of the bars placed in concrete, in accordance with the drawings or as directed by the engineer. The calculated weight for reinforcing bars shall be determined as follows:

i. Reinforcement shall be measured in length separately for different diameters as actually used in the work including the lengths of hooks at ends, spacer bars; reinforcement chairs and overlaps to the extent permitted by Engineer-in-charge.

ii. From the length measured, weight of reinforcing bars shall be calculated on the basis of weights specified in the table in this section.

iii. Wastage and annealed steel wire for binding shall not be measured as the cost of these items were already included in the unit rate for reinforcement.

Payment rate

The unit rate in the bill of quantities for reinforcement is inclusive of the cost of all wastage of steel and the cost of binding wire or welding materials at site of work, cover blocks and cost of all incidental and operational charges in cutting , bending ,cleaning , placing , binding or welding and fixing in position as shown on the drawings and as necessary to complete the work as per specification.

5.36 Cover Blocks

a) Before concreting, cover blocks shall be fixed in all R.C.C works to separate the reinforcement from the shuttering so that when the concrete is set the reinforcement is well within the concrete section at a distance from the outer surface, with specified cover to reinforcement.

b) Use of stone chips as cover for the reinforcement will not be accepted. Only cement mortar cover blocks of required thickness to maintain the specified cover shall be used.

c) Normally a bottom cover of 12mm to 15mm is sufficient for slabs. For columns the cover should be about 40mm, and for beams it is 25mm.

d) Cover blocks shall be reasonably good for using in appropriate grade of R.C.C. work. The mortar for preparing cover blocks shall at least be of proportion 1:2. Cover blocks shall be prepared on a clean and level platform by spreading the mortar in the moulds of required size and depth. When the mortar is still green strands of tying wire shall be inserted into each block. This wire is useful for tying the block to the reinforcement. After 24 hours the blocks shall be removed from the mould and cured for about seven days.

e) A properly made cover block does not get crushed when the reinforcement is tied over it and during the concreting work.

5.37 Reinforcement chairs

a) When the reinforcement is tied there is a need to separate bottom steel from the top steel and to maintain correct effective depth.

b) For ensuring separation to top and bottom steel and to ensure that the reinforcement work does not get disturbed due to the load or movement of workers when concrete is being laid, reinforcement spacers or chairs shall be fixed.

c) Use of large sized stones or bricks to separate top and bottom steel will not be allowed.

d) Reinforcement chairs shall be of slightly lesser size so as to accommodate the chair underneath the top steel and after allowing for the required covers to the top and bottom steel.

e) The chair shall be minimum 450mm long and should have legs bent in opposite directions to ensure stability,

f) The chairs shall be placed on a cover block so that the legs do not stick out once the shuttering is removed.

5.38 **Removal of Form work**: Centering and shuttering shall be removed after maturity gradually without jerking. Before removal of the shuttering the concrete shall be examined properly. Form shall not be released until the concrete has achieved strength of at least twice the stress to which the concrete may be subjected at time of removal of form work. 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 these existing on the work. Where possible, the form work shall be left longer as it would assist the curing.

Stripping Time: In normal circumstances where ordinary portland cement is used and adequate curing is done, form work may generally be removed after expiry of the following period:

	Type of Formwork	**Minimum Period Before Striking Formwork**
a)	Vertical formwork to columns, walls, beams	24-48 hours
b)	Soffit formwork to slabs (Props to be refixed Immediately after removal of formwork)	3 days

c)	Soffit formwork to beams/ Flat slabs	
	(Props to be refixed immediately after removal of formwork)	7 days
d)	Props to slabs:	
	1) Spanning up to 4.5 m	7 days
	2) Spanning over 4.5 m	14 days
e)	Props to beams and arches:	
	1) Spanning upto 6 m	14 days
	2) Spanning over 6 m	21 days

The number of props left under the concrete element, their sizes and dispositions shall be such that they shall be able to safely carry the full dead load and live load likely to occur during further construction.

The contractor shall be liable for damage and injury caused by removing the forms or props before the concrete has gained sufficient strength.

5.39 Conditions on RCC slabs/ Roof Slabs

5.39.1 The R.C.C. slab laid should be leak proof. After observing for two rainy seasons as defect liability period 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 F.S.D. from the Corporation. 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 code No.456/2000 at his own cost on the instructions of the Corporation.

When R.C.C. slab is laid, the contractor shall carry out the following tests at his own cost to prove that the slab is impervious.

a) After the centering is removed and curing period is over the slabs shall be put to test by stagnating water of 15 cms depth for one week and watched carefully to test the leakages if any.

b) If there are any leakages, the contractor shall immediately rectify the same at his own cost and again test the same to see that there are no leakages. No payment will be made to the contractor on this account either for testing or for rectifications thus carried out.

c) The officer observing the leakage test shall issue a certificate to this effect before final bill is made.

5.39.2 The variation thickness of R.C.C. roof slab due to varying spans, or special covering materials should not effect the general roof bed which should be uniform unless otherwise shown in drawings or instructed.

5.39.3 For all slabs to be laid MS hooks to be provided as directed by the Corporation for fixing fans and lights etc., G.I. pipes or PVC pipes has to be provided as directed by the Corporation in the masonry walls or concrete at the specified places for making electrical wiring.

TABLE – IV

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

Characteristic Strength of Cube 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

5.40Cement Plastering in two coats CM 1:6 & CM 1:4 (APSS 901, 903 & 904)

5.40.1 The surface shall be prepared by roughening of the back ground and raking the joints. The surface of the wall shall be kept wet for 2 hours before plastering.

5.40.2 Guides: Patches of 15cm X 15cm of required thickness at not more than 2 meters intervals horizontally and vertically shall be applied over the entire surface truly in the plane and truly plumb to serve as guides.

5.40.3 Plaster shall be started from the top and worked down towards plinth. The work shall be tested frequently with a plumb bob and straight edge.

5.40.4 The Mortar in 1:6 proportions shall be dashed and pressed over the surface and then brought to smooth and uniform surface by means of float and trowel. The plaster shall be well pressed into the joints.

5.40.5 After the first coat the surface is left rough to receive the second coat. The final coat shall be applied a day or two after the first coat put on has set, but the first coat shall not be allowed to dry. The final coat shall consist of 1 part of cement to 4 parts of fine sieved sand and shall be applied as in the first coat and brought to a uniform surface and then finished with a sponge to give granular appearance.

5.40.6 All corners, junctions and arises shall be brought truly to a line, level and plumb.

5.40.7 The finished surface shall be watered for a period of atleast 10 days.

5.40.8 Theoretical requirement of cement for plastering should be as follows :-

Cement bags of 50 kgs.

a.	12 mm plastering in C.M. (1:5)& C.M. (1:3)	1.02 bags per 10 Sqm.
b.	12 mm plastering in C.M. (1:6)& C.M. (1:4)	0.82 bags per 10 Sqm.
c.	20 mm plastering in C.M. (1:6)& C.M. (1:4)	1.15 bags per 10 Sqm.
d.	12 mm plastering in C.M. (1:4)	1.08 bags per 10 Sqm.
e.	12 mm plastering in C.M. (1:6)	0.72 bags per 10 Sqm.

5.41 Water proof plaster over the roof

5.41.1 On the clean wet surface of the concrete slab, before it has set, a layer of cement plaster shall be laid to give an average depth of 20mm over the concrete.

5.41.2 The Mortar to be used shall be of CM 1:3 proportions mixed thoroughly with a standard water proofing material with water repelling properties to ensure non-absorption.

5.41.3 Gauges should be put on the floor about ten feet apart to ensure even thickness.

5.41.4 Plastering must be done in squares or strips to avoid cracks. After the floor has been completed, it shall be covered with two inches of grass; sand or saw-dust and kept wet for three weeks.

5.42 Pointing: (APSS - 906)

5.42.1 Cement mortar for pointing shall conform to SS: 115 and shall be of 1:3 proportions.

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

5.42.3 The mortar shall be pressed into the raked out joints according to the type of joint required. The mortar shall not be spread over the corners, edges or surface of the masonry. The pointing shall then be finished with proper tool. The superfluous mortar shall be cut off from the edges of the line and the surface of the masonry shall be cleaned of all mortar.

5.42.4 Pointing could be either flush pointing, or groove pointing.

5.43 Notes on Pointing

i) Flush pointing with a groove or a line appears neat and does not spoil the look of the stone or brick masonry.

ii) As far as possible a minimum amount of mortar shall be used to avoid wastage.

iii) The edges shall be neatly trimmed with a trowel and a straight edge.

iv) While mortar is green a groove shall be formed by running a tool along the center lines of the joints. This operation shall be continued till a smooth and hard surface is obtained.

v) Even the vertical joints shall be finished in a similar fashion.

vi) Even when the job is done carefully, there is always an amount of superfluous mortar sticking to the masonry. This should be wiped off with a wet cloth.

vii) After the work is set and dry i.e., after one or two days the stones shall be cleaned with a strong acid so as to remove the cement stains.

viii) After cleaning with acid the stones shall be cleaned with soap water to ensure natural colour of the stones.

ix) If care is taken as shown above the pointing work will look attractive and neat, and the natural appearance of the stone masonry is retained.

5.44 Flooring: (APSS 701 & 702)

5.44.1 Granite Flooring:

Flooring shall be with high polished colour granite stone slabs 18 to 20 mm thick of size not less than 2.40 mts length, laid over existing RCC slab or CC bed.

All the stones in one room shall be preferably of same width and shade. The width of all the slabs in one row must be uniform with longitudinal joints parallel to each other.

The joint width shall be kept minimum and the sides of the slab shall be chisel dressed to ensure a correct joint.

Raw-silk- pink granite

Raw-silk-Ivory-granite

Imperial- red- granite

Red-multi colour- granite

Kashmir- gold- granite

5.44.2 Granolithic concrete flooring (APSS No. 701 & 710)

The mix proportions for the Granolithic concrete floor topping shall be (1:2:4) (Cement : F.A. : C.A) by volume. The minimum amount of water which will give necessary workability for adequate compaction shall be added. The grading of the course aggregate for Granolithic concrete shall be from 6mm to 12mm. The finished thickness of flooring shall be 50mm thick or as specified in the approved drawings and the panels into which the floor is divided for laying the Granolithic concrete shall not have any panel dimensions in excess of 5.0m.

5.45 Joinery:

For all wood/iron/ Aluminium work a sample of each item i.e., frame with shutters complete should be prepared and got approved by the Engineer-in-Charge before they are manufactured in full quantities and fixed in position.

The furniture and fixtures and wind appliances for wood work should be of best quality available in the market, and should be got approved by the Engineer-in-Charge before fixing.

5.46 Door Frame:

Wooden Doors & Windows:

The wood shall be of Best Sal wood/Best Teak wood as specified in Bill of quantities for frames and shutters.

The wood shall be well seasoned, uniformly coloured and shall be free from knots, cracks, shakes, splits, cross grains etc.

The wood shall be durable and of reasonably straight grains.

Moisture content of the wood used shall be as near as possible to the following values:

Recommended **values** of **moisture content** in timber at the time of assembly or framing.

Type of work	**Coastal area**	**Inland area**
Frames of windows	16 to 18%	14 to 15%
Shutters of windows etc.	15 to 16%	12 to 14%

Construction and fixing

Frames shall have dovetail, tenon or mortise joints.

Before fixing in position, the frames shall be inspected and passed by the Engineer-in-charge. A coat of primer shall be applied before the frames are fixed in position. All portions of untreated timber abutting against masonry or concrete shall be painted with boiling coal tar or approved preservative, before placed in position.

The frames shall be erected in position and held plumb with strong supports from both sides.

Hold fasts shall be embedded in C.C. beds as specified.

Frames shall have dovetail, tenon or mortise joints.

Frames without sills shall be provided with temporary wooden bracings between the styles at sill level which can be withdrawn after the frame is firmly set.

5.47 Steel Door frames:

M.S. Hollow door frames manufactured by cold roll formed process steel sheet 1.25mm thick bright **CRCA** confirming to IS 4351-1976 with 105 x 60mm size .

5.48 Fabrication: The steel door frames shall be got fabricated in an approved workshop as approved by the Engineer.

5.49 Mortar Guards : Mortar guards as instructed by the Engineer-in-charge shall be provided. These shall be welded to the frame at the head of the frame for double shutter doors to make provision for bolts.

5.50 Lock-Strike Plate : There shall be an adjustable lock- strike plate of steel complete with mortar guard to make provision for locks or latches complying with the relevant Indian Standards. Lock-strike plate shall be of galvanised mild steel and fixed at 95cm from the head of the frame.

5.51 **Shock Absorbers :**For side hung door there shall not be less than three buffers or rubber or other suitable material inserted in holes in the rebate and one shall be located on the centre line of the lock strike plate and the other two at least 45cm above and below the centre line of the lock strike plate. For double shutter doors, there shall be two buffers of rubber or similar suitable material inserted in holes in the rebate in the lock jamb only at the head and spaced 15cm at either side of the centre line of the door.

5.52 **Finish :**The surface of door frame shall be thoroughly cleaned, free of rust, mill-scale dirt, oil etc. either by mechanical means, for example, sand or shot blasting or by chemical means such as picking. After pretreatment of the surface one coat of approved primer i.e. red oxide zinc chrome primer conforming to Ito 2074:79 and two coats of paints as directed by the Engineer-in-charge shall be applied to the exposed surface.

5.53 **Fixing:** frames shall be fixed up right in plumb. To avoid sag or bow in width during fixing or during construction phase, temporary struts across the width preventing sides bulging inward may be provided. Wall shall be built solid on each side and grouted at each course to ensure solid contact with frame leaving no voids behind the frame. The Hollow frame section shall be filled with CC (1:2:4) using 20mm grade HBG metal. Three lugs shall be provided on each jamb with spacing not more than 75 cm. The temporary struts should not be removed till the masonry behind the frame is set. In case screwed base tie is provided, this should be left in position till the flooring is laid when it can be removed. After pretreatment of the surface, one coat of steel primer and two coats, of paint, as directed by the Engineer-in-charge shall be applied to the exposed surface.

5.54 **Flush shutters for doors:**

5.54.1 **Flush shutters (Double/Single) :**should be factory made ISI marked confirming to IS 2202-1991 (part-I), 35mm thick with bond wood solid block board type core having cross bonds and face veneers hot pressed bonded with water proof phenol formaldehyde synthetic resin, with lipping on all sides.

5.55 **Construction:** The block board core shall confirm to the requirements specified in clause 7.1.1. of **IS** 2202 (Part I) : 1991. The frame constructed of stiles and rails shall be provided for holding the core. The width of the frame including internal lipping shall not be less than 45 mm and not more than 75 mm.

5.56.1 **Plywood:** used in flush door shutter shall confirm to IS 710 : 1976 with surface requirements confirming to type AB of IS 303 : 1989.

5.56.2 Cross-bands used in flush door shutter shall confirm to the requirements laid down in IS 710:1976.

5.57.1 **Face Veneers:** used in flush door shutters shall confirm tot he requirements laid down for veneer for BWP grade plywood in IS 710:1976.

5.57.2 All Plywood, cross – boards and veneer used shall be treated in accordance with clause 6.1.5.1. of IS 2202 (Part I) : 1991.

5.57.3 Adhesive used for bonding plywood or cross bond and face veneer to core shall be phenol formal dehyde synthetic resin adhesive confirming to BWP grade specified in IS 949:1974.

5.57.4 Internal lipping shall be of Teak wood and shall have a total depth not less than 25mm. It may be provided separately, when it is of species different from that of backing or as one piece with the style, designated as frame-cum-lipping, when internal lipping and backing are of the same species.

5.57.5 External lipping shall be of teak wood and shall be solid and shall measure at least 6mm on the face of the door. It shall be provided all round the shutter in case of single shutter and on three sides in case of double shutter.

5.57.6 In case of double leaved shutters, the sheeting of the stiles shall be rebated by 8mm to 10mm. The rebating shall be either splayed or square type as per clause 7.7 of IS 2202 (Part – I) : 1991. The depth of lipping at the meeting of stiles shall not be less than 30mm.

5.57.7 Shutter shall be shop prepared for taking mortise locks or latches as may be ordered.

5.57.8 Workmanship and the finish of the face panels shall be in confirmity with those specified in IS 303:1989

5.58 **Tests :**Knife test, glue Adhesion test, End Immersion test, slamming test shall be carried out as per clause 10 of IS 2202 (Part – I) 1991. The sampling and criteria for conformity, making etc. shall also be as per IS 2202 (Part – I) : 1991.

5.59 **Windows**

5.59.1 **Seccolar Systems**

a. Windows / Ventilator

Windows / Ventilators fabricated from pre painted Steel Sections, made out of cold rolled steel as per ISD 513 of 0.6mm thick 'D' quality, galvanized as per IS 277 with sinc of 120 gm/sq.mtr.

Primer Coat of Epoxy Primer of 7 microns thick, finish paint with a modified polyster paint of thickness between 13 – 20 microns, and back coat with Alkyd/Polyster of 7-12 microns. The size of profiles is approximately 56 x 46mm for internal shutter frames and 46 x 52mm for External shutter frames. Shutter in fitted with 4mm thick plain/pinheaded glass fixed with EPDM gaskets in the groove provided in the profile.

b. Doors

Doors fabricated from Pre-Painted Steel Sections, made out of Cold Rolled Steel as per IS 513 of 0.6mm thick 'D' quality, galvanized as per IS 277 with zinc of 120gm/se.mtr. Primer Coat of Epoxy Primer of 7 microns thick, finish paint with a modified polyster paint of thickness between 13-20 microns, and back coat with Alkyd/Polyster of 7-12 microns. The size of profiles is approximately 46 x 46mm for Internal Shutter frames and 46 x 52mm for External Shutter frames, middle and bottom jambs of size 23 x 130mm and panels filled with Glass/Board.

5.60 ALLUMINUM DOORS, WINDOW & VENTILATORS:

(i) Aluminium doors, windows and ventilators: All extruded aluminium section to be used for fabrication shall be hollow aluminium alloy extrusions confirming to designation 63400 of IS: 1285. Aluminium Doors, Windows and Ventilators shall confirm to IS 1948:1961

(ii) All extruded aluminium sections and fixtures shall be coated with natural colour anodic coating in accordance with IS 1868.

(iii) The mortice locks shall be provided in accordance with IS 2209.

(iv) The floors springs (hydraulically regulated) shall be in accordance with IS 6315:1992.

5.61 **Q.C. Clearance**: The doors & windows (both frames & shutters) and ventilators should be got cleared by the Engineer / Quality Control agency authorised by the Engineer-in-Chief. The tests will be conducted at the manufacturer's place and Q.C. clearance certificate will be issued for the lot before supply to site for use in construction. All the arrangements for testing at the manufacturer's place should be made by the contractor at his cost. No door, window or ventilator should be fixed without clearance of Engineer/ Q.C. agency. The contractor should inform the Engineer/Q.C. agency for testing and clearing at least 7 days in advance.

6.0 ADDITIONAL SPECIFICATIONS:

6.1 Anti Termite Treatment

If the site is infected with white ants, all the ant hills shall be dug out completely and queen ants destroyed. Anti-termite treatment, before construction in foundation and basement where required shall be done as per I.S. code 6313 Part II 2001.

Chemicals used, the relevant I.S. specifications for the same and their usual concentrations as water emulsions for soil treatment shall be as given in table 201.9 of S.S. 201 APSS.

6.2 **Structural Glazing:**

The structural glazing shall be made up of electro colour anodized (having 15 micron anodic coating) aluminium structural sections of not less than 101.5 x 57 x 2 mm box sections for all mullions and not less than 63 x 57 x 2 mm box section for all transoms of structural glazing

system and sub frame of 26.5 x 20 x 1.8 mm size. The members shall be fixed in grid pattern mechanically joined with Aluminium cleats and GI metal screws. The frame shall be fixed to the beam / slab/ soffit with GI brackets and fasteners. Glazed panels shall be made using 5 mm thick heat strengthened reflective glass of St.Gobain / Glaverbel / Equivalent make fixed to the sub frame with 6 x 12mm spacer tapes of Norton make or equivalent and structural silicone bonding using G.E. SILICONE (SSG 4000) or DOW CORNING (795). The gaps between glazed panels shall be sealed with suitable Bakor rod and Silicon weather sealant of GE / DOW CORNING are to be applied to provide water tightness of glazing frame. Necessary masking tapes are to be used to prevent spreading of sealant over glass panels.

6.3 ACP Cladding:

The Aluminium wall cladding shall be fabricated with a minimum of 4mm thick Aluminium composite panel of approved make comprising of thermoplastic resin core sandwiched between two skins of 0.25mm thick aluminium alloy. The panel shall be PVDF coated to minimum 35-micron thickness of approved metallic colour. The resin content pf PVDF shall be 75% to 80%. The back of the panel shall be chromatised 3 -4 microns. The Aluminium composite panel shall be mounted on frames made of 50 x 25 x 1.5 mm aluminium extruded tubes fixed to the column / beams / walls with Anchor bolts, screws and GI brackets and fasteners wherever required.

6.4 Aluminium Louvers:

Supply and fixing of powder coated (approved shade) Aluminium Louvers, using 63 x 37 x 1.5mm, Aluminium box section for main frame, the aluminium louver blades of size 103 x 50 x 1.5 mm thick shall be fixed to the main frame using G.I sheet metal screw as shown in the drawing. The spacing between the each louver blade shall be 75 mm.

6.5 Blasting Operations

Blasting operations when considered necessary shall be resorted to only with written permission of the Engineer-in-charge. Where blasting is resorted to only small charges

shall be used. Prior inspection shall be carried out for the safety and stability of the public property. Blasting operations in the proximity of over head power lines, communication lines, or other structures shall not be carried until the operator or the owner of both of such lines have been notified and precautionary measures deemed necessary shall be taken as per the procedure laid down in S.S. No. 203 APSS and code 4081-1986 shall be followed.

Excavation in Hard rocky chiseling:

This includes rock which is easily excavated by blasting, but due to close proximity of structures or any other reason that the Engineer-in-charge may consider, will have to be excavated by chiseling.

The contractor may resort to any of the following methods to excavated rock by chiseling:

(i) Wedging by means of crowbars, pick axes or pneumatic drills

(ii) Heating and quenching

(iii) Controlled blasting with a small charge just sufficient to make a crack in rock which will be subsequently removed by wedging.

No extra payment shall be made for removal of rock by chiseling and controlled blasting.

6.6 a) Expansion Joints

Structures in which marked changes in plan dimension take place abruptly shall be provided with expansion joint at the section where such changes occur. Expansion joint shall be so provided that the necessary movement occurs with a minimum resistance at the joint. The structures adjacent should preferably supported on separate columns of walls but not necessarily on separate foundations reinforcement shall not extend across an expansion joint and the break between the sections shall be complete. The details as to the length of a structure where expansion joints have to be provided can be determined after taking into consideration various factors such as temperature exposure to weather etc. For the purpose of general guidance however it is recommended that structure exceeding 45M in level to shall be decided by one or more expansion joints (SS No. 403.8 & IS 456).

b) **Construction Joints**

Vertical joints in floor and roof slabs shall be provided in the case of long building of more than 30M in length specially when the width or depth of such buildings are less than 15M and when narrow corridors connect blocks of relatively greater width. The most suitable position for such vertical joints are where the corridors take off from inner blocks. On soils such as black Vice Chairman and Managing Director, TGFDC Ltdton, such joints are more essential shall be invariably provided at the places shown in the drawing or as directed by the Engineer-in-charge. Construction joints when necessary shall be located as follows.

In the main beam over the centre of support. No vertical joint shall be permitted in case of main beams. In other cases they shall be provided if necessary in the following location.

i) In subsidiary beams at mid span.

ii) In the case of slabs the joints wherever possible shall be parallel to main reinforcement. In the case of one way reinforced slabs and over the centre of supporting beams or walls in other cases. In general the joints shall not be provided in locations of considerable shear or under concentrated loads.

Suitable water stops as specified shall be provided in the case of water retain structures (SS No. 403.7).

6.7 Bearings of R.C.C. Slabs & Beams.

a) Where supports are not monolithic with the beam or slab the bearing surface shall be plastered with cement mortar 1:3 with the craft paper laid over the plaster, before laying the concrete.

b) The vertical face of the masonry rebate at bearings shall be plastered smooth with CM 1:3. For beams the craft paper shall be continued to the sides by folding the paper neatly to the plastered vertical face of the masonry opening.

6.8 Load testing of structures

Load testing of structures shall conform to SS No. 403 APSS. Load tests on completed structures shall be made of required by the specifications or condition of contract or by the Engineer-in-Charge in the event of reasonable doubt as to the adequacy of the strength of the structure. Such tests shall be carried out after expiry of 56 days of effective hardening of the concrete test loading of structures, allowable deflections, recovery of deflection etc., shall be as per clause 17.6 of IS: 456-2000.

6.9 OVERHEAD TANKS

6.9.1 The tenderer shall be solely responsible for handing over a watertight structure. Failing which, he will not be entitled to final payment under this contract. The period of guarantee required for the contract, before which he will not be entitled to final payment under this contract, shall be two years after completion of the reservoir and putting in into commission and-during this period the structure under full working head of water shall neither develop any defects which will endanger its stability nor shall it show signs of leakage. The above guarantee period of two years shall commence from the date of first filling of the reservoir with water upto the maximum water level.

6.9.2 Cash security to the value of 5 (five) percent of each bill will be recovered from payments due to be made to the contractor and credited to deposits. These deposits together with earnest money arid security deposit required under the terms of the contract will be retained till the expiry of the guarantee period and until a certificate of soundness of the structure is furnished by the Engineer-in-charge. The whole of the above sum together with any recovery, from the payment already made, as may be assessed by the Engineer-in-charge shall be forfeited to the Corporation if the reservoir developed leaks. The above percentage recovery shall be exclusive of the amount with-held under Clause 68 of Preliminary Specifications to the APSS.

6.9.3 The work shall be executed according to the standard specifications for the reinforced concrete given in APSS and relevant Indian Standard No. IS:3370 parts I, II and IV and also the notes on reinforced concrete, contained therein, subject however to the modifications indicated hereunder. All concrete shall be mixed in power or diesel driven concrete mixers and placed in such a manner so as to prevent segregation of heavy aggregate. It is absolutely essential that most careful attention is to be paid by the contractor in preparation, mixing and placing to secure a dense concrete necessary for water tight structure. Special care is necessary at expansion joints, where 6" wide Rubber water stopper is to be inserted and all construction joints shall be treated as stipulated in IS:3370 part I to ensure water tightness. The amount of water required to produce the least shrinkage effects should be carefully gauged. The clear cover of reinforcement rods shall confirm to those specified in IS:3370 Part II.

6.9.4 The contractor should be prepared to arrange on his own responsibility sufficient number of concrete mixers and vibrators as may be required. Test cubes' should be

taken and got tested periodically at the expense of the contractor and the results shall confirm to IS:456-1964. No patent water proofing compound shall be mixed in concrete, nor applied to the surface nor shall plastering be done to the interior of the reservoir as those are liable to give defective results on the life and water tightness of the reservoir.

6.9.5 All faces of the reservoir interior, and sub-structures shall be free from honey-combing and shall present a smooth dense surface and shall be free from work ridges and shall be given cement wash to improve the appearance. If any honey combing is seen on the finished surface of the concrete, it shall be rectified by gunting at the contractor's expense.

6.9.6 Testing and Inspection of Tanks:
After the tank is constructed, it shall be filled gradually with potable water. During testing, lime or sodium silicate or any other chemical shall be added to the water. After filling the water upto full supply level (Le. MWL) of the tank, it is maintained for seven days initially. After this initial period, the fall in the water level shall be obtained at every 24 hours interval for a further period of seven days.

The average loss of water in 24 hours shall not exceed the following:

a)0.1% of the capacity of tank
b) 5mm fall in the level

c) 2 Litres per Sq. Metre of the water contact area.

6.9.7 Additional allowance upto 0.5mm fall in level may be made for high exported loss in summer depending upon the local conditions. Records shall be kept of leaks, if any, at different levels of water.

6.9.8 If the water tightness test is still found to be not satisfactory the contractor shall be required to carryout tests to localise the leakages at his cost.

The contractor shall then be required to take such measures as the Engineer-in-Charge specify to make the structure water tight to the extent described. Entire rectification work shall be at the contractor's cost. All the arrangements required for testing shall be at the contractor's cost. Payment will be made at the quoted rate only after conducting water tightness test successfully however subject to operation of condition.

7.0 Safety Specification:

7.0.1 All the necessary safety appliances as per IS: 4130 shall be issued to the workers and their use explained. It shall be ensured that the workers are using all the safety appliances while at work.

7.0.2 Walkways and passageways shall be provided for the use of the workman who shall be instructed to use them and all such walkways and passageways shall be kept adequately lighted, free from debris and other materials.

7.0.3 During night, red lights shall be placed on or about all the barricades.

7.0.4 All the roads and open area adjacent to the work site shall either be closed or suitably protected.

7.0.5 All nails in any kind of lumber shall be withdrawn, hammered or bent over as soon as such lumber is removed from the structure and placed in pipes for future cleaning or burning.

7.0.6 No electric cable or apparatus which is liable to be a source of danger or a cable or apparatus used by the operator shall remain electricity charged.

7.0.7 Where in any work of demolition it is imperative, because of danger existing to ensure that no unauthorized person shall enter the site of demolition outside working hours, a watchman should be employed. In addition to watching the site, he shall also be responsible for maintaining all notices, lights and barricades.

7.0.8 On every demolition job, danger signs shall be conspicuously posted all-round the structure and all door openings giving access to structure shall be barricaded or marked except during the movement of actual workmen or equipment. However provision shall be made for at least two independent exits for escape of workmen during any emergency.

7.0.9 The removal of a member may weaken the side wall of an adjoining structure and to prevent possible damage, these walls shall be supported until such time as permanent protection is provided. In case any danger is anticipated to the adjoining structure the same shall be got vacated to avoid any danger to human life.

7.0.10 The power on all electrical service lines shall be shut off and all such lines cut or disconnected at or outside the property line, before the demolition work is started. Prior to cutting of such lines the necessary approval shall be obtained from the electrical authorities concerned for demolition work itself.

7.0.11 All gas, water, steam and other service lines shall be shut off and capped or otherwise controlled at or outside the building line, before demolition work is started.

7.0.12 All the mains and meters of the building shall be removed or protected from damage.

7.0.13 If a structure to be demolished has been partially wrecked by fire, explosion or other catastrophe, the walls and damaged roofs shall be shored or braced suitably.

7.0.14 All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris.

8.0 Structural Steel work:

Fabrication and application of primer and sand blasting, erection in position structural steel works in built up sections, rolled steel sections. Painting works for the structural steel (measured on weight of fabricated steel) Make SAIL/TATA including 2 coats of primer , 2 coats of epoxy paint of Asian or any approved make.

- For YST Gr. 450 Mpa
- For YST Gr. 310 Mpa

9.0 Stainless Steel Cladding:

Stainless steel cladding for complete structure and lamp area using 304 grade-18 guage, Brushed finish fixed onto the MS structure with suitable Rubber membrane of 10mm thickness on rear side of SS sheet along with High Pressure Laminate sheet of 6mm thickness to avoid the crackling sound and improve the overall performance of the structure in long run. SS cladding panels shall be formed to lap and interconnect with edges of adjacent panels which are then mechanically attached through Brass strip T angles of minimum 3mm x 10mm between the grooves of SS sheets and give a seamless finish with complete installation, all necessary hardwares and labour costs. The complete work shall be approved by the concerned Structural Engineer or Architect and item includes scaffolding at all heights. Make: JSW/SAIL or equivalent prime producers / manufacturers**.**

TECHNICAL SPECIFICATIONS
SANITARY AND WATER SUPPLY

STANDARD SPECIFICATION FOR BUILDING WORK (AS PER A.P.S.S.)

All the items of work shall be executed as per the Standard Specifications laid down in APSS, the relevant I.S Codes of the Special Specification as indicated in Schedule - 'A' of the tender

Sl. No.	Name of the specification	Specification No.of.APSS
13.	**SANITORY WORKS AND ROOF PLUMBING**	
13.01	Stoneware pipes and fittings	1301
13.02	Cast iron pipes & special castings for water & Sewage	1302
13.03	Galvanised mild Steel Pipes & Fittings	1303
13.04	Concrete & pre-stressed Concrete Pipes & Collars	1304
13.05	Asbestos Cement Pressure Pipes & Fittings	1305
13.06	Unplasticised (Rigid) PVC pipes and fittings for potable water supplies	1306
13.07	Polyethylene pipes and fittings for potable water supplies	1307
13.08	Cast iron manhole covers & frames intended for use in drainage works	1308
13.09	C.I. Surface boxes for sluice valves, fire hydrants and air valves	1309
13.10	C.I. Grating for drainage works	1310
13.11	Sheet metal rain Water Pipes, gutters, fitting & accessories	1311
13.12	C.I. Rain water pipes and fittings	1312
13.13	Asbestos cement rain water pipes, gutters and fittings (spigot and socket type)	1313
13.14	Asbestos cement soil, waste and ventilating pipes and fittings	1314
13.15	C.I. Soil, waste and ventilating pipes & fittings	1315
13.16	Handling, transport and custody of pipes, fittings valves etc.	1316
13.17	Trench work excavation and back filling	1317
13.18	Laying and Jointing of glazed stoneware pipes and fittings	1318
13.19	Laying & Jointing of C.I. pipes, fittings & fixing accessories	1319
13.20	Laying & Jointing of Galvanised mild steel pipes & fittings	1320
13.21	Laying & jointing of cement pipes	1321
13.22	Laying & jointing of AC pressure pipes & fittings	1322
13.23	Laying & jointing of Unplasticised (Rigid) PVC pipes and fittings for potable water supplies	1323
13.24	Disinfection of water mains before commissioning	1324
13.25	Construction of manholes, flush tanks & other masonry works on sewers	1325
13.26	Fixing and Plumbing of sanitary fittings	1326
13.27	House Drains Connection – Construction	1327
13.28	fixing of rain water gutters & down take pipes for roof drainage	1328

1.0 DRAINAGE, SEWERAGE, WATER SUPPLY, PLUMBING ETC.

1.01 General

1.01.1 All water supply, drainage and sanitary work shall be executed by a licenced or authorised plumbing supervisor or licenced or authorised plumber and shall be in accordance with the requirements of relevant bye-laws of-municipal or other authorities in whose jurisdiction the work is being carried out.

1.01.2 All items such as earthwork excavation, concrete, brick work, stone work, painting, etc., relevant specifications for those shall apply unless otherwise specified.

1.01.3 Unless otherwise specified, all exposed work such as cisterns, brackets etc., shall be painted with synthetic enamel paint of approved colour in two coats over a priming coat.

1.01.4 The diameter of pipes and fittings wherever mentioned shall mean the internal diameter of nominal bore unless otherwise specified.

1.01.5 The job shall include the cost of making necessary chases, grooves, holes etc, in walls, floors and in other places and also making good or completion of the works. ANY DAMAGE caused to floors, walls etc., during the execution of the sanitary and plumbing works shall be made good by the Contractor at his own cost to the satisfaction of the Engineer-in-charge.

1.01.6 All the water supply and sanitary connections are to be tested against leakage and satisfactory performance based on standard tests before they are fixed.

Codes and Standards

SCHEDULE -C

LIST OF SPECIFICATIONS FOR THE VARIOUS ITEMS OF WORKS SUPPLEMENTING THOSE DESCRIBED IN SCHEDULE 'A' BY S.S. NUMBERS

GENERAL SPECIFICATIONS

Sl.No.		Description	IS.No. and as amended from time to time
A)	**LIST OF INDIAN STANDARDS**		
I.	**PIPES & FITTINGS FOR SANITARY, PLUMBING, DRAINAGE**		
	1	Lead Pipe	IS 404:1993
	2	Lead sheet	IS 405:1992
	3	Pre-cast Concrete pipes with or without reinforcement – Specifications	IS 458:2003
	4	Specification for Salt-glazed stone ware pipe and fittings	IS 651:1992
	5	Method of test for concrete pipes.	IS 3597:1998
	6	Specification for Caulking lead.	IS 782:1978
	7	Centrifugally cast (spun) iron pressure pipes for water, gas and sewage.	IS 1536:2001
	8	Vertically cast iron pressure pipes for water, gas and sewage.	IS 1537:1976
	9	Cast iron fittings for pressure pipes for water, gas and sewage	IS 1538:1993
	10	Specifications for Centrifugally Cast (Spun) Ductile Iron Pipes for Water, Gas and Sewage	IS 8329:2000
	11	Specification for high density polyethylene pipes for potable water supplies.	IS 4984:1995
	12	Mild steel tubes and tubulars.	IS 1239
	13	Specification for Chemically resistant salt-glazed stone ware pipe and fittings.	IS 3006:1979
II	**WATER SUPPLY FITTINGS**		
	1	Specification for Pillar taps for water supply purpose	IS 1795:1982
	2	Specification for Plug cocks for water supply	IS 3004:1979
	3	Washers for use with fittings for cold water services.	IS 4346:1982
	4	Specification for Self closing taps for water supply	IS 1711:1984
	5	Specification for cast copper alloy screw down bib taps and stop valves for water services.	IS 781:1984
	6	Water meter boxes domestic type.	IS 2104:1981
	7	Water fittings - Copper alloy float valves (horizontal plunger type) - Specification	IS 1703:2000
	8	Specification for copper alloy gate, globe and check valves for water works purposes .	IS 778-1984

III	**SANITARY FITTINGS**		
	1	Vitreous sanitary appliances (Vitreous china)	IS:2556
	2	Specification for Glazed fire clay sanitary appliances.	IS 771: 1979
	3	Flushing cistern for water closets and urinals.	IS 774:2004
	4	Brackets and supports for wash basins and sinks	IS 775:1970
	5	Wooden water closet seats and covers.	IS 776:1962
	6	Plastic seats and covers for water closets	IS 2548:1996
	7	Waste plug and its accessories for sinks and wash basins.	IS 3311:1979
	8	Non ferrous waste fittings for wash basin and sink.	IS 2963:1979
IV	**LAYING OF PIPES**		
	1	Code of practice for water supply in buildings.	IS 2065:1983
	2	Code of practice for building drainage.	IS 1742:1983
	3	Code of practice for laying of cast iron pipes.	IS 3114:1994
	4	Code of practice for laying of glazed stone-ware pipes.	IS 4127:1983
	5	Laying and jointing of polyethylene pipes and PVC pipes parts- I to III	IS 7634:
	6	Laying of D.I pipes	IS 3114:1965
	7	Code of practice for laying concrete pipes.	IS 783 :1985
V	**ROOF DRAINAGE SYSTEM**		
	1	Cast iron rain water pipes and fittings.	IS:1230:1979
	2	Specification for Asbestos cement building pipes, gutters and fittings (spigot and socket type)	IS 1626:1994
	3	Cast iron/Ductile iron drainage pipes and fittings	IS 1729:2002
	3	Specification for Centrifugally cast (spun) iron spigot and socket soil, waste and ventilating pipes, fittings and accessories.	IS 3989:1984
	4	Code of practice for fixing rainwater gutters and down pipes for drainage.	IS 2527:1984
	5	Code of practice for building drainage.	IS 1742:1983
VI	**TANKS/ MANHOLE COVERS / MISC.**		
	1	Rectangular pressed steel tanks.	IS 804 :1967
	2	Code of practice for design and construction of septic tank	IS 2470:1985
	3	Specifications for Cast iron manhole covers and frames	IS 1726:1991

Note:- The above I.S specifications mean latest over and above with amendments if any.

1.02 **Materials:** Materials, fittings and appliances for sanitary and plumbing work, used in the work shall be as specified in the Bill of quantities. The contractor shall submit to the Engineer-in-charge, samples of all materials, fittings and appliances for approval well in advance before starting the work. All materials, fittings and appliances used in the work shall confirm to the approved samples.

1.02.1 **Galvanised pipes and fittings**: -Galvanised steel pipe, fittings and accessories shall be of tested quality and shall confirm to IS: 1239 - (Part-I) 1968.

1.02.2 **Lead Pipe**:- Lead pipes shall confirm to IS:404 Weight and thickness of pipes shall be indicated in the drawings or in the Bill of quantities.

1.02.3 **Lead sheets**: Sheet lead for finishing shall weight at least 30 Kgs. per sq.m. unless specified otherwise and shall confirm IS:405.

Bottle trap shall be of approved quality heavy brass chromium plated trap and made particularly smooth on the inside and shall have minimum 50 mm water seal and cleaning screw at bottom.

1.02.4 **Lead trap**; Lead traps shall be of the same weight and thickness for lead pipes. Lead traps wherever provided hall have minimum 50 mm water seal and cleaning screw at bottom. Traps shall be connected to wasted pipes with brass cap and lining of required sizes and wiped solder joints.

1.02.5 **High density polythelene pipes and fittings**: High density polythelene pipes and fittings shall be of tested quality and shall confirm to IS:4984-1972 and IS: 8008

1.02.6 **Cast iron pipes and accessories**: Cast iron pipes with sockets spigots ends shall confirm to IS:1230 and IS:1729.

1.02.7 IS:8008 : Specification for injection moulded HDPE (Part I to IV) fittings for potable water supplies.

1.02.8 **Manhole covers**: Manhole covers shall confirm to IS: 1726.

1.02.9 **Concrete pipes**: Concrete pipes shall be non-pressure type and shall confirm to IS: 458 and the type of joints shall be as indicated in the drawings.

1.02.10 **Salt-glazed stoneware pipe**: Salt glazed pipe shall conform to IS: 651 and IS: 4006.

1.02.11 **Sanitary appliances and non-ferrous fittings**: All sanitary appliances and non-ferrous fittings shall be of tested quality and shall confirm to the relevant Indian Standards.

1.03 Joints

1.03.1 **Cast iron Pipes**: The type of jointing for CI pipes confirming to IS: 1729 shall be socket and spigot either with molten lead wool and gasket confirming to IS: 782.

If the joints used are spigot and socket types, the spigot shall be careful centered in the socket by one or more pieces of clean white hemp/spun yarn with about 25mm overlap; sufficient yarn only shall be forced into the socket to leave a correct depth for lead caulking. The pipe shall then be examined again for line and level and the proper depth of each joint shall be tested before running the molten lead. For pouring of molten lead of ring of hemp rope shall be wrapped round the pipe

at the end of the socket and the joint shall be covered with stiff damp clay. The rope shall then be removed carefully leaving V shaped large hole at the top of the joint to pour the molten lead. Lead shall be poured in one operation only. After a section of convenient length of pipe has been laid, lead shall be caulked sufficiently with caulking tools and hand hammer till the excess lead is removed and the joint shall be made neat and clean.

The type of jointing CI pipes conforming to IS: 1230 shall be socket and spigot with cement and sand. mortar (1 : 1) and gasket yarn.

The spigot shall be carefully inserted and centered in the socket by and or more pieces of thick clean hemp/spun yarn and shall be forced into the socket to leave a correct depth of 30 mm around for cement mortar. The pipe shall then be examined again for line and level and the proper depth of each joint shall be tested before inserting the cement mortar. The joints shall then be adequately carefully filled with stiff cement and sand mortar (1: 1) and the joints shall be levelled to the edge of the socket. Each joint shall be adequately cured by covering with wet clothes and pouring water at frequent intervals.

The parking ring or washer for the flanged joints shall be rubbed for the full diameter of the flange with proper pipe hole and the holes cut out suitably. The packing shall be smeared with graphite paste or a mixture of red lead and white lead and shall be introduced between the flanges of both the pipes and nuts tight in opposite pairs keeping the longitudinal axes adjoining pipe lines in exactly the same straight line. Lead washers shall be provided along with bolt, to prevent any leakage through bolt holes.

1.03.2 **Stoneware pipes:** The type of jointing for stoneware pipes shall be socket and spigot as indicated on the drawings. The inside of the socket shall be first painted with a layer of cement mortar (1 :2) and a gasket of yarn dipped in cement slurry shall be inserted in the socket of the pipe with in wooden caulking tool and wooden mallet in such a way that the gasket shall fully enRural Region the spigot with a slight overlap. When the spigot end received the gasket, it shall be wrapped round with two or three turns of treated spun yarn its end before being inserted into the sockets. The rest of the joint shall be then completely filled with cement sand mortar (1 : 1) having very little water and the joint shall be leveled to form a smooth splayed; filled at the angle of 45 degree. All excess of cement mortar left inside the pipe joint shall be neatly cleaned off and the joint shall be adequately cured by covering with gunny bags and pouring water at frequent intervals. In jointing stoneware pipes, care shall be taken that the pipes and kept concentric and the socket especially on the under side, shall be completely filled with cement mortar. Where settlement of earth is envisaged, the joint shall be made with bitumenastic filler or any other materials as approved by the Engineer-in-charge.

1.03.3 **Concrete Pipes:** The type of jointing for concrete pipes shall be with loose concrete collars and the joints shall be packed from other side with spun yarn dipped in cement slurry as specified for jointing stoneware pipes; stiff cement mortar (1: 1) shall be filled from both sides and splayed at an angle of 45 degree on both side, the joints shall be adequately cured as specified for joints in stoneware pipes.

1.04 Laying of pipes :

1.04.1 Cast iron pipes: The laying of cast iron pipe lines shall commence only after the bottom of the trench at various points have been levelled and aligned in accordance with the drawings. The sides of the trenches shall be vertical as far as possible and the width of the bottom shall be 300 mm wider than the diameter of the pipe. Where joints are made, the trench shall be widened suitable to provide room for caulking joints. Shorting and Timbering shall not be used without prior approval of the Engineer. For pipes buried in the ground, the Contractor shall take care to

maintain always the minimum cushion of earth over the pipes as indicated in the drawings. All pipes, Water mains, cables etc met within the course of excavation shall be carefully protected and supported. All pipes and fittings shall be sounded with a light hammer and checked properly to detect any crack or blow holes before laying. The excavated materials shall be thrown on one side of the trench and the pipes stacked on the other side.

The inside of the socket and the outside of spigot shall be thoroughly cleaned of all foreign matter before laying. The pipes shall be laid with their socket ends facing the directions of the flow. The pipes shall then be lowered in the trenches by a method as approved by the Engineer. The pipes shall then be jointed by caulking as specified in

clause 8.01.15. After each section of the pipeline has been laid it shall be tested for water tightness before back filling the trench. On successful completion of testing, the trench shall be backfilled with the excavated earth in layer of200 mm and shall be watered and rammed. Any subsidence accruing in the line of branches after backfilling shall be repaired by the contractor at his own cost. Where the pipe lines cross roads, the sides of the trenches shall be suitably shored.

1.04.2 **Concrete pipes:** The laying of concrete pipelines shall conform to clause 9 of IS:783. Pipes shall be laid true to line and grade. Laying of pipes shall always proceed upgrade of a slope.

1.04.3 **Stoneware pipes:** The laying of stoneware pipeline shall commence only after the bottom of the trench at various points have been levelled as shown in the drawings. The centre line of the trench shall be first marked out on the ground and shall be excavated correct to depth, slope and width at all points. The pipes shall be carefully laid to the alignment, levels and gradients as shown on the drawings. The trench shall be excavated wide enough under the sockets to allow hands to pass for making joints. The pipes between manholes shall be laid truly in straight lines and without any vertical or horizontal deviations on a bed of concrete as shown in the drawings. While laying pipes, portion of concrete under each socket shall be dug and taken off so that the barrel of the pipe gets full support on the concrete bed. Pipes shall be launched with concrete tangentially upto the crown of the diameter of the pipe as shown on the drawing. When it crosses under a road, the pipes shall be fully encased in concrete as shown on drawings. The contractor shall take precautions to maintain always a minimum cushion of earth over the pipes as indicated in the drawings. All pipes shall be carefully examined with a light hammer for soundness before laying. After each section of the pipeline has been laid, the joints hall be allowed to sit properly and shall be inspected and carried out only after approval of the Engineer. After testing, the trench shall be back filled with selected earth in layers of 200 mm and shall be watered and thoroughly rammed all pipes, water mains, cables etc. met within the course of excavation shall be carefully protected and supported.

When the pipelines cross roads, the trenches shall have vertical sides with suitable shoring. Any subsidence in the line of trenches after backfilling shall be repaired by the contractor at his own cost.

1.04.4 **Cast iron rain water pipes:**

Cast iron rainwater pipes shall confirm to IS:1230 and IS: 1729 and shall be installed as shown in the drawings.

Cast iron rainwater pipes fixed exposed to external walls shall confirm to IS: 1230 and shall be blocked out at least 20 mm from the plastered surface by means of cast iron bobbing. The rain water pipes at the roof level shall be fitted with a cast iron band with a masonry bell mouth of suitable size fitted with a cast iron grating. The bottom of the down pipe shall be fitted with a shoe fixed 150mm above ground / apron level of the building as shown on the drawings. The sockets spigots of pipes and fittings shall be joined as specified in clause 8.01.15.

Cast iron rainwater pipes embedded in concrete or masonry shall confirm to IS: 1729 and shall be securely fixed to wall with wooden plugs and nails. Joints of the sockets and spigots of pipes and fittings shall be as specified in clause 8.01.15.

1.05 Inspection pits and trap pits:

Construction of pits shall commence only after the pipes have been laid in position to true line and levels as shown on the drawings to the satisfaction of the Engineer.

Inspection Pits: Inspection pits shall be constructed as indicated in the drawings/bill of quantities. Unless otherwise specified, all inspection pits shall be constructed with rubble masonry in cement mortar (1 :4). Half round channels of size suitable for the inlet and outlet pipe diameter shall be formed on the floor of the pit with M-10. The floor on the pit shall be haunched towards the channel as shown in the drawings. Inside pits shall be finished with cement sand plaster as specified in the specification and finished smooth with cement punning. Care shall be taken to avoid invert level after finishing and shall be as shown in drawings and/or as directed by the Engineer.

Inspection/master trap pits: The pits for the glazed stoneware master trap shall be constructed as indicated in the drawings/bill of quantities. The construction and finishing of the pit shall be haunched towards the interception/master trap pits. Gully trap pits shall be constructed as indicated in the drawings/bills of quantities. The construction and finishing of the pit shall be as described in specification for inspection pit. The cast iron grating shall be set flush with the finished ground/ apron level.

1.06 Testing of Cast Iron Soil and Waste Pipelines:

On completion of laying the cast iron soil waste and ventilation pipeline shall be tested by the contractor at his own cost and to detect leakage and any other defects in the pipe line.

Test shall be conducted using proper apparatus with attachments for smoke making machine for applying smoke to the pipelines under pressure, jute Vice Chairman and Managing Director, TGFDC Ltdton waste or brown paper soaked in creosote oil shall be used and fixed to obtain dense and pungent smoke. While conducting smoke test top of soil waste and ventilation pipes shall be kept open till smoke starts coming out of openings. The opening shall then be surely plugged with expanding rubber, traps and other openings for connecting sanitary fixtures shall be sealed with water or other approved plugs. The entire pipeline shall be tested in suitable sections as directed by the Engineer. The entire length of the pipelines including all joints under test shall be closely observed for any sign of smoke leakage. All leakage and defects shall be rectified by the contractor to the satisfaction of the Engineer.

1.07 Testing of underground Sewer lines:

The drainage system shall be tested in accordance with the provisions of IS: 1742. All defects and deficiencies detected during the watch shall be promptly rectified by the contractor to the satisfaction of the Engineer.

2.0 WATER SUPPLY:

2.01 Jointing and laying of galvanised steel water supply pipes:

2.01.1 Screwed galvanised steel pipes, conforming is IS: 1239 shall be jointed with screwed socket joints and screwed fittings of the same materials as that of the pipes. Any burrs remaining on the pipes and after the threads are cut shall be removed. An approved jointing compound together with a grumet of a few stands of fine yarn shall be used for jointing pipes and fittings. Any pipe

threads exposed after jointing shall be painted with white synthetic enamel paint and in the case of under ground piping, thickly coated with approved bituminous compound to prevent corrosion.

2.01.2 The depth at which the underground water supply pipe is to be laid shall be as shown in the drawings. The service pipe passing into or beneath the building shall be laid at least 200mm below the ground floor level and accommodate in a previously laid sleeve in the structure where it enters the building. The space between the sleeve and the pipe as its entry into the exit from the building shall be filled with bituminous materials for a minimum of 150mm at both ends. Piping shall not be buried in walls or floors as far as

possible. However when unavoidable, piping shall be buried for the shortest distance necessary and adequate protection shall be provided against damage.

2.01.3 Galvanised steel piping shall be secured by iron or steel clamps and hooks when fixed on walls. All pipe work shall be completely water tight and the joints shall be such that there are no projections of jointing materials or the like in the interior of pipes. Before the pipeline is commissioned, all piping and fittings shall be flushed clean

2.01.4 **Testing:** After the laying and fixing of all galvanised steel water supply pipes and fittings are completed the line shall be slowly and carefully charged with water to a test pressure of 5 Kg. per Sq.cm. or the specified working pressure plus 50% as may be prescribed by the Engineer. Care shall be taken that air in pipelines is completely exhausted while filling the pipelines with water. This pressure shall be maintained for at least one hour, unless otherwise specified. The pipes and fittings shall be inspected for any leakage of water. Defects in pipes and fittings, if detected, shall be remedied by the Contractor at his own cost.

2.02 Jointing and laying of high density polythelene water supply pipes:
All higher density polythelene pipes shall have screwed ends and shall be jointed with screwed fittings of the same materials of the pipes. Any burrs remaining on the pipe ends after cutting threads shall be removed if necessary and approved jointing compound with a few strands of fine yarn may be used for jointing pipes and fittings. All exposed high density polyethelene pipes shall be installed with PVC saddles Screwed on 25mm thick wooden blocks securely fixed on walls, at suitable intervals, not exceeding 1m. Pipes wherever installed on wall, clamps shall be fixed as in the case of galvanised steel pipes.

2.03 **Jointing of lead pipes:** Jointing in lead pipes shall be wiped solder joints. Joints shall be wiped in a continuous circular motion in one direction so as to leave a neatly formed elliptical shaped joints free from tears, burns, dropping etc. All exposed lead pipes, exceeding 25mm in diameter shall be secured to walls by iron clips or lead ears. The spacing of the clips shall not exceed 900mm.

2.04 **Storage water tanks :**All tanks for storage of water shall be as indicated in the drawings and bill of quantities and shall be completely and properly covered with dust, light and mosquito proof cover of approved type as shown on the drawings or as described in the bill of quantities. They shall be fitted with a ball valve of approved type, securely fixed to the tank independent of the inlet pipe. A mosquito proof overflow pipe shall be fixed to the tank with the pipe invert about 25mm above the top of water line.

Approved type of stop valve shall be provided for every outlet pipe. All outlet and inlet pipes shall be fixed as shown in the drawings. Support of the tanks shall be 'as indicated in drawings. Inside surface of galvanised steel tanks shall be painted with anti-corrosive drinking water paints as indicated in bill of quantities.

2.05**Cleaning and disinfection:** All storage tanks water supply fittings and pipes before being put into commission, shall be disinfected with liquid chlorine by the Contractor as his own cost.

3.0 INSTALLATION OF SANITARY APPLIANCES:
All sanitary appliances shall be fixed in position rigidly on floor and walls as indicated in the drawings/ bill of quantities or as directed by the Engineer.

3.1 Water closet-Squatting type: Squatting type water closet shall be fitted with specified trap and shall be jointed with gasket yarn and cement mortar. Rim of the pan shall be levelled properly and set flush with the finished floor. The pan shall be connected to flushing cistern of capacity as indicated in the bill of quantities. The flushing cistern shall

be supported on pair of CI cantilever brackets firmly embedded in the wall in cement mortar (1:4) or screwed to wall suitable plugs. Heights of the bracket from the top of pan shall be as shown in the drawings. The flush pipe from the cistern shall be 32 mm of specified tested quality and connected to the pan inlet by means of hemp and putty joint.

3.2 **Water closet-pedestal type :** Pedestal type water closet shall be rigidly fixed on the finished floor by means of 75mm long brass screw with suitable plugs. The flushing cistern shall be porcelain or PVC or cast iron low level push down cistern of capacity as indicated in the bill of quantities. The cistern shall be supported on pair of cast iron or rolled steel cantilever brackets firmly fixed on wall with brass screws and suitable plugs. The flush pipe from the cistern shall be 40mm dia chromium plated. Brass bend fitted to the closet by means of rubber adopter. The closet shall be provided with double plastic seat cover confirming to IS:2548 and chromium plated hinges.

3.3 **Urinals:** Flat backtype urinals shall be firmly fitted. on finished wall by means of 50mm long brass screws and suitable plugs. Height of the lip from the standing point shall be as shown in the drawings. Urinals shall be fitted with specified type of automatic flushing cistern of capacity as described in the bill of quantities and as shown on the drawings. Flushing pipes shall be of galvanised steel pipes of required sizes and connected to the Urinal with 15mm dia. PVC connector fitted with brass cap and lining at one end. The joint to the inlet of urinal shall be neatly finished with putty joints.

SENSOR FITTED URINALS

Flat back urinals shall be fitted with sensors for automatic flushing shall be firmly fitted on finished wall by means of 50mm long brass screws and suitable plugs. height of the lip from the standing point shall be as shown in the drawings.

The arrangement of waste pipes and discharge to the floor trap shall be as shown on the drawings or as directed by Engineer. For single urinal, the discharge may be direct to the floor trap through a 40mm dia waste pipe. For range of urinals the discharge may be collected to the common discharge pipe by 40mm dia pipe shall be led to the 100mm SWG half round channel laid on the floor leading to the floor trap.

3.4 **Wash hand basin**

Wash hand basin shall be fitted in position to true level on a pair of cast iron brackets rigidly fixed on wall with 50mm long brass screws and suitable plugs. The type of waste pipes and their connection shall be as shown on the drawings or as directed by the Engineer.

3.5 **Porcelain sink** of size as indicated in the bill of quantities shall be levelled properly and fitted in position on a pair of cast iron cantilever brackets firmly embedded in the wall in cement mortar
(1 :4) The sink shall be fitted with chromium plated brass waste fittings of standard size. The type of waste pipes and their connections shall be as shown on drawings. or as directed by the Engineer.

3.6 **Other miscellaneous fittings** (e.g. Mirror, towel rails, soap cases etc.)
All such fittings shall be of type and sizes prescribed in the bill of quantities and shall be fitted in position true to line, level, and plane as shown on the drawings or as directed by the Engineer.

ALL MATERIALS TO BE USED FOR CIVIL WORKS , ELECTRICAL AND SANITARY WORKS SHOULD BE FIRST QUALITY AND AS PER THE STANDARDS OF BIS. STEEL SHALL BE PROCURED FROM MANUFACURERS MENTIONED AT CLAUSE 107 OF CONDITIONS OF CONTRACT

INTERNAL ELECTRIFICATION
(AS PER NUMBERS OF APSS, BIS CODE, MOST, ETC)

1.0 GENERAL SPECIFICATIONS AND INSTRUCTIONS Electrical

I.E. RULE 1956: the installation shall generally be carried out in conformity with Indian electricity rule 1956 as amended from time to time and national electrical code which contains specific regulations to be adhered to in the supply and use of electrical energy in the interest of safety.

PRESURE AND FREQUENCY OF SUPPLY: all current consuming devices shall be suitable for the pressure and frequency of supply stated in the special conditions of contract.

SYSTEM OF WIRING: the wiring shall be carried out on such a system as may be specified in the conditions of contract. Power wiring shall be kept separate and distinct from lighting wiring. All conductors shall be run as far as possible along the walls and ceiling, so as to be easily accessible for inspection. The balancing of circuits in three phase system shall be arranged before hand by the engineer.

CONDUCTORS: The material and size of the conductors shall comply with the bureau of the Indian standards and as per the provision of I.E. rules, 1956. all cables shall have the maker's name and identifications printed on the insulated surface. In case of dispute regarding make it is the responsibility of the contractor to prove that the material is original of the company.

MATERIALS: All materials, fittings, equipment and their accessories, appliances, etc, used in an electrical insulation shall confirm the bureau of India standard specification wherever they exist. Incase the Indian standard does not exist, the materials and other items shall be those approved by the competent authority. A list of approved materials for use in the electrical works is enclosed.

2.0 TESTS TO BE COMPLIED WITH: Before the installation is permanently put in to service the following test shall be complied with.

a) INSULATION RESISTANCE: the insulation resistance shall be measured by applying between earth and the whole system of conductors or any section there of with all fuses in place and all switches on a direct current pressure of not less than twice the working pressure shall be deemed to be that which is maintained between the phase conductors and the neutral.

b) The insulation resistance of an installation measured as in above shall not be less than 1 mega ohm.
Lighting circuits shall be tested with all lamps in place except in the case of earthed concealed wiring system.
Heating and power circuits may be tested, if desired with the heating and power appliances disconnected from the supply.

3.0 EARTH RESISTANCE: It is recommended that the value of any earth system shall not be more than 1 ohm unless other wise specified. Care should be taken select a material which is resistant to corrosion in the soil in which, it will be used. The electrode shall be kept free from paint, enamel and grease. The size of the earth continuity conductor should not be less than 14 S.W.G.(2.8.94sqm). earth resistively test shall be carried out in accordance with Indian standard code of practice for earthing.

4.0 FANS AND REGULATORS: All ceilings fans shall be wired to a ceiling rose and suspended from hook or shackle and insulated from the same. All joints in the suspension rod shall be screws and all joints or bolts in connection shall be additionally secured by means of split pins.

5.0 CONDIUT SYSTEM OF WIRING: The conduit shall be electrically continuous front distribution board to out let boxes of lighting switches and other appliances. The lengths of conduits shall be joined by means of screws sockets. Threads shall be free from grease or oil and no material of this nature shall be allowed to come in contact with the conductors. The whole system of the conduits shall be electrically continuous throughout and shall be permently and efficiently connected to the earthing system.

6.0 EXCAVATION AND BACKFILL: All excavation and backfill including tempering, shorting and strutting required from the installation of the cable shall be carried out by the contractor in the accordance with the drawing and requirements laid down else where. Trenches will be filled in layer not exceeding 150mm. Each layer shall be properly rammed and consolidated before laying the next layer. The contractor shall restore all surface, road ways, side walks, curbs, wall or other worked out by excavation to their original condition, satisfactory to the Corporational officers.

Prior to burying of cables, following tests shall carried out

Insulation test between phases, phase and earth for each length of cable before and after jointing. On completion of cable laying work, the following test shall be conducted in the presence of the Corporational engineer.
Insulation resistance test
Continuity test
Earth test

7.0 MEDIUM VOLTAGE AND LOW VOLTAGE SWITCH GEAR PANEL BOARD:

The main panel board shall be floor mounted and totally enclosed. The design shall include all provisions for safety of operating and maintenance personal. The general construction shall confirm to appropriate Indian standard specifications. Cubical type switch board shall be fabricated out of sheet steel not less than 2.00mm thick. Such sheet steel member shall be stiffened by angle iron frame work. Unless other wise approved, incomer bus section panel or sections shall be separate and independent. The general arrangement for multiplier construction shall be such that the horizontal bar framed present aplesant and authentic look. The general arrangement shall be got approved before fabrication. All cable entries shall be through gland plates. Cable entry plates shall be sectionalized. The construction shall include necessary cable supports for crimping the cable allay or rear cable chamber. incomer termination shall be suitable for receiving busbar trunking. Busbar shall be firmly fixed on support constructed from a suitable inculting material which confirms to relevant Indian standards. The support shall be sufficiently robust to effectively with stand electromechanical stresses produced in the event of short circuit. The minimum clearance to be maintained for open and closed indoor air insulated busbars/electrically iron exposed and working at system voltage up to 600volts shall be as follows:

BETWEEN	MAINCLERANCE
Phase to earth	26mm
Phase to phase	32mm

8.0 DISTRIBUTION: Distribution boards shall be assembled, aligned and installed as per installation manual of the switch board supplier and relevant Indian standard specifications. Phase sequence for each incomer shall be tested and connections adjusted accordingly. A mechanical endurance test shall be carried out by closing and opening of the circuit breaker.

9.0 COMPLETION DRAWINGS: At the completion of the work and before issuance of virtual completion contractor shall submit to the Corporational officer five sets of layout drawings drawn at approved scale indicating the complete wiring system “as installed”. The drawings shall in particular give the following information.
Run and size of conduits, inspection and junction boxes.
Number and size of conductors in each circuit
Location and rating of sockets and switches controlling the light and power out lets.
Location and details of distribution boards, main switches and others particulars.

A complete wiring diagram as installed and schematic diagram showing all connections in the complete electrical system.
Instructions, maintenance and operation manuals if any for the equipments.
Contractor should obtain necessary approval, from electrical inspectorate submitting necessary drawings test certificates etc.

10.0 SPECIAL CONDITIONS FOR THE ELECTRICAL WORKS (GENERAL)

Ceiling fans and other fittings will be supplied Corporationally free of cost at divisional stores. And contractor has to make his own arrangements to transport the same to sit and fix in position.
The work shall be carried out strictly in conformity with (1) code of practice for electrical wiring and fittings in Govt. buildings (2) the Indian standard specification (3) the Corporational specification, if the work carried out does not comply with the code of practice and Corporational specifications and if the workmanship is unsatisfactory it will be binding the contractor to redo the job without any extra cost and pay penalty as decided by the Corporation.

- The work should be carried out under the direct supervision of persons holding a certificate of competency for the type of work involved.
- After completion of work a plan of building should be prepared indicating the location of various main and sub-boards and all the fitting together with a circuit diagram duly numbered (in the diagram). The final bill will not be paid till the above and the diagram submitted and approved after verification.
- The contractor will be responsible for any defects noticed for either improper work man ship or defective materials supplied by him for one calendar year from the date of final completion of work.
- Lugs should be provided for all earth connections.
- The contractor himself should arrange for the transportation of men and material to their work spot.
- All civil works and patch works indicated for providing electrical installations should be well finished to the satisfaction of the civil authorities. A certificate from them should be obtained to the effect that the civil and patch work done is to the satisfaction civil authorities. It will be the responsibility of the electrical contractor to obtain such certificate from the civil engineer. Unless such certificate is produced this office will have right to with held the bill.
- Concerting to the pole and providing independent earthing should be done in presence of Corporational staff.
- The distribution board with switch controls shall be separate in each floor for normal supply and essential supply.

- The lighting circuits shall be provided with separate conductor to enable to connect the normal lighting and essential lighting with linking to any of the above system to ensure to switch over to essential supply in the order to have minimum to avoid inconvenience to the staff working.
- The control for the luminary to be provided in the hall for both to be connected to the normal supply and essential supply shall be separate and away from the each system.
- For the points to be connected to essential supply a separate conduit system is to be laid as enumerated in the above conditions includes circuit a main of any system.
- The location for the D.B's and switch controls for essential supply will be decided during the course of execution where the circuit conduit way have to be terminated.

Conditions for Supply, Erection and Commissioning of Lift.

1) GURARANTEE :-
The equipment offered should be covered by the usual guarantee by which any
part or parts which fail within 24 months from the date of handing over due to defective materials or bad work should be replaced by the firm at free of cost. The period 24 months is to be reckoned from the date of handing the lift to this Corporation after testing and commissioning in satisfactory operating condition. No extra amount will be paid for any reasons what so ever.

2) The delivery and erection shall be completed as per the rate of progress as specified in the tender conditions under rate of progress.

3) Deputation of erector

Before the commencing the erection, the erection engineer should be deputed when ever asked from by the Corporation. No separate charges will be paid for such deputation.

4) (a) The design and drawings of all civil works have to be furnished by the firm
(b) The firm shall supply the lay out drawings of lift and its switchgear after the Completion of the work
(c) Finial bill shall be paid only after the entire work is completed to the satisfaction of the Corporation.
(d) The rate offered by the firm shall be inclusive of all charges such as packing forwarding and insurance etc. the rate also shall be inclusive of Excise duty,S.T etc., including all other incidental charges, such as accommodation for erection crew journeys boarding and lodging inclusive of training to an operator concerned etc., .The price shall also include any statutory increase in excise duty, S.T if any during the currency of the contract. However the Corporation shall help the firm in procuring the materials at concessional sales tax (i.e., the Corporation shall provide the firm with D-form for obtaining S.T concession)

5) **Servicing:** Free servicing will have to be done by the firm for a period of twenty four months from the date of commissioning the lift i.e., during the guarantee period.

6) Terms of payment: 80% of the contract value will be paid on receipt of the all lift material at site. The balance 20% will be released after handing over the lift in satisfactory working condition, inclusive of erection, commissioning and testing.

7) Specification: The supply and erection of lift should be inconformity of standards as per I.S.I specifications.

8) Scaffolding: Scaffolding to the required extent has to be erected by the firm at their cost.

9) Steel : The rate quoted should also include necessary steel required for still support angles, hitch beams, buffer supports channels and bearing plates etc., . The Corporation will not be responsible for any mishaps during execution of equipment.

10) Minor civil works : Doing all minor works comprising of cutting holes and making good, quide rail brackets and landing batton fixtures, frames for collapsible gates and civil works, associated with the laying of the stills at each entrances and on the landing buffer supports channels and other works ancillary to the erection work in lift making groom and all other civil works will have to be carried out by the firm only to the satisfaction of the Corporational officer and the company will responsible for any defects in the said works that might be noticed at later dates.

11) Transport & Storage: The materials will have to be delivered at site and stored at the cost of the firm. The safety of the material will be firms responsibility till the equipment is handed over duly commissioned. Any damage or loss of the material stored will be to the account of tenderer. Any repairs or replacement etc., needed to the materials so stored should be done at the cost of tenderer till the lift is handed over in satisfactory operation condition after testing and commissioning. All the expenses should be borne by the company. However, storage facilities will be provided free of cost.

12) Earthing: Necessary earthing is to be provided by the firm in confirmation to the relevant I.S.I specifications.

13) Other conditions will be as per APSS (Manual AP detailed standard specifications)

CONDITIONS Exclusively for Transformers

RATES: The rates should be inclusive of all taxes and other charges for packing forwarding, insurance, transportation of the material to the site.

DEPUTATION OF ERECTION ENGINEER & STAFF: The erection Engineer and staff should be deputed at the time of erection. No. Separate charges will be paid for such deputation.

DELIVERY & ERECTION: The transformers should be supplied to erecting, commissioning and handing over in satisfactory working condition within (2) months from the date of agreement. All the H.T and L.T switchgear transformers etc., should be erected as per latest Electrical Inspectorate rules and for any deviations from rules, the contractor will be held responsible.

GUARANTEE; All the equipment supplied should be guaranteed for two year from the date of handing over or from the date or charging of installation whichever is later in satisfactory working condition. Any part or parts, which fail during the guarantee period due to defective manufacturing or bad workmanship, should be replaced repaired by the firm free of cost.

TEST REPORTS: The contractor should furnish test reports for transformers, oil breather, OCB's etc., issued by the competent authority.

The contractor should hand over all the required manuals of transformers supplied by him.

CONDITIONS FOR SUPPLY, ERRECTION AND COMMISSIONING DIESEL GENERATOR SETS

1) **GUARANTEE:**The Generator set and its connected switch gear, offered shall be covered by the usual guarantee period during which if any part / parts fall either due to defective materials bad workmanship shall be repaired / replaced by the firm at free of cost. This guarantee period of 24 months will be reckoned from landing over the generator set after testing and commissioning in satisfactory working condition.
2) **DELVERY & ERRECTION:** The delivery and errection shall be complete as per the rate of progress as specified in the tender conditions under rate of progress.
3) **A)** The design and drawings of all civil works have to be furnished by the firm.

   B) The firm shall supply the layout drawings of generator set and its switch gear after completion of the work.

   C) Final bill shall be paid only after the entire work is completed to the satisfaction of the Corporation.

   D) The rate offered by the firm shall be inclusive of all charges such as packing forwarding and insurance etc., S.T etc., including all other incidental charges such as accommodation for erection crew, journeys bearing and lodging inclusive of training to an operator concerned etc. The price shall also include statutory increase in Excise Duly, S.T. if any during the currency of the contract. However the Corporation shall help the firm in procuring the materials of concessional sales Tax (i.e. the Corporation shall provide the firm with 'D' form for obtaining S.T concession)
4) **SERVICING:** Free monthly servicing and maintenance shall be done by the firm for a period of 24 months from the date of handing over the plant and also the firm shall depute servicing Engineer as and when required by the Corporation without claiming any extra charges duly replacing the parts defective due to manufacture, free of cost and without any obligations.

5) **TERMS OF PAYMENT:** 80% of the contract value on delivery of all materials at site based on payment schedule and balance after handing over the set in satisfactory working condition inclusive of errection, commissioning and testing.
6) The current transformers which are proposed to be used shall be resin coated power cables shall be of fibre glass which can withstand a temperature of 130 and Fuses, ACBs shall be English / Electric / Sermers LT & LK/ISI approved make.
7) **CIVIL WORKS:** All the Civil works contingent to installation of generator set shall be done to the satisfaction of the Corporational officers concerned. The firm shall be responsible for any defects in the said works that might to be noticed at a later dated.
8) **TRANSPORT & STORAGE:** The materials should be stored at the firms cost and responsibility. The storage accommodation will be provided by the Corporation subjects availability of the accommodation. This Corporation will not defray of reimburse the cost of any materials / materials lost damaged or otherwise in the transit or storage of the materials or for any reason including thefts cyclone fire burglary or any other causes.
9) **TESTING CERTIFICATES:** Test Certificate shall be furnished.

10) **EXPERIENCE:** Only previous experience in supply and errection of generator sets and commissioning only need to apply.
11) **EARTHING:** Necessary earthing is to be provided by the firm in confirmation to the relevant I.S.I Specifications.
12) Necessary exhaust piping from engine exhaust to outside the room by means of MS / Gl pipe of suitable size and supporting it properly by means of clamps. Silencer should be mounted at the end of the exhaust pipe.
13) The D.G set should be tested on load for at least 4 hrs out of which 2 hrs shall be 100% load and remaining 2 hrs shall not be less than 75% of full load.

GENERAL SPECIFICATIONS
LIST OF INDIAN STANDARDS FOR ELECTRICAL WORKS

Relevant Indian standards for the various materials to be used in electrical works as per specification condition No

S//l.No.	Description	IS.No. and as amended from time to time
A) LIST OF INDIAN STANDARDS		
I CABLES		
1	PVC insulated cables for working Voltageupto and including 1100 V	IS 694:1990
2	PVC Insulated (heavy duty) electrical cables	IS 1554:1988

S//l.No.		Description	IS.No. and as amended from time to time
	3	11 KV XLPE cables	I S 7089-part-II
	4	Recommended current ratings for cables	IS 3961-1967
	5	PVC insulations and sheath of electric cables	IS 5831:1984
	6	Conductors for insulated electric cables & flexible cords (superceding IS 1753: 1967)	IS 8130:1984
II	**CONDUITS & ACCESSORIES AND JUNCTION BOXES**		
	1	Flexible steel conduits for electrical wiring	IS 3480:1966
	2	Conduits for electrical installation: Part 1 General requirements	IS 9537-PI-1981
	3	Conduits for electrical installation: Part 2 Rigid steel conduits	IS 9537-PII-1989
	4	Recommended practice for hot dip galvanizing of Iron and steel	IS 2629:1985
	5	Fittings for rigid steel conduits for electrical wiring	IS 2667-1988
	6	Accessories for rigid steel conduits for electrical wiring	IS 3837-1976
	7	Adopters for flexible steel conduits	IS 4649:1968
	8	Boxes for enclosure of electrical accessories – Steel and cast iron boxes	IS 5133:1969
III	**DOMESTIC SWITCHES SOCKETS**		
		Plugs and socket outlets (250V; 16A) : Specifications	IS 1293:2005
		Ceiling Roses – Specification	IS 371:1999
		Switches for domestic and similar purposes	IS 3854:1997
IV	**ELECTRICAL INSTALLATION**		
		code of practice for electrical wiring installation	IS 732:1989
		code of practice for earthing	IS 3043:1987
		Recommendations on safety procedures and practices in electrical work	IS 5216:1982
		Code of practice for Selection, installation and maintenance of fuses (Voltages not exceeding 650 V)	IS 3106-1996
		code for practice for interior illumination Part2	IS 3646:1966
		code of practice for lighting of public thoroughfares	IS 1944:1970
		Installation and maintenance of paper insulated power cables	IS 1155-1967
		Code of practice for use of structural steel in General building construction	IS:800
		Methods of testing uniformity of coating on zinc coated articles	IS:2633
		Code of practice for phosphate iron and steel	IS:6005
V	**LT PANEL BOARDS / LIGHTING PANELS**		
		Enclosed distribution fuse board and cutouts for voltage not exceeding 1000 V AC / 1200 V DC	IS 2675-1983
		Specifications for Low voltage switchgear and control gear	IS 13947:1993

S//l.No.	Description	IS.No. and as amended from time to time
	Part-1 General Rules (supercedes IS 4237 & IS 2147) Part-2 Circuit Breakers (supercedes IS 2516) Part-3 Switches, disconnectors (supercedes IS 4064) Part-4 Contractors, starters (supercedes IS 2959) Part-5 Control circuit devises & switching elements (supercedes IS 6875 switches/ push button)	IS 13947:2004
	Code of practice for climate for climate proofing of electrical equipment	IS 3202:1965
	Electrical accessories- Circuit breaker for over current protection for house hold & similar installations (Miniature Air-bread circuit breakers for voltage not exceeding 1000V)	IS 8828:1996
	Current transformers	IS 2705:1992
	Low voltage fuses (upto 1000V) Supercedes IS 2208 & IS 9224	IS 13703:1993
	Wrought aluminium and aluminiumalloy bars, rods, tubes and sections for electrical purposes	IS 5082: 1998
	Specifications for low voltage switch gear and control gear assemblies (i.e. Factory build assemblies of switchgear and control gear for voltages up to 1000 V)	IS 8623:1993
	Electrical measuring Instruments (Direct acting indicating analog instruments) & accessories	IS 1248:2003
	Danger notice plates	IS 2551:1982
	Guide for Marking insulated conductors (supercedes IS 375)	IS 5578-1984
	Guide for uniform system of marking & identification of conductors and apparatus terminals	IS 11353:1985
	Electrical relays for power systems protections	IS 3231:1986
	Voltage Transformers (part 1 to part 4)	IS 3156:1992
	Electricity meters induction type (for alternating current)	IS 722:1986
	Inter connecting Bus-bars for Voltage above 1KV	IS 8084-1976
VI	**LIGHTNING**	
	Code of practice for the Protection of buildings and allied structures against lightning	S 2309-1989
VII	**FIRE SAFETY**	
	Code of practice for Fire safety of buildings (General) Electrical Installation	IS 1646-1997
VIII	**LIGHTING FIXTURES AND ACCESSORIES**	
	General and safety requirements for electric Lighting fittings	IS 1913-1969
	Interior Illumination	IS 3636-1966
	tubular florescent lamps	IS: 2418:1977

S//l.No.	Description	IS.No. and as amended from time to time
	Bal lazes for use in florcent lighting fittings (part 1)	IS: 1534
	bi-pin lamp holders for tubular florcent lamps	IS: 3323
	capacitors for use in florcent lighting fittings	IS: 1569
	starters for florcent lamps	IS: 1522
	holders for starters for tubular florcent lamps	IS: 3324:1982
	specifications for decorative lighting out fits	IS: 5077
	high-pressure mercury vapour lamps	IS: 2183
	GLS lamps	IS: 416
	Bayonet lamp holders	IS 1258:2005
	dust proof electric lighting fittings	IS :4012
	dust tight electric lighting fittings	IS:4013
	specification for floodlights	IS: 1947
	Lighting public thorough fares	IS 1944-1970
	Luminaries for street lighting	IS 2149-1970
	Water tight electric lighting fittings	IS 3553-1966
	Waterproof electric lighting fitting	IS 3528-1966
	industrial lighting fittings	IS: 1777
	industrial lighting fitting with plastic reflectors	IS:3287
IX	**Ceiling fans**	
	Electrical ceiling type fans & regulators	IS 374-1979
X	**Transformers**	IS 2026-1962
	Installation and commissioning of transformers	IS 1886-1967
XI	Onload **change over** switches	IS 4064-1978
	Tubular steel poles for overhead power lines	IS 2713:1980
	Mild Steel wire for General Engineering purpose	IS 280:2006

11.0 Standards for Electrical Equipment

11.1 Unless other wise stipulated in this specification, all equipment or material covered under this specifications shall be designed, manufactured and tested in accordance with the latest standards of Indian Standard's specifications.

11.2 All equipment shall conform to latest Indian electricity Rules, Indian electricity act and Indian Insurance rules as regard safety, earthing and other essential provisions specified in for installation and operation of electrical equipments.

11.3 Extreme care shall be taken to make enclosures for switch gears proof against rodents, lizards and other creeping vermin.

11.4 Continuity of power supply is to be given maximum consideration and the design of the equipment shall be such as to simplify inspection maintenance and testing at site. The design shall include all reasonable precautions and provisions for safety of operating personnel and maintenance personnel.

1.0 WIRING INSTALATION

2.0 SCOPE

The scope under this section covers wiring installation comprising of

a) Lighting/Fan/Exhaust Fan/Circuit bell points.
b) Power circuits and Air Condition circuits.
c) Circuit wiring.

RECESSED CONDUIT WIRING SYSTEM WITH RIGID STEELCONDUIT

a) **Type and size of conduit:** All rigid non-metallic conduits shall conform to accepted standards and shall be used to corresponding accessories. Conduits shall provide adequate mechanical protection for the enclosed cables and the interior of the conduit shall be free from obstructions. No non-metallic conduit less than 20 mm in dia shall be used. The number of insulated cables that can be drawn into rigid non-metallic conduits are given in the following table (Ref: Table-2)

Size of table		SIZE OF CONDUITS, MM													
Normal cross Sectional area mm2	No, & diameter wires Mm	16		20		25		32		40		50		63	
		Number of Cables, Max													
		S	B	S	B	S	B	S	B	S	B	S	B	S	B
1.0	1/1.12*	5	4	7	5	13	10	20	14	-	-	-	-	-	-
1.5	1/1.40	4	3	7	5	12	10	20	14	-	-	-	-	-	-
2.5	1/1.80 3/1.06	3	2	0	5	10	8	18	12	-	-	-	-	-	-
4.0	1/ 2.24 7/0.35	3	2	4	3	7	8	12	10	-	-	-	-	-	-
6.0	1/ 2.80 7/1.06*	2	-	3	2	6	5	10	3	-	-	-	-	-	-
10.0	11/3.55+ 7/1.40*	- -	2 -	- 2	5 -	4 4	3 3	7 6	- 5	- 8	- -	- -	- -	- -	- -
16.0	7/1.70	-	-	-	-	2	-	4	3	7	6	-	-	-	-
25.0	7/2.24	-	-	-	-	-	-	3	2	5	4	8	6	9	7
35.0	7/2.50	-	-	-	-	-	-	2	-	4	3	7	5	8	6
50.0	7/3.00+ 19/1.80	-	-	-	-	-	-	-	-	2	-	5	4	6	5

"*" for copper conductors only.

"+" for aluminum conductors only.

MS Conduits: Conduit pipe shall be finished with stove enamel surface. all conduit accessories shall be treaded type only and under no circumstances pin grip type or clamp type accessories be used. No steel conduits less than 16mm diameter shall be used. The number of insulated conductors that can be drawn into rigid steel conduits are given in separate enclosure.

(Ref.Table-2)

b) **Bunching of cables:** Unless otherwise specified, insulated conductors of AC supply shall be bunched in separate conduits. For lighting and small power outlet circuits, phase segregation in separate conduits is recommended.

c) **Conduit Joints:** Conduits (metallic) shall be joined by means of screwed couplers and screwed accessories only. In long distance straight runs of conduit, inspection type boxes at reasonable intervals shall be provided. Cut ends of conduit pipes shall have no sharp edges nor any burrs left to avoid damage to the insulation of conductors while pulling them through such conduits.

d) Inspection type conduit fittings such as inspection boxes, deep boxes, bends, elbows and tees shall be so installed that they remain accessible for such purposes as withdrawal of existing cables or installation of additional cables.

e) Metallic switch board boxes shall be fabricated from **1.6mm** thick sheet metal of 16 gauge GI sheet and wooden switch board boxes shall be of Teakwood. The switch boards should be flush mounting type. The MS switch boards should be painted with two coats of red oxide and two coats of synthetic enamel paint of approved grade and make before fixing in position.

The switch boxes should be covered with **3mm** thickDecolumHylum cover.

f) The chase in the wall shall be neatly made and be of ample dimensions to permit the conduit to be fixed in the manner desired. In the case of building under construction chases shall be provided in the walls, ceiling etc., at the time of their construction and shall be filled up neatly after erection of conduit and brought to original finish of the walls.

g) The conduits shall be fixed in chases by means of staples or saddles not more than **60 cms** apart. Fixing of standard bends or elbows shall be avoided as far as practicable and all curves maintained by bending the conduit pipe itself with a long radius which will permit easy drawing in of conductors. All threaded joints of rigid steel conduit shall be treated with some approved preservative compound to secure protection against rust.

h) Suitable inspection boxes shall be provided to permit periodical inspection and to facilitate removal of wires if necessary. Minimum size of inspection boxes shall be **75** x **75 mm**.

i) The M.S. switch board boxes, junction boxes etc., should be efficiently earthed with conduit by a suitable means of earth attachment.

j) When crossing through expansion joints in Buildings, the conduit section across the joint may be through flexible conduits of same size as the rigid conduit.

k) **Wires:** Wires shall comply with the following features.

- Annealed copper conductor, multi strand, PVC insulated, **1100** volts grade cables.

- The following colour coding shall be followed :-

Phase	-R	-	Red
Phase	-Y	-	Yellow
Phase	-B	-	Blue
Neutral		-	Black
Earth		-	Green

l) On each (lighting/Ceiling Fan/Exhaust Fan) circuit not more than 6points or **800-1000** watts load should be connected. Example:- If on one of the switch boards there are only **4** switches to control **4** lights, other switch board another **3** switches to control lights etc, then for arriving at the circuit length, the shortest distance from circuit breaker in the MCB distribution board to the nearest switch board shall be considered. Inter connections between such switch boards shall be allowed by providing same wires as are used for light points and no measurement in circuit wiring is allowed for such inter connections. A separate conduit pipe has to be provided for running circuit mains and the conduits for light points shall never be used for the same.

For **5** Amps **3** pin on separate board the circuit measurement to first nearest **5** Amps **3** pin socket is considered. No measurement will be separately considered for looping of switch boards in circuit wiring.

m) The mounting height of switch boards (bottom of MS Box) shall be **4'6"** from finished floor level.

The **5** Amps/**15** Amps **3** pin sockets with shutter protection shall be at 1 mtr. Level (or skirting level).

Wiring for power circuits i.e., **15** Amps **3** pin and AC points shall be provided in separate conduit pipes.

n) Neat holes shall be punched on MS Switch Board Boxes for conduit pipe entries. Rough, burred holes with chisel shall be avoided. Conduit pipes to be fixed to MS Switch Board Boxes, MCB Distribution Boards etc., by providing (double chack)check nut arrangement. Before drawing of PVC insulated cables inside the conduits, ebonite/ nylon bushes to be provided at conduit ends in order to avoid damage to cables during drawing.

o) **3mm** thick Hylum / Decolum covers provided on Switch Boards should be fixed to switch boards by providing brass coated screws and plated cup washers.

p) Any loose holes on Switch Board boxes and Distribution Boards shall be properly closed, so as to prevent entry of lizards etc.

q) Whenever cables of size 2.5 sq.mm /**6.0**Sq.m and above are connected inside switch, socket or MCB, metallic plug point etc, proper type and size of lugs to be crimped to cable leads before making the permanent connection in switches etc.

r) Telephone/intercom cables shall not be laid in the same conduit where electric lighting/power cables are drawn. Separate conduit pipes to be used for drawing of telephone/intercom cables.

s) Loose joints with PVC insulation shall be avoided. Wherever possible joints of cables shall be avoided. If found necessary proper type and size of connectors shall be used.

t) The drop of voltage between the main switch/distant. Terminals and the farthest current consuming apparatus shall not exceed **2%** with all devices switched on.

Testing

The entire installation shall be tested for

a) Insulation Resistance

b) Earth continuity

c) Polarity of single pole switches

Tests shall be conducted in the presence of Site Engineer. Test results to be tabulated and submitted to the site engineer.

2.0 MCB DISTRIBUTION BOARDS, MCB'S AND ELCB'S

Scope

The scope under this section covers installation comprising.

a) Low voltage distribution boards

Details

a) The Distribution Boards shall have vermin, dust, rust proof painting done by powder coating process.

b) The cables entering the D. Board should be properly bunched and dressed before making connection in MCB's.

c) Cable glands shall be provided wherever armoured cables are connected to switches.

d) Cable leads shall be provided with proper type and size of lugs crimped to leads before making permanent connection inside MCB's, RCCB's etc.

e) Permanent circuit identification shall be provided on the distribution boards.

f) The mounting height of MCB distribution boards etc., (bottom line) shall be **6'-6"** from finished floor level.

3. CABLES

3.1 **Scope :** The scope under this section covers Power cables

3.2 Standards

A	Specification for conductors for insulated electric cables	IS:**8130** -
B	Specification for Armoured/ unarmoured power cables	IS:**1554**-Part I -
C	Recommended current ratings for cables	IS:**3961** -
D	Specifications for PVC insulation and sheathing of electric cables	IS:**5831-1984**

3.3 General requirements for cables

a) Cables should be stranded aluminium conductors for **6mm** and above.

b) L.V. cables shall be **1100** Volts grade.

c) Cables shall have colour coded insulation.

d) PVC inner and outer sheathing shall be applied by extrusion.

e) Steel armouring between inner and outer sheathing.

f) The PVC insulation and sheathing shall confirm to IS:**5831-1984.**

g) The armouring for cables up to **16mm^2** shall be of round steel wire and that above**16mm^2** shall be of galvanized steel strings.

3.4 Laying of Cables

a) Cables if laid underground shall be at a depth of not less than **60**Cms., in a trench. Sand filling shall be provided at the bottom of trench before laying the cable. Bricks shall be provided on either side of the laid cable. Sand filling shall be done to cover the cable laid. Bricks shall be provided on the top. Earth filling shall be done.

M.S. cable identification tags, route indicators embedded in C.C. are to be provided at every 8 meters length of cable laid.

b) Hume pipe, trenches/tunnels with proper pre-cast slabs to withstand wear and tear of vehicular traffic shall be provided at road crossings.

c) Cables if laid in the air shall be laid on cable trays and shall be properly clamped to the trays by plated MS. saddles at proper intervals. Cables shall be properly dressed before fixing on the cable trays.

d) Extra cable loops of minimum 500 **mm** shall be provided at each end of cables laid.

e) Cables shall be bent to a radius of **20** times the diameter of the cable with a minimum of **10** times diameter at restricted space.

f) Control/Telephone cables shall be laid away from power cables on separate cable trays.

3.5 Testing :

Manufacturers test report shall be submitted for tests on cables in accordance with Indian standards specifications.

Cables shall be tested after installation before commissioning by using 1000 Volts Megger and the following readings shall be obtained and tabulated.

- Continuity on all conductors
- Insulation Resistance a) between conductors
  b) all conductors and ground

The tests shall be conducted in the presence of Site Engineer and results submitted.

4 CABLE TRAYS AND ACCESSORIES:

4.1 Scope

The scope covers MS cable trays and cable tray accessories.

4.2 Standards

(IS. specifications shall be adhered to)

4.3 Specifications

Material: Hot rolled plain sheets of tested quality "O" grade as per IS **1079.**
Thickness of material: **2.0 mm**
Cable loading on tray: **50** Kg/MTR
Span between cable tray supports: **1.5** meters to **2.0**Mtrs.

Surface finish: Hot dip galvanising iron as per IS **2629,** minimum **70** microns thickness

Length of cable trays: **2.5** Meters
Width of Cable trays: (outside to outside width to be taken)

a) Ladder type - Bolted/welded construction **300** mm/450mm/600mm (depending on number of cables to be laid)

b) Perforated cable trays (Same as above)

4.4 Sizes of Cable Trays:

a) Ladder type - Bolted/welded construction

Side rail

* Flange width **15** mm
* Depth **70** mm
* Two coupler holes of **10**mm diameter required on each side of side rail
* Rungs
* Channel section: **20** x **40** x **20** mm
* Slot size on rungs: **20** x **10** mm (oblong holes)
* Interval between rungs not more than **250m**m

b) Perforated type construction

* Flange width: **30**mm
* Slot size: **20** x **10** mm (oblong)

4.5 Sizes of Coupler Plates:

a) Ladder type - Bolted/welded construction
Size: **90** x **45** mm
Thickness of material: **2/2.5** mm
Slot size: **20** x **10**mm oblong holes - Two numbers
Round holes **10**mm diameter Two numbers
Finish: Hot dip galvanised as per IS:**2629**

b) Perforated type construction:
Size: **210**mm x **25**mm
Thickness of material: **3**mm
Slot size: Oblong holes **20** x **10** mm - **2** numbers
Round holes **10**mm diameter - Two numbers
Finish: Hot dip galvanised as per IS:**2629**

4.6 Hardware for coupler plate: (Electro galvanised)

a) Hexagonal Head Bolts - **4** Nos.

b) Plain washers **- 8** Nos.

c) Hexagonal nuts - **4** Nos.

Number of coupler plates per cable tray - Two numbers.

4.7 Cable tray Accessories:

Material: Hot rolled plain sheets of tested quality "O" grade as per IS: **1079**

Finish: Hot dip galvanised as per IS:**2629**

Minimum bending Radius - **450**mm

Tees, Horizontal/vertical elbows, cross and reducers for both ladder type - welded/bolted and perforated construction shall be as per standard manufacturers drawings.

4.8 Erection

Cable trays shall be erected on walls, trenches (if necessary) by **drilling holes in the wall by power drilling machine**. Cable Tray shall be fixed to wall by providing proper size Anchor expandable type bolt and nut arrangement.

Proper type of cable tray accessories shall be selected depending on the site condition.

5.0 CABLE TERMINATION:

Cable gland body shall be made of brass castings and machined to final size. The general construction of the glands should be as per standard manufacturer's drawings. It mainly consists

a) Compression Nut - Brass - 1 No.

b) Gland body with Hexagonal head - Brass - 1 No.

c) Rubber Ring - Rubber - 1 No.

d) Brass washers - Brass - 3 Nos.

e) Check nuts - Brass - 1 No.

Metal parts of the gland shall be free from blow holes and surface shall be machined smoothly.

All edges shall be debarred and then nickel plated wherever necessary. The cable glands shall be of single compression type.

6.0 L.T. PANEL BOARDS

6.1 Scope

The Scope covers the requirement of designs, construction, assembly, testing, Supply and installation of Panel Boards.

6.2 Standards:

IS:13947 - Specification for low-voltage switch gear and control gear

Part -1 General rules (supercedes IS 4237 & IS 2147)

Part -2 Circuit breaker (supercedes IS 2516)

Part-3 Switches, disconnectors (supercedes IS 4064)

Part-4 Contractors, motor-starters (Supercedes IS 2959)

Part-5 Control circuit devises & switching elements (supercedes IS 6875)

IS:13703 - Low Voltage fuses (supercedes IS:**9224 & IS 2208)**

IS:**2705** - Current Transformers

IS:**1248** – Indicating Instruments

IS 5578 - Guide for Marking insulated conductors (superceding IS 375)

IS 11353 - Guide for uniform system of marking & identification of conductors and apparatus terminals

IS:**3156** - Voltage Transformers

IS:**3231** - Relays

IS:**722** - Integrating Information

IS:**8623** - Factory Built Assemblies of switch gear and control gear.

6.3 CONSTRUCTION:

The panel board shall be:

i) of the metal enclosed, indoor, floor mounted, free standing type.

ii) be made up of the requisite vertical sections, which, when coupled together shall form continuous dead front switchboards.

iii) provide dust and damp protection, the degree of protection being no less than IP, **51** to IS. **2147**.

iv) be readily extensible on both sides by the addition of vertical sections after removal of the end covers.

6.3.1 The panel boards shall be constructed only of materials capable of withstanding the mechanical, electrical and thermal stresses, as well as the effects of humidity, which are likely to be encountered in normal service.

6.3.2 Each vertical section shall comprise:

i) A front framed structure of rolled/folded sheet steel channel section, of minimum **2** mm thickness, rigidly bolted together. This structure shall house the components contributing on the major weight of the equipment, such as circuit breaker fuse switch units, main horizontal busbars, vertical risers and other front mounted accessories.

The structure shall be mounted on a rigid base frame of folded sheet steel of minimum **2mm** thickness and **100mm** height. The design shall ensure that the weight of the components is adequately supported without deformation or loss of alignment during transit or during operation.

ii) A cable chamber housing the cable and connections, and power/control cable terminations. The design shall ensure generous availability of space for ease of installation and maintenance of cabling, and adequate safety for working in one vertical section without coming into accidental contact with live parts in an adjacent section.

iii) Front and rear doors fitted with dust excluding neoprene gaskets with fasteners designed to ensure proper compression of the gaskets. When covers are provided in place of doors, generous overlap shall be assured between sheet steel surfaces with closely spaced fasteners to prelude the entry of dust.

6.3.3 The height of the panel should not be more than **2400** mm. The total depth of the panel should be adequate to cater for proper cabling space.

6.3.4 Doors and covers shall be minimum 2.0/ **1.5**mm thick sheet steel. Sheet steel shrouds and partitions shall be of minimum **1.5**mm thickness. All sheet steel work forming the exterior of switch boards shall be smoothly finished, leveled and free from flaws. The corners should be rounded.

6.3.5 The apparatus and circuits in the panel boards shall be so arranged as to facilitate their operation and maintenance and at the same time to ensure the necessary degree of safety.

6.3.6 Apparatus forming part of the panel boards shall have the following minimum clearances:

i) Between phases - **25** mm

ii) Between phases and earth - **25** mm

iii) Between phases and earth - **25** mm

iv) Between neutral and earth - **19** mm

When, for any reason, the above clearances are not available, suitable insulation shall be provided. Clearances shall be maintained during normal service conditions.

Creepage distances shall comply to those specified in relevant standards.

6.3.7 All insulating material used in the construction of the equipment shall be of non-hygroscopic material, duly treated to withstand the effects of high humidity, high temperature tropical ambient service conditions.

6.3.8 Functional units such as circuit breakers and fuse switches shall be arranged in multi-tier formation, except that not more than two air circuit breakers shall be housed in a single vertical section.

6.3.9 Metallic/insulated barriers shall be provided within vertical sections and between adjacent sections to ensure prevention of accidental contact with:

i) Main busbars and vertical risers during operation, inspection or maintenance of functional units and front mounted accessories.

ii) Cable terminations of one functional unit, when working on those of adjacent unit/units.

6.3.10 All doors/covers providing access to live power equipment/circuits shall be provided with tool operated fasteners to prevent unauthorized access.

6.3.11 Provision shall be made for permanently earthing the frames and other metal parts of the switch gears by two independent connections.

6.4 METAL TREATMENT AND FINISH:

6.4.1 All steelwork used in the construction of the switchboards, should have undergone a rigorous metal treatment process as follows: (Seven tank process.)

i) Effective cleaning by hot alkaline degreasing solution followed by cold water rinsing to remove traces of alkaline solution.

ii) Pickling in dilute sulphuric acid to remove oxide scales and rust formation, if any, followed by cold water rinsing to remove traces of acidic solution.

iii) A recognised phosphating process to facilitate durable coating of the paint on the metal surface and also to prevent the spread of rusting in the event of the paint film being mechanically damaged. This again, shall be followed by hot water rinsing to remove traces of phosphate solution.

iv) Passivating in de-oxalite solution to retain and augment the effects of phosphating.

v) Drying with compressed air in a dust free atmosphere.

vi) Primer coating with two coats of a highly corrosion resistant primer, applied wet on wet & stove dried under strictly controlled conditions of temperature and time.

vii) A finishing coat of stoving synthetic enamel paint to the specified shade of IS.**5.** The total thickness of paint should not be less than **15** to **20** microns.

6.5 BUS BARS:

6.5.1 The busbars shall be air insulated and made of high conductivity, high strength aluminium alloy complying with the requirements of grade E91 of IS 5082.

6.5.2 The busbars shall be suitably braced with non-hygroscopic SMC supports to provide as through fault withstand capacity of **50** KA RMS symmetrical for one second and a peak short circuit withstand of **105** KA minimum. The neutral as well as the earth bar should also be capable of withstanding the above fault level. Ridges shall be provided on the SMC supports to prevent trackling between adjacent bus bars.

6.5.3 Large clearances and creepage distance shall be provided on the busbars system to minimise the possibility of a fault.

6.5.4 High tensile bolts and spring washers shall be provided at all busbar joints.

6.5.5 The cross sections of the busbars risers for various ratings shall have been decided on the basis of temperature raise tests carried out under conditions closely similar to actual service conditions. For a total operating temperature of **110** deg. C. at an ambient of **40** deg. at the standard current ratings and corresponding cross sections of the main busbars should be such that the bus bar shall carry **1** Amp. per Sq.mm.

6.5.6 The main phase busbars shall have continuous current rating throughout the length and the neutral busbars shall have a continuous rating of atleast 50% of the phase busbars.

6.5.7 Connections from the main busbars to functional circuit shall be arranged and supported so as to withstand without any damage or deformation the thermal and dynamic stresses due to short circuit currents.

6.5.8 Busbars shall be colour coded for easy identification of individual phases and neutral.

6.5.9 The busbars shall be suitably supported with epoxy resin mould insulators.

6.6 Tests:

The panel Board shall be inspected as per relevant standards in presence of the Site Engineer and shall include.

a) High voltage test

b) Insulation test

c) Constructional and safety features

6.7 Name Plates:

Main name plates shall be fixed at the top centre. Name plate giving feeder detail shall be provided and are to be fixed by screws.

7.0 EARTH ELETRODES

7.1 Scope:

The scope included both pipe earth electrodes and plate earth electrodes.

7..2 Standards:

IS:**3043** - Code of practice for earthing

7.3 Construction:

Pipe Earth Electrode: G.I pipe shall not be less than **38**mm diameter and **2½**meter long. It shall be buried vertically into the earth pit with the top not less than **1.25** meters below ground level. The G.I pipe should be "C" / "B" class type.

Plate Earth Electrode: Copper plate of **600** x **600** x **3.15** mm. (or GI plate)shall be burried in the earth with faces vertical and top shall not be less than **1.5** meters below ground level.

The electrodes shall be surmounted by alternate layers of charcoal or coke and salt. Watering arrangement with **½"** G.I pipe with a funnel shall be provided, the later being housed with chamber (masonry) of inner size **300** x **300** mm CI hinged cover with CI frame to be provided on the top.

7.4 Tests:

The resistance of earth electrode shall be less than 5 Ohms.

8.0 EXTERNAL ELECTRIFICATIONS WORKS

8.1.1 Underground Cables:

i) Medium and low pressure:

Cables should be double steel tape armoured over lead covering and paper insulated or PVC insulated as specified in the schedule of work. All repair joints of cables should be in joint boxes and filling in of the compound shall be done as per IS specifications using best quality materials. All accessories and other materials should conform to I.S. Specification. The jointing work should be carried out by a competent authorized cable jointer. The cables shall be 1100 V grade.

ii) Trench:

Trenches shall not be less than 45 cm wide and 60cm below ground level. Wherever necessary, suitable propping and storing may be done to avoid caving in of the adjoining trench walls. Where the cables cross other services lines adequate protection should be taken to prevent accidental exposure and/or damage to the cables.

iii) Spacing between cables:

Where more than one cable is laid in the same trench the actual space between the cables should normally be 23 cm apart leaving a clear distance of 15cm from the cable and the trench walls.

iv) Laying of cables:

Before the cables are laid, a layer of 3" sand base is to be provided for purposes of cushioning. The cables after being uncoiled and laid into the trench from the rollers should be drawn in straight length. After the cable is laid, it is to be covered with another layer of sand of about 15cm in depth, and the top surface is to be suitably levelled to received the cable covers which may be of second class bricks or tiles and laid in such manner as to overlap the cables on either sides by at least 5cm. Cable markers of aluminium or G.I. shall be provided at concrete blocks of 3/20cm x 20cm x 5cm and spaced at distance of about 30cm from center to center and at every change in direction. Cables may also be laid in tier formation in the same trench in this case also after the 1st 3 inches of sand cushion, the first tier of cable is laid and sand filled in the trench to form a bed of 23cm above this tier. After this the second cable is laid and the process repeated, the top most tier being at least 45cm below the Ground level. The top cable shall be suitably covered with bricks or tiles. When laying cables, care should be taken to see that the paper insulated cables are bent/straightened slowly, sharp radii

being avoided. The minimum safe bending radius for single core cables is 20 diameters and for multicore cables 10 dia meters and for armoured cables 12 diameters, the diameter being the overall diameter of the cable. Where the cables are required to cross roads they should be normally taken through sleeve pipes at least 10cm in diameter which may be either stone ware, steel or spun reinforced concrete. For more than one cable the diameter should not be less then 15cm. Steel pipes shall be used where it is not possible to obtain sufficient depth to withstand impact from traffic.

v) Cable inside building:

Cables laid inside the building should be properly protected and be carried either in ducts with suitable covers with slabs or chequred plates or fixed to walls by clamps, brackets or cable trays.

vi) Hume Pipes

Wherever cables crossing roads, passages Hume pipes of suitable diameter shall be provided across the road including Civil works of digging, laying of Hume pipes upto a depth of 1 metre and refilling the trench. This shall be properly laid to cover the entire road so as to protect the cables against damage of passing Heavy Vehicles.

vii) Testing the cables:

High voltage tests should be undertaken to ensure that no damage has occurred during the laying operation and that the joints are in order. Cables of 1.1 KV suitable for low and medium voltage should with stand for 15 minutes, 300 volts D.C. current applied between the conductors and between each conductor and sheath. In absence of high pressure testing equipment it is sufficient to test for 1 minute with 1000 volts. If the test results are found to be not satisfactory the contractors shall arrange to replace without any extra cost including removal of rejected materials, Re-laying etc.

viii) Cable laying & termination shall confirm to IS 1255

ix) Earthing of cables and cable glands shall confirm to IS 3043

x) The cable length given in bill of quantities are approximate and the contractor has to measure exact length of cables to be laid before commencement of work in presence of engineer in charge and give the sizes and quantities required to the engineer in charge to take further action by the engineer in charge. The measurements after laying cables are also to be taken jointly by contractor.

8.1..2 Over head lines

This specification of over head line covers installation, testing and commissioning of over head lines distribution lines upto including 11 KV lines, service connections and street lighting works.

1) **Materials** : Supports for over head lines and for street lights shall be any of the following types or as specified by Engineer in charge and shall be of adequate strength confirming in all respects to Rule 76 of Indian electricity rules.

Steel tubular poles: This shall conform IS 2713-1964. This shall be seamless/sawaged and welded type as specified and shall be in time stepped sections. Unless other wire specified $1/6^{th}$ from the base length of the pole plus 15cm be coated with black bitumen paint both internally and externally. The remaining portion of the pole shall be painted with one coat of red oxide on its external surface. The pole shall be complete with cap and base plate.

Steel poles (RSJ Joists): These shall be 1 section steel rolled poles confirming to IS standards and Medium weight. The height of the pole shall not be less than 9mts and the pole shall be fixed below ground level not less than 1.5 mts.. The size of overhead line steel RS Joist pole shall be concreted in 1:3:6 cement concrete and painted as per steel tubular poles given above.

Prestressed Cement Concrete Poles (PSCC): PSCC poles shall be of 8.0 Mts./ 9.0 Mts. Height and shall confirm to standards of APTRANSCo. / APDISCo.

'D' Iron Clamps: Where so specified in the contract conductors shall be spaced vertically supported on shackle which are attached to the pole by means of 'D'shapped clamps made of M.S. flats of size not less than 50x6mm and galvanized set the dimensions of 'D' shall be such as to hold 75 mm high and 90 mm dia (minimum size) shackle insulators. The 'D' iron clamp shall be compete with pole clamp with necessary bolts nuts and washers and bolts holes. Clamps shall also provided for pin insulators as in case of vertical formation.

G.I. Strap : Where 'D' iron clamps are not specified, a pair of strap plates of galvanized iron of size 40mm x 3mm and length of 23cms shall be used with shackle insulators. The pole clamp shall be treated with one coat of red oxide primer before erection and finished with two coats of approved paint after erection along with other hardware as specified. The nuts, bolts, for pole clamp shall be of G.I./Cadmium passicated/ galvanized.

Stay/Strut Set : A stay set shall consist of stay rod, anchor plate, bow tightener or turn buckle, thimble, stay wire, and strain insulator. The stay rod shall be with stay grip in case of turn buckle is used instead of bow tightener. The stay wire shall be either 7/4.00mm dia or 7.3.15mm dia. G.I. as specified in the contract confirming to IS 2141 – 1968 grade. The anchor plate shall be of M.S. galvanized and not less than 30cms x 30cms x 6.4mm thick and size of stay rod shall be not less than 1.8 m (6 feet) long and 19mm dia.

Insulator: Porcelain insulator shall conform to IS 1445 –1966 suitable for over head lines for power lines below 1000 V and IS 731-1971 for overhead power lines greater than 1000V. This shall be vitreous throughout and non absorbent. The exposed surface shall be glazed. Insulator shall have adequate mechanical strength high degree of resistance to electrical puncture and resistance to climatic and atmospheric attack. The insulator shall be of the following types as specified.

a) Pin and shackle insulators for L.T. and MV lines.
b) Pin and disc type for HV lines.

The minimum size of shackle insulators shall be 65mm dia 100mm high. The pin insulators shall be suitable for 12mm cordeam thread and shall be complete with GI. Pin, nuts, and washers.

Binding Materials: Binding of conductors with the insulators shall be done with 12 SWG soft/ aluminum conductor.

Guard wire: Guard wire shall be G.I. It shall have minimum breaking strength of 635 kg in accordance with Rule 38 of I.E. Rule. It shall also be sufficient current carrying capacity to ensure rendering of guard line.

Earth wire: The size of the continuous earth wire shall not be less than SSWG.G.I.

Section Stay: A stay shall be provided at all angle or terminal poles. The stay rod with the anchor plate shall be embedded in cement concrete 1:3:6(1 Cement:3 coarse:6 graded stone) and not less than 0.28 cum content in such away to prevent uprooting of the stay rod. The stay wire shall also be connected and bounded properly to the continuous earth wire. Double stays shall be provided at the all dead ends of the pole.

Jumpers: While stringing conductors as sufficient length be kept at shackle termination for making jumpers.

Guarding: All road crossing, crossings, of overhead lines, and between HV & LV lines carried on the same support guared shall be provided. The guard wires shall be bonded to earth wire Cage guard shall be provided for distribution lines of vertical configuration.

8.1..3 Lighting Arrestors

Lightening arrestors shall confirm to IS 3070 - 1965 part I and IS - 3070 - 1966 part-II as applicable. The lightening arrestors system shall confirm to Rule 92 of IE Rule.

8.1..4 Service Connection by Underground Cables:

The service cables from an overhead distribution live shall be fixed to the support with 2 No's of clamp of M.S. flat size 50mm x 6mm. This shall be protected upto a height of 3m from ground level by a G.I. pipe of adequate size clamped to the support with 2 No's of flats of size 50mm x 6mm. The cable shall be laid through pipes while crossing roads, pavements, masonry etc.

8.1..5 ACSR Conductors

Conductors shall be of the following types.

Aluminium conductor steel reinforced (ACSR) This shall comply with the requirements of I.S. 398 - 1961.

The physical and electrical properties of the above conductors shall be in accordance with the specifications as per IS. These conductors shall have a breaking strength of not less than 350kg.

Necessary precautions during storage and handling shall be taken to avoid damage to the conductors.

8.1.6 Transformers

The transformers required are intended for use in distribution of power and lighting. The 11 KV / 433 volts Transformer required for feeding lighting, pumps, Air conditioning, lifts etc.

The transformers shall be distribution type out door used complete with oil filled H.T brushing, L.T. cable end box receive suitable size confirming to IS2026

The transformers shall be designed and manufactured and tested as per IS 2026.

The transformers winding shall be of copper/aluminium winding as specified.

The transformer shall be adequately designed and effectively cooled to ensure its working on full load conditions continuously under short time over load conditions.
The design of core should ensure stability and reduce to a minimum the transformer excitation current and eddy current losses.

The core shall be provided with lugs suitable for lifting the complete core and coil assembly of the transformer.

The transformer coils shall be made of high conductivity copper and insulated with paper of dielectric strength and allow ageing characteristics. The Insulation of the coils shall be treated with suitable insulating material like varnish is to develop full electrical strength of the windings.

The tap changing arrangement shall be provided on the H.T side. The tap changer shall be ON / OFF load type. The tap changing switch shall be mechanically coupled to the external operating handle and the operating handle shall be carried through on oil tight gland on the tank side. A register plate clearly indicating the tapping in use shall be fixed to the external operating mechanism and provision shall be made for securing and padlocking the switch in any of the working position and to ensure that contacts are fully engaged before the transformer is energised. The range of ON / OFF Load tap change shall be $\pm$2 ½ % to $\pm$ 5%.

i) Bushing

The Bushing Insulators of the transformers shall be of sufficient creepage length and shall be unaffected by atmospheric conditions due to weather, fumes, alkalies at site.

ii) Insulating oil

Sufficient oil shall be supplied for first filling. The oil shall comply in all respects with pro IS.335.

All accessories like drain valve, oil filling valve, filter valve, oil sampling valve, pressure relief device, oil level indicator, indicating thermometer (dial type) earthing terminal, bi-directional rollers . Exhaust vent, eye bolts, lugs, Diagram and rating plate.

9.0 Testing

All panel boards, switch boards, transformers, over head lines, cables, switches, main switch boards, shall be properly tested with meggar, test lamps for voltage, Insulation, and values shall be submitted to site electrical Engineer before commissioning pressure test of approximate standard shall be carried out on equipment, on overhead lines, cable panel boards etc.

The H.T. side of transformers shall be tested with 1000V meggar and L.T. side of equipment, overhead lines, cables with 500V meggar. The earth pits shall be tested with earth meggar. All results shall be carried out at site in presence of electrical Engineer and report shall be submitted to him in triplicate and also to the consultant.

All test certificates Transformers, main panel boards, main switch boards, cables, overhead lines, sub distribution boards shall be supplied in triplicate to the site electrical Engineer as well as to consultant. All meters shall be properly working without damages/strucking.

10.0 Commissioning

All the equipment, transformers, cables, panel boards, overhead lines can be commissioned only after the pressure/meggar tests are found satisfactory. The equipment, cables, overhead lines, panel boards, transformer etc shall be energised in presence of Engineer and consultant after satisfactory presence/meggar tests.

11.0 Contractor:

The contractor for electrical works executing substations, earthing, transformers, lighting shall hold valid class 'A' licence issued by Unified state of Andhra Pradesh/Telangana electrical licensing board and he should submit his license copy and his previous experiences along with the tenders and also before commencement of

work The contractor shall quote and employ the number of electrical engineers, supervisors, wiremen in his position for such type of works, who are possessing necessary permits/certificates/licences.

Liquidated damages will be levied in case of failure to complete the job in time as per standard clauses.

The contractor shall be able to read the drawings and prepare the drawings as per site conditions and any modifications necessary for submissions to the electrical inspector.

The contractor shall have laison with APSEB officials and electrical inspectors, get the drawings and installations approved and also getting power supply released from APTRANSCO.

It is complete responsibility of the contractor to get the electrical inspector's approval, including and getting power supply. He should have good laison with APTRANSCO.

The contractor can strictly follow the drawings and specifications for carrying out the works and he can get clarifications from site Engineer or Consultant in case of doubt. The contractor shall submit three copies of drawings for conduit routing inside the building, which he is going to carry out and submit one copy to consultant and two copies to client. This also includes the point wiring, telephone point conduit and power plug wiring conduit for each building before starting of the civil works atleast one week in advance for verification by client and consultant. The contractor shall also give the total quantity of various conduit to be used in each building before starting work as well the quantity of various wires to be used for each building.

The contractor should plan properly for all electrical material and works entrusted to him 15 days in advance and in form the Engineer in charge and consultant about his work progress. He should co- ordinate with civil persons for recessed conduit laying and also switch boards recessed fixing and any other electrical work associated with civil works as well as electrical Engineer at site and electrical consultant for his works.

LIST OF APPROVED MAKES /MATERIALS TO BE USED FOR

ELECTRICAL WORKS

Sl No	ITEM/ MATERIAL	MAKES
1	P.V.C. pipes and accessories	Sudhakar, Finolex, Mercury, Atul
2	M.S. conduit pipes (Screw type) black enameled with all accessories as per IS 9538- part-II 1981 or latest revision	Gupta Brothers, Supreme, Sunce, Adarsh, BCG, Bharat
3	Annealed copper conductor, PVC insulated, 1100 volts grade flexible copper cables manufactured to IS-694 (with FR & ISI marking)	Havells/ Finolex / Polycab / Q-Flex/ Nicco/ / Anchor/ RPG/ Suncab
4	PVC insulated aluminium conductor, PVC sheathed, Armored Underground cables to IS 1554-Part-I-1976 or latest revision	Universal/ ICC/ CCI/ Nicco/ Poly cab Havells/ Finolex/ Suncab/ Fine cab Rediant/ Asian/ Unistar/ Paragon/ Premier/ Polycat,

5	Ceiling roses, junction boxes and E.I.shades, Pendent holders and batten holders and brackets	Anchor/ Pointer Cona/ Million/ Delite/ Leader
6	5A single pole switches, two way switches, flush type switch and porcelain fuse, 5A 3pin socket and 15A 3 pin power plugs flush type sockets kit kat fuse units	Anchor/ Pointer Cona / Khosla/ Delite/ Crompton/ Maru/ sputnik/ Leader/ Million
7	Modular plate switches, 6A pin Modular Wall Plug Socket with Switch Control	Northwest / Crabtree / Legrand Mosiac/ MK/ Anchor Woods
8	M.S. Boxes	Make out of 16 SWG sheet steel
9	Distribution boards of single phase and 3phase from 4way to 12way	MDS, Havells, HPL, S&S, SHIP
10	MCB, MCCBs, MCB Isolators, MCB distribution Boards, Isolators, ELCBs, RCCBs	Schneider Electric India / Standard/ Havells/ Legrand/ MDS/ L&T /Indo-Copp/ LT&LK
11	Iron clad sheet metal main switches of various capacities both rewirable and HRC type.	Havell's, standard, sputnik, HPL,
12	Rewirable and HRC fuse units of various capacities.	Havell's, standard, sputnik, HPL
13	Switch Fuse Unit	L&T /English Electric/ Siemens/ Havells/ HPL /standard
14	Distribution Fuse Board Type 5N 100 TNG E.E. or equipment.	English Electric/ Larsen Toubro/ Siemens/ Havells/ HPL
15	Panel Mounted Meters (Ammeter and Volt meter etc)	AE/ IMP/ EMCO
16	Cable Glands	Siemens/ Dowells/ Crompton Greaves
17	Cable Lugs	Dowells/ Jaison
18	Cable Terminating Kits	M-Seal/ Raychems/ CCI
19	Flourescent Fittings	Cromption/ Phillips/ Bajaj/ GEC/ Havell's
20	Energy saving model 28Watts with Electronic Choke & Ordinary 40W tube.	Unit: Trinic Tube: Philips/ Wipro/ Crompton /GE
21	Post top Lanterns, street light fixtures, Bulk head fittings, Halogen Lamps.	Philips/ Crompton greaves/ Bajaj /Havell's
22	Ceiling fans and exhaust fans	Khaitan/ Orient/ Crompton Greaves/ Polar / Bajaj
23	Bell pushes	Anchor, Leader, Maru
24	Screws or nails of all sizes	Bharat, sharp,Nettle fold (Brass, GI, M.S) only
25	Wooden accessories (including fillets gutties,	Make of well seasonedhigh quality

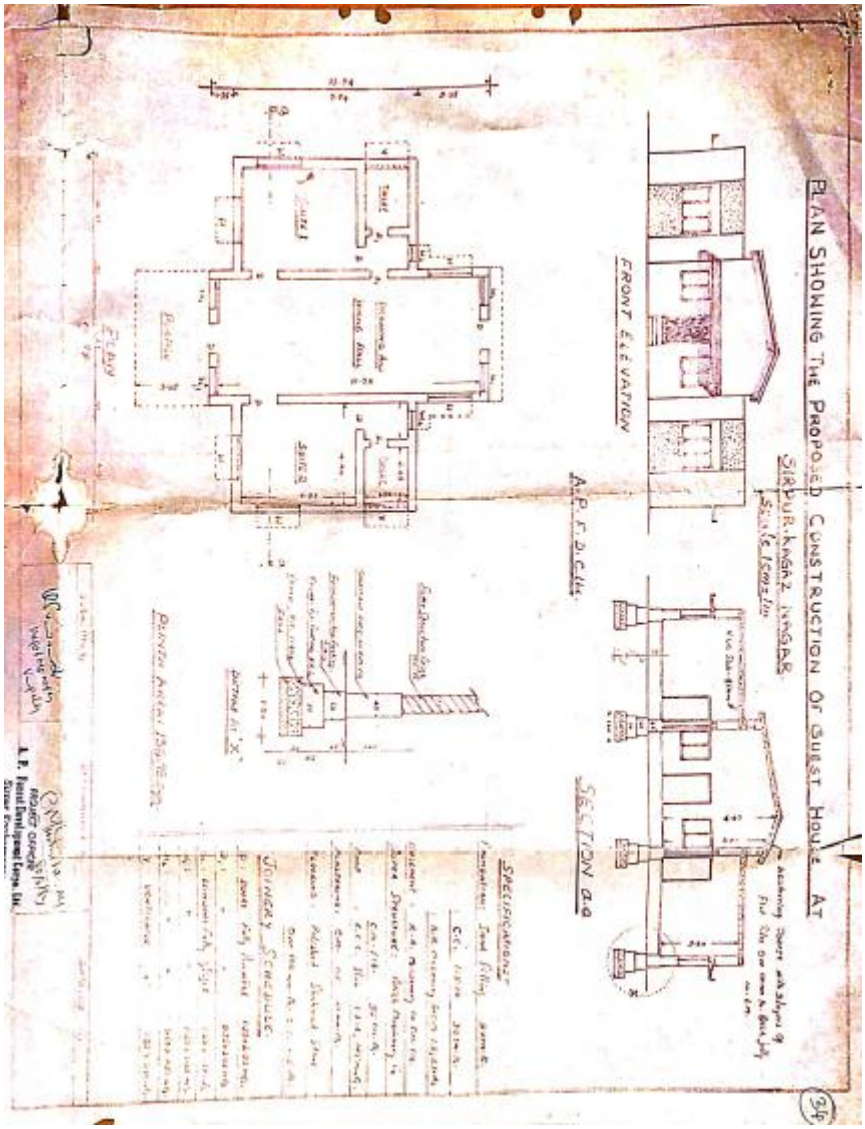
	boards & blocks including, double boards)	teak wood without knots and well polished.
26	PVC Casing & Capping and accessories	MODI/ PLAZA/ PRESSION
27	Energy Meters	ECE/ HAVELL'S/BHEL/HPL
28	Pump sets	Kirloskar/ Crompton Greaves/ Texmo
29	Transformers	ETE/ HINT/ VOLTAMPS/ Vijay Electricals/ HIT/ APTransco approved makes

I here by agree to use material only from the marks specified against each item.

Tenderer

General Manager
TGFDC Ltd

DRAWINGS



Tenderer

General Manager
TGFDC Ltd

1.0 DRAWINGS:

1.1 The plans enclosed with the tender are liable to the altered during execution of work as per necessity of site conditions. The premium quoted by the contractor for various items shall hold good for execution of work even with altered plans.

1.2 One set of drawings, on the basis of which actual execution of the work is to proceed shall be furnished free of cost to the contractor by the Divisional Manager/ General Manager/ Engineer-in-charge progressively according to the work program submitted by the contractor and accepted by the Vice Chairman and Managing Director, TGFDC Ltd/ Engineer-in-Charge. Drawings for any particular activity shall be issued to the contractor atleast 10 days in advance of the scheduled date of the start of the activity. However, no extra claims by the contractor toward any delay in issue of drawing or issue of any revision / change to the drawings issued earlier shall be admissible. The Engineer -in-Charge shall intimate the contractor 7 days in advance regarding any delay to issue of drawings, for any particular stage of works. If work gets effected due to delay to issue of drawings, for any particular stage of work the contractor shall be granted extension of time in terms of condition 14.7 of tender notice.

1.3 Signed drawings above shall not be deemed to be an order for work unless they entered in the agreement or schedule of drawings under proper alterations of the contractor and Engineer-in-charge or unless they have been sent of the contractor by the Engineer-in-charge with a covering letter confirming that the drawing in and authority for work in contract.

2.0 DISCREPANCIES:

2.1 In case of discrepancies between documents the following order of procedure shall apply:-

2.1.1 Between the written description of written dimensions in the drawings and the corresponding one in the specifications, the latter shall apply.

2.1.2 Figured dimensions shall supersede scaled dimensions. The drawings on a larger scale shall take precedence over those on a smaller scale.

2.1.3 Drawings issued as construction drawings from time to time shall supersede tender drawings and also the correspondence drawings previously issued.

Note: The contractor should not execute any component of work without obtaining the working drawings. Any work done without drawings shall be at the contractors' responsibility only. Acceptance for such work will be at the discretion of the Vice chairman and managing director TGFDCl.

3.0 SECRECY CLAUSE:

The drawings and specifications made available to the tenderer shall exclusively be used on the work and they are retained from passing on each plan to any unauthorised 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 clause or official secret Act 1923.

BILL OF QUANTITIES (Enclosed Seperately)

AND

PRICE BID.

Name of work : Renovation of TGFDC Camp Office at Kaghaznagar Division Office complex

BILL OF QUANTITIES

PREAMBLE

1. The Bill of Quantities shall be read in conjunction with the instructions to Tenderers, General and Special conditions of Contract Technical Specifications and Drawings.

2. The quantities given in the Bill of Quantities are estimated and provisional and are given to provide common basis for tendering. ***The quantities here given are those upon which the lumpsum tender cost of the work is based but they are subject to alterations, omissions, deductions or additions as provided for in the conditions of this contract and do not necessarily show the actual quantities of work to be done.*** The basis of payment will be actual quantities of work ordered and carried out as measured by the Contractor and verified by the Engineer and valued at the estimate rate plus or minus tender percentage quoted in the Bill of Quantities where applicable, and otherwise at such rates and prices as the Engineer-in-Charge may fix within the terms of Contract.

3. The estimate rates in the Bill of Quantities shall, except in so-far as it is otherwise provided under the Contract include cost of all constructional material, labour, machinery, transportation, erection, maintenance, profit, taxes and duties together with all general risks, liabilities and obligations set out or implied in the Contract.

4. The plans enclosed with the tender are liable to be altered during execution of work as per necessity of site conditions. The Tender percentage quoted by the tenderer shall hold good for execution of work even with altered plans.

5. The whole cost of complying with the provisions of the Contract shall be included in the estimated rates for items provided in the Bill of Quantities and where no items are provided in the Bill of Quantities, their cost shall be deemed to be distributed among the estimate rates entered for the related items of work.

6. General directions and descriptions of work and materials are not necessarily repeated nor summarised in the Bill of Quantities. References to the relevant sections of the Contract documentation shall be made before entering estimate rate against each item in the Bill of Quantities.
7. The method of measurements of completed work for payment shall be in accordance with the relevant B.I.S. Codes & A. P. S. Specifications.
8. All items of work are to be executed as per the drawings / specifications supplied with the contract documents.

   If there is any contradiction between the drawings and the text of the specifications, the later shall prevail.

9. The Tenderer should inspect and select the quarries of his choice before he quotes the tender percentage in the Schedule of Bill of Quantities and satisfy himself about the availability of required quantum of materials.

10. Diversion drains should be excavated before completion of the embankments and the useful soils should be used in the nearby embankments.

11. The actual mix proportion by weight to be adopted during execution will be got designed in the laboratories to suit the grade of concrete and mortar to be used. It will be the responsibility of the contractor to manufacture concrete and mortar of required strength.

12. The quantum of measurement for all items of earthwork involving conveyance manually or by machinery shall be as assessed by level measurement. The measurements for the embankment will be for the consolidated banks only.

13. Wherever bailing out of water is involved either for excavation or for foundations or for constructions, the percentage quoted shall take into account the de-watering charges necessary. No separate payment will be made for de-watering.

14. Wherever embankment work is involved, useful soils approved by the Engineer-in-Charge from the cutting reaches and diversion drains shall be taken and used for forming nearby embankments soils used for constructions will be at free of cost.

15. The quoted tender percentage shall also include the work of any kind necessary for the due and satisfactory construction, completion and maintenance of the works according to the drawings and these specifications and further drawings and orders that may be issued by the Engineer-in-Charge from time to time. The quoted tender percentage shall include compliance by the Contractor with all the general conditions of contract, whether specifically mentioned or not in the various clauses of these specifications, all materials, machinery, plant, equipment, tools, fuel, water, strutting, timbering, transport, offices, stores, workshop staff, labour and the provision of proper and sufficient protective works, diversions, temporary fencing and lighting. It shall also include safety of workers, first aid equipment suitable accommodation for the staff and workmen, with adequate sanitary arrangements, the effecting and maintenance of all insurance, the payment of all wages, salaries, fees, royalties / Taxes, duties or other charges arising out of the execution of works and the regular clearance of rubbish, reinstatement and clearing-up of the site as may be required on completion of works safety of the public and protection of the works and adjoining land. The work of Building in quality control / assurance shall be deemed to be covered in the quoted percentage.

16. The Contractor shall ensure that, the quoted tender percentage shall cover all stages of work such as setting out, selection of materials, selection of construction methods, selection of equipment and plant, deployment of personnel and supervisory staff, quality control testing etc. The work quality assurance shall be deemed to be covered in the tender percentage.

17. a) The special attention of the tenderer is drawn to the conditions in the tender notices wherein reference has been made to the Andhra Pradesh Standard Specifications [APSS] and the Standard preliminary specifications containing therein. These preliminary specifications shall apply to the agreement to be entered into between the contractor and the Corporation of Andhra Pradesh/Telangana and shall form an in-separable condition of the contract along with the estimate. All these documents taken together shall be deemed to form one contract and shall be complimentary to another.

18. b) The tenderer shall examine, closely the A.P.S.S. / MOST and also the standard preliminary specifications contained therein and sign the Superintending Engineer's office copy of the APSS / MOST and its addenda volume in token of such study before submitting his overall tender percentage which shall be for finished work in-situ. He shall also carefully study the drawings and additional specifications and all the documents, which form part of the agreement to be entered into by the successful tenderer. The APSS / MOST and other documents connected with contract such as estimate plans, specifications, can be seen on all working days in the office of the Vice Chairman and Managing Director, TGFDC Ltd.

19. The tenderers attention is directed to requirements for materials under the clause 'materials and workmanship' in the preliminary specifications of APSS. Materials conforming to the Bureau of Indian Standards specifications, APSS etc., shall be used on the work and the tenderers shall quote his overall tender percentage accordingly.

20. The tenderer has to do his own testing of materials and satisfy himself that they conform to the specifications of respective I.S.I. Codes before tendering.

21. The contractor shall himself procure the required construction materials of approved quality including the earth for formation of embankment and water from quarries / sources of his choice. All such quarries / sources of materials required for the work shall be got approved by the Engineer-in-Charge in writing well before their use of the work.

22. The contractor shall himself procure the steel, cement, Bitumen, Blasting materials, sand, metal, soils, etc., and such other materials required for the work well in advance. The contractor has to bear the cost of materials for conveyance. The Corporation will not take any responsibility for fluctuations in market in cost of the materials, transportation and for loss of materials etc.

23. Inspection of site and quarries by the tenderer: Every tenderer is expected before quoting his overall tender percentage, to inspect the site of proposed work. He should also inspect the quarries and satisfy himself about the quality, and availability of materials. The best class of materials to be obtained from quarries, or other sources shall be used on the work. In every case the materials must comply with the relevant standard specifications. Samples of materials as called for in the standard specifications or in this tender notice, or as required by the VC & MD TGFDC / Engineer-in-charge, in any case, shall be submitted for the VC & MD TGFDC / Engineer-in-charge's approval before the supply to site of work is begun.

24. The tenderer's particular attention is drawn to the sections and clauses in the A.P. standard specification dealing with

a) Test, inspection and rejection of defective materials and work.
b) Carriage
c) Construction plant
d) Water and lighting
e) Cleaning up during the progress and for delivery.
f) Accidents
g) Delays
h) Particulars of payments.

The contractor should closely peruse all the specification clauses, which govern the overall tender percentage he is tendering.

25. The defect liability period of contract is twenty four months.

26. The estimate rates for items shown in the Schedule "A" include all construction materials. No escalation in rates will be paid unless specified in the tender document. The tenderer has to quote an overall tender percentage considering all the aspects of the tender to complete the finished item of work as per the APSS / MOST / B.I.S. specifications, the special specifications appended, Drawings etc.

27. If there is any contradiction between APSS / MOST and B.I.S. specifications, listed and detailed technical specifications, the latter shall prevail.

28. In case of a job for which specifications are not available with the Schedule or in APSS / MORT&H or B.I.S. code and are required to be prescribed, such work shall be carried out in accordance with the written instructions of the Engineer-in-charge.

29. The contractor should use the excavated useful soils and stone for construction purpose. Soils used for construction either for homogeneous section in hearting or in casing zone based on the suitability will be at free of cost and the cost of stone used for construction purpose will be recovered from the contractor's bill.

The contractor should quote his tender percentage keeping in view of the above aspects.

30. Additions and alternations by the Tenderer in the Schedule of quantities will disqualify the tender.

31. In the case of discrepancies between the written description of the item in the Schedule "A" and the detailed description in the specification of the same item, the latter shall be adopted.

32. The Unit rates noted below are those governing payment of extras or deductions for omissions according to the conditions or the contract as set-forth in the preliminary specifications of the A.P. standard specifications and other conditions of specification of this contract.

33. It is to be expressly understood that the measured work is to be taken according to the actual quantities when in place and finished according to the drawings or as may be ordered from time to time by the Divisional Manager/ General Manager / VC & MD TGFDC / Engineer-in-charge and the cost calculated by measurement or weight at their respective rates without any additional charge for any necessary or contingent works connected works connected herewith. The Percentage Excess or less on ECV quoted are for works in situ and complete in every respect.

34. For all items of work in excess of the quantities indicated the rates payable for such excess quantities will be tendered rates i.e., estimate rates plus or minus tender percentage.

35. For all items of work, intermediate payment will be made provisionally as per relevant clause. Full-accepted agreement rates will be paid only after all the items of works are completed.

36. The contractor is bound to execute all supplemental works that are found essential incidental and inevitable during execution of main work.

37. The payment of rates for supplement items of work will be regulated as under.

Supplemental items directly deductible from similar items in the original agreement.

The rates shall be derived by adding to or subtracting from the agreement rate of such similar item the cost of the difference in the quantity of materials labour between the new items and similar items in the agreement worked out with reference to the schedule of rates adopted in the sanctioned estimate with which the tenders are compared.

a) Similar items but the rates of which cannot be directly deducted from the original agreement.

b) Purely new items which do not correspond to any item in the agreement.

The rate of all such items shall be estimated rates plus or minus overall tender percentage.

38. ENTRUSTMENT OF ADDITIONAL ITEMS.

a) Where ever additional items not contingent on the main work and outside the scope of original agreement are to be entrusted to the original contractor dispensing with tenders and if the value of such items exceeds the limits up to which the officer is empowered to entrust works initially to contractor without calling for tenders approval of next higher authority

shall be obtained. Entrustment of all such items on nomination shall be rates not exceeding the estimate rates.

b) Entrustment of supplement items contingent on the main work will be authorised by the officers up to the monetary limits up to which they themselves are competent to accept items in the original agreement so long as the total amounts up to which they are competent to accept in an original agreement rates for such items shall be worked and prior approval to be taken from VC &MD TGFDC

c) Entrustment of either the additional supplemental items shall be further subject to prior approval to be taken from VC &MD TGFDC, the items shall not be ordered by an officer on his own responsibility if the revised estimate or deviation statement providing for the same requires the sanction of higher authority.

Note: It may be noted that the term estimate rate used above means the rate in the sanctioned estimate with which the tender's compared or if no such rate is available in the estimate the rate derived will be with reference to the schedule of rates adopted in the sanctioned estimate with which tenders are compared.

BILL OF QUANTITIES

[Part-I]

Name of Work:: Renovation of TGFDC Camp Office at Kaghaznagar Division Office complex

Estimate Quantity (only Figures)	Item Detailed Specification Description	Work Type eg. Earth Work, Electrical works.. etc (upto 200 Characters)	Item Short Description (upto 100 Characters)	APSS / Morth Cl. Number (upto 200 Characters)	Rate (INR) (Upto 2 Decimals)	UOM (upto 50 Characters)	Amount (INR) (Upto 2 Decimals)
121.00	Through scraping of old plastered surface - ceiling	Civil Work	Through scraping of old plastered surface - ceiling	As directed by Dept	10.90	Sqm	1319.00
263.30	Through scraping of old plastered surface	Civil Work	Through scraping of old plastered surface	As directed by Dept	10.90	Sqm	2870.00
121.00	Ornamental Plastering with CM(1:5) Prop: 12mm thick in single coat using including cost and conveyance of all materials like cement, sand, water etc., to site, including sales & other taxes on all materials, all operational, incidental charges and labour charges such as mixing mortar, finishing, curing, etc., complete but excluding seigniorage charges for finished item of work. (APSS 901,906)	Civil Work	Ornamental Plastering with CM(1:5) Prop: 12mm thick	APSS 901,906	199.62	Sqm	24154.00
263.30	Plastering 12mm thick in two coats with base coat of 8mm thick in CM (1:6) and top coat of 4mm thick in CM (1:4) dubara sponge finish including cost and conveyance of all materials like cement, sand, water etc., to site, sales & other taxes on all materials,all operational, incidental and labour charges such as mixing mortar, scaffolding charges, lift charges, including cutting of Grooves wherever necessary as directed by Engineer - in - charge, finishing, curing, etc., complete but excluding seigniorage charges for Even Surfaces of Wall for finished item of work. (APSS 901,903 & 904)	Civil Work	Plastering 12mm thick in two coats with base coat o	APSS NO 402	520.14	Sqm	136953.00

Tenderer

General Manager
TGFDC Ltd

95.08	Supplying and fixing Gyp board Fine line Grid false ceiling (GS-FLC-4.6)using 12.5mm thick Gyp Board sheet tiles of size 595mm x 595mm conforming to IS 2095 - 1992 fixing to Gyp steel precoated GI wall angle of size 25mm x 25mm x 0.70mm thick along the perimeter of ceiling screw fixed to brick work / partition at 610mm center to center and suspending the frame work using precoated GI Tee section (24mm x 38mm x 0.7mm) from soffit at 1220mm center to center fixed with GI Soffit Cleat, rawl plugs and steel expansion fasteners & connecting clip to the GI Tee section with 4mm dia GI rod with galvanised spring steel level clip of PVC unversal holding clips system at 1200mm center to center and fixing the 12.5mm Gypboard sheet tiles of size 595mm x 595mm and finishing two coats of drywall top coat, overheads and contractor profit complete for finished item of work in all floors.	Civil Work	Supplying and fixing Gyp board Fine line Grid fals	APSS NO 402	1119.06	Sqm	106400.00
249.40	Providing and applying Wall putty of White Cement or Polymer or Cement based of average 1 to 2 mm thickness over plastered surface to prepare the surface even and smooth after thoroughly brushing the surface to remove all dirt and remains of loose powdered materials, applying emery paper, Sand the surface, clean & wipe off loose dust, applying knifing paste filler by putty knife / muslin pad, air dry for 2 - 3 hrs, sand with 180 and 320 No., emery paper for the surface preparation including cost and conveyance of all materials to work site and all operational, incidental, labour charges, over heads and contractors profit etc., complete for finished item of work in all floors for Internal walls	Civil Work	Providing and applying Wall putty of White Cement o	APSS No. 309 & 310	253.70	Cum	63273.00

249.40	Painting to New walls with two coats of Acrylic Emulsion paint of superior quality of approved brand and shade over base coat of cement primer interior grade -I making three coats in all to give an even shade after thoroughly brushing the surface to remove all loose powdered materials, including cost and conveyance of all materials, including cost and conveyance of all materials, cost of brushes, water to site, etc., sales & other taxes, all operational, incidental and labour charges such as scaffolding charges, lift charges, curing etc., complete for finished item of work in all floors for internal Walls.(APSS No. 912) in All Floors	Civil Work	Painting to New walls with two coats of Acrylic Emu	APSS No. 912	199.70	Sqm	49805.00
263.30	Painting to New walls with two coats of Acrylic Emulsion paint of superior quality of approved brand and shade over base coat of cement primer exterior grade -II making three coats in all to give an even shade after thoroughly brushing the surface to remove all loose powdered materials, including cost and conveyance of all materials, including cost and conveyance of all materials, cost of brushes, water to site, etc., sales & other taxes, all operational, incidental and labour charges such as scaffolding charges, lift charges, curing etc., complete for finished item of work in all floors for external Walls.(APSS No. 912) in All Floors	Civil Work	Painting to New walls with two coats of Acrylic Emu	APSS No. 912	275.60	Sqm	72565.00
20.16	Painting to New wood work with two coats of ready mixed synthetic enamel paint Grade I all shades to give an even shade over base coat Primer with Luppam finishing after thoroughly brushing the surface to remove all remains including cost and conveyance of all materials to site, sales & other taxes, all operational, incidental and labour charges etc., complete for finished item of work.(3 coats) (APSS No. 1201 & 1212).in All Floors	Civil Work	Painting to New wood work with two coats of ready	APSS No. 1201 , 1212	212.24	Sqm	4279.00

8.14	Providing skirting to internal walls to 10 cm height with Nano polished vitrified tiles 8mm thick , regular finish and normal colour, length equal to flooring tiles, set over base coat of CM(1:5) 12 mm thick using screened sand with cement slurry of honey like consistency spread at the rate of 3.30 kgs per sqm and jointing with white cement paste mixed with pigment of matching shade to full depth, including cost of all materials like tiles, cement, sand and water etc.,and overheads & contractors profit complete for finished item of work.(APSS No.701 &707)	Civil Work	Providing skirting to internal walls to 10 cm heigh	APSS No.701 &707	1101.35	Sqm	8965.00
8.28	Flooring with Ceramic Tiles of 7.3mm thick 1st. quality of Non-skid red or white full body Ceramic floor tiles of size not less than 300 x 300 mm and thickness between 7-8 size as approved by Engineer - in - charge set over a base coat of CM (1:8), 12mm thick laid over flooring bed / V.R.C.C. slab, with neat cement slurry of honey like consistency spread at the rate of 3.3 Kgs of cement per Sq.m and jointed with neat white cement paste to full depth mixed with pigment of matching shade including cost and conveyance of all materials like cement, sand, water, ceramic tiles etc. to site, sales and other taxes on all materials, all operational, incidental and labour charges such as mixing of cement mortar, laying, curing, lift charges etc., complete but excluding seigniorage charges for finished item of work.(APSS No.701 & 707)	Civil Work	Flooring with Ceramic Tiles of 7.3mm thick 1st. qua	APSS No.701 &707	939.23	Sqm	7777.00

17.22	Dadooing to walls with any color glazed tiles 1st. quality of any size of brand as approved by Engineer - in - charge and set over a base coat of CM (1:5), 12mm thick and neat cement paste at the rate of 3.3 Kg/Sqmt. and jointed with white cement paste mixed with pigment of matching shade including cost and conveyance of all materials like cement, sand, water, tiles, etc. to site, sales and other taxes on all materials, C921 such as mixing of cement mortar, laying in position, curing, lift charges etc., complete but excluding seigniorage charges for finished item of work (APSS No.701 & 707) in All Floors	Civil Work	Dadooing to walls with any color glazed tiles 1st.	APSS No.701 &707	564.61	Sqm	9723.00
121.00	Providing specialized high solid, cold applied acrylic elastomeric liquid membrane coating treatment to the terrace / roofing with fibre mesh / geo fabric duly a. Cleaning of the surface from dirt, dust and other contaminations. b. Applying one coat of High solid, Cold applied, Acrylic Elastomeric Liquid Membrane coating c. immediately, Application of one coat of High solid, Cold applied, Acrylic Elastomeric Liquid Membrane coating e. Laying of fibre mesh 40 GSM / Geo fabric 40 GSM on the surface. f. Over the Fibre mesh, Application of two coats of High solid, cold applied, Acrylic Elastomeric Liquid Membrane Coating	Civil Work	Providing specialized high solid, cold applied acry	As directed by Dept	796.44	Sqm	96369.00
250.00	Supply and Fixing of ISI 25mm outer dia mediumgrade, FRLS with IS:9537 part 3 regid PVC pipe. concealed in wall with all required accessories including masonary work for light, fan and separate plug point with 8 or 9 Module Hot dip galvanized Metal Box including all labour charges etc., complete. Makes : Sudhakar / Finolex / Modi / VIP / Precision / Universal / Million Plast / Gold / Polycab / DEC / Beljin / Champion / Austro	Electrical work	Supply and Fixing of ISI 25mm outer dia mediumgrade	As directed by Dept	119.80	Rmt	29950.00

6.00	Wiring with 2 runs of 14/0.3mm (1.0 Sq.mm) Fire Retardant Low Smoke (FRLS) / HFFR P.V.C. insulated 1100 V Grade as per IS: 694 / 1990 specification for flexible copper cable (ISI MARK) in existing pipe with 6A 1 way modular switch, Ceiling rose including all labour charges etc., complete for light, bell, fan and exhaust fan points in Non-Residential Buildings Makes of Wires : Finolex / RR kabel / Havells /APAR EBXL / KEI / L&T / V-Guard Makes of Switches : Legrand Myrius / GM Four Five /Million mway / Goldmedal Curve /Anchor Roma Plus / Havells Fabio /Panasonic Vision / Hager Insista / BenloVesta / C&S Primo / CPL Vysma / Polycab Levana / Salzar / Infinity	Electrical work	Wiring with 2 runs of 14/0.3mm (1.0 Sq.mm) Fire Ret	As directed by Dept	676.04	Pt	4056.00
20.00	Supply and fixing of 6A 3/2 pin Modular wall plug socket with shutter and 6A 1 way modular switch control on a common switch board with earth continuity including wire leads, earth connections along with all labour charges etc., complete. Makes : Legrand Myrius / GM Four Five /Million mway / Goldmedal Curve /Anchor Roma Plus / Havells Fabio /Panasonic Vision / Hager Insista / Benlo Vesta / C&S Primo / CPL Vysma / Polycab Levana / Salzar / Infinity	Electrical work	Supply and fixing of 6A 3/2 pin Modular wall plug s	As directed by Dept	340.30	Each	6806.00
12.00	Supply and Fixing of 16A/6A 3pin plug socket with shutter and 16A modular switch control duly recessed in wall with Galvanised hot deep box of with common switch board including earth connections and all labour charges etc., complete. Makes of Switches : Legrand Myrius / GM Four Five /Million mway / Goldmedal Curve /Anchor Roma Plus / Havells Fabio /Panasonic Vision / Hager Insista / BenloVesta / C&S Primo / CPL Vysma / Polycab Levana / Salzar / Infinity	Electrical work	Supply and Fixing of 16A/6A 3pin plug socket with s	As directed by Dept	490.85	Each	5890.00

60.00	Supply and run of 1 of 22/0.3 mm (1.5 sq.mm) FRLS / HFFR PVC insulated 1100 V grade as per IS: 694 / 1990 specifications for flexible copper cable for existing pipe for earth continuity including all labour charges etc., complete. Makes : Finolex / RR kabel / Havells / Polycab /Beljin (HFFR) /Ollvin(HFFR) /Finecab Gold (HFFR) / GM(HFFR) / Gold Medal(HFFR) / Million(HFFR) / KEI (HFFR) / V-Guard (HFFR)./ DEC (FRLS / HFFR) / Bonton (HFFR) and Avocab (HFFR) / Fortune Arrt (HFFR) / SPM (HFFR) / Sudhakar (HFFR) / Nakoda (HFFR) / HPL (HFFR) / GLOSTER (HFFR) / Rajnigandha (HFFR) / Pawancab (HFFR) / South King (HFFR)	Electrical work	Supply and run of 1 of 22/0.3 mm (1.5 sq.mm) FRLS	As directed by Dept	39.90	Rmt	2394.00
180.00	Supply and run of 3 of 2.5 Sq mm PVC F.R L.S. / HFFR P.V.C. insulated flexible copper cable 1100 V grade as per IS: 694 / 1990 specifications specifications in the existing conduit pipe for run of mains from main panel board to TPN DB'S with pin type lugs and connection. Makes : Finolex / RR kabel / Havells / Polycab /Beljin (HFFR) /Ollvin(HFFR) /Finecab Gold (HFFR) / GM(HFFR) / Gold Medal(HFFR) / Million(HFFR) / KEI (HFFR) / V-Guard (HFFR)./ DEC (FRLS / HFFR) / Bonton (HFFR) and Avocab (HFFR) / Fortune Arrt (HFFR) / SPM (HFFR) / Sudhakar (HFFR) / Nakoda (HFFR) / HPL (HFFR) / GLOSTER (HFFR) / Rajnigandha (HFFR) / Pawancab (HFFR) / South King (HFFR)	Electrical work	Supply and run of 3 of 2.5 Sq mm PVC F.R L.S. / HFF	As directed by Dept	167.85	Rmt	30213.00
20.00	Supply and run of 3 of 4 Sq mm F.R L.S. / HFFR P.V.C. insulated flexible copper cable 1100 V grade as per IS: 694 / 1990 specifications in the existing conduit pipe for run of mains from main panel board to TPN DB'S with pin type lugs and connection Makes : Finolex / RR kabel / Havells / Polycab /Beljin (HFFR) /Ollvin(HFFR) /Finecab Gold (HFFR) / GM(HFFR) / Gold Medal(HFFR) / Million(HFFR) /	Electrical work	Supply and run of 3 of 4 Sq mm F.R L.S. / HFFR P.V.	As directed by Dept	254.80	Rmt	5096.00

	KEI (HFFR) / V-Guard (HFFR)./ DEC (FRLS / HFFR) / Bonton (HFFR) and Avocab (HFFR) / Fortune Arrt (HFFR) / SPM (HFFR) / Sudhakar (HFFR) / Nakoda (HFFR) / HPL (HFFR) / GLOSTER (HFFR) / Rajnigandha (HFFR) / Pawancab (HFFR) / South King (HFFR)						
4.00	Supply and transportation of 20W +/-10%, >/ 2000 lumens, 1200mm length LED retro tube light, housing made with glass body, wide operating voltage with Single / double side connection, PF≥0.9, Surge protection: > 2KV, THD<15%, with inbuilt driver and frosted cover CCT: 3000K - 6500K as desired by the department and as per IS specifications, minimum CRI≥80,.etc complete with 5 years warranty with BIS Certification.LUMINAIRE MAKE: Phillips / OSRAM / GE Venture / Wipro / Crompton / Bajaj /Havells / Jaquar / IB LED / Panasonic /Halonix / HPL / Syska / Eveready / Surya/ Keselec / Arraystorm / GM / Goldmedal LED MAKE : PHILIPS LUMILEDS / CREE /NICHIA / OSRAM / SAMSUNG / LG LEDs.	Electrical work	Supply and transportation of 20W +/-10%, >/ 2000 lu	As directed by Dept	370.38	Each	1482.00
30.00	Supply and transportation of 18W +/-10%, >/ 2000 lumens, LED edge lit edge slimline panel light, housing made with pressure die cast aluminium with powder coated round / sqaure with protruted light eddiciency diffuser IP 20 operating voltage with Single / double side connection, PF≥0.9, Surge protection: > 2KV, THD<15%, with inbuilt driver and frosted cover CCT: 3000K - 6500K as desired by the department and as per IS specifications, minimum CRI≥80,.etc complete with 5 years warranty with BIS Certification.LUMINAIRE MAKE: Phillips / OSRAM / GE Venture / Wipro / Crompton / Bajaj /Havells / Jaquar / IB LED /	Electrical work	Supply and transportation of 18W +/-10%, >/ 2000 lu	As directed by Dept	1329.00	Each	39870.00

	Panasonic /Halonix / HPL / Syska / Eveready / Surya/ Keselec / Arraystorm / GM / Goldmedal						
10.00	Supply and fixing of CFL batten holder (Makes : Anchor / Gold Medal Olive / Million Zoom). in lieu of ceiling rose of light point complete with all connections and all labour charges with 18 Watt CFL bulb Makes : Phillips / Crompton / Bajaj / Surya / Havells / HPL/ Halonix.	Electrical work	Supply and fixing of CFL batten holder (Makes : Anc	As directed by Dept	207.35	Each	2074.00
5.00	Supply, Transportation of energy efficient fan, 1200 mm sweep, aluminium body, consuming 28 W, BEE 5 star rated, ceiling fan with Brush Less Direct Current(BLDC)motor, class of insulation: B, 3 no's blades, 30 cm long down rod, 2 no's canopies, shackle'kit, safety rope, copper winding, Power Factor greater than 0.90, Service Value (CMMAV) greater than 8.5, Air delivery minimum 235 CMM, 350 RPM(tolerance as per IS:374-2019), THD less than 10%. with remote or compatible to electronic step type regulator unit for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C(max), insulation resistance more than 2 mega ohm, suitable for 230V, 50 HZ, single phase AC supply, earthing etc., including all standard accessories etc., complete. Makes : Atomberg (Efficio) / Havells /Orient / Halonix	Electrical work	Supply, Transportation of energy efficient fan, 120	As directed by Dept	3538.93	Each	17695.00
5.00	Supply and fixing of 2 Module Modular type Electronic Fan Regulator in the existing switch board Makes :Legrand Arteor / Schneider Zencelo / Honeywell Blenge Plus / CabtreeAmare / Logus Platina / Gold Medal GIFA/ GM-Zenova/ L&T- Englaze	Electrical work	Supply and fixing of 2 Module Modular type Electron	As directed by Dept	751.67	Each	3758.00

5.00	Labour charges for Fixing of Ceiling fan and regulator including transportation and giving connections with twin core wire etc., complete. Makes : Finolex / RR Kabel / Havells /Polycab / GM / Million / V-Guard / Gold Medal / Kundancab / HPL / RPG /Nandicab / Nakoda / Payal / Finecab /Gemini / Vimal / Suncab / Pawancab	Electrical work	Labour charges for Fixing of Ceiling fan and regula	As directed by Dept	231.65	Each	1158.00
3.00	Supply of 12" (300 mm) 900 R.P.M of heavy duty exhaust fan 250V A.C.50Hz.. 300mm size etc., complete. Makes: Crompton / Almounard / Havells Turbo Force SP	Electrical work	Supply of 12" (300 mm) 900 R.P.M of heavy duty exh	As directed by Dept	3908.42	Each	11725.00
3.00	Labour charges for fixing of Exhaust fan in wall with necessary connections and masonary work of making hole, finishing etc., complete	Electrical work	Labour charges for fixing of Exhaust fan in wall wi	As directed by Dept	646.59	Each	1940.00
1.00	Supply and fixing 4 WAY TPN Distribution board with IP-43 protection (Metal Door) as per IS 13032 and suitable for 1 No. 3 phase ELCB / RCCB / FP Isolator as incomer and 12 Nos 10kA 10-32 A SP MCBs as outing goings including internal connection and labour charges for flush mounting etc., complete. Make:Legrand / Schneider / Siemens / L&T / Hager / Cabtree Xpro / ABB / C&S	Electrical work	Supply and fixing 4 WAY TPN Distribution board with	As directed by Dept	12448.00	Each	12448.00
1.00	Providing independent earthing for Important equipment with 40mm dia 'B' class 2.5m long G.I pipe and 19mm dia 'B' class G.I pipe of 0.3mtr. long connected with reducer providing G.I funnel with mesh enclosed in C.C/ brick massonry chamber of 450m x 450m x 400mm with R.C.C. Slab cover duly providing staggered holes filling with 20Kg Salt and 40Kg Charcoal or 40Kg bentonite powder from the bottom of the pipe giving earth connection from electrode through G.I strip of 40 x 6mm x 200mm length with all accessories and labour charges complete, as per IS specifications 732/1982 (Part II)	Electrical work	Providing independent earthing for Important equipm	As directed by Dept	6630.60	Cum	6631.00

20.00	Supplying and laying, filling, jointing and testing SWG SP-1 pipes of ISI make confirming to IS 1651 & 4127 1st quality with air tight Cement joints in CM (1.5:1)prop. including excavation of trenches and socket pits in any soil (except rock requiring blasting) and refilling with watering and tamping including cost and conveyance of all materials to site and all labour charges for finished item of work (APSS NO 1301 & 1318) - 152.4 MM Dia SWG pipe	Plumbing & Sanitary works	Supplying and laying, filling, jointing and testing	APSS NO 1301 & 1318	940.30	Rmt	18806.00
20.00	Supplying and laying, filling, jointing and testing SWG SP-1 pipes of ISI make confirming to IS 1651 & 4127 1st quality with air tight Cement joints in CM (1.5:1)prop. including excavation of trenches and socket pits in any soil (except rock requiring blasting) and refilling with watering and tamping including cost and conveyance of all materials to site and all labour charges for finished item of work (APSS NO 1301 & 1318) - 101.6 MM Dia SWG pipe	Plumbing & Sanitary works	Supplying and laying, filling, jointing and testing	APSS NO 1301 & 1318	656.25	Rmt	13125.00
2.00	Supplying and fixing 150.00mmx100.00mm SWG gully trap 1st class confirming to ISI 651 & 4127 with CI grating and constructing single brick masonry wall chamber of size 20" x 14" x 12" in CM (1:6) prop. Over a CC (1:5:10)prop. bed, and fitted with 304.8 mm x 225.6 mm(12" x 9") CI frame and hinged cover and plastering 12mm thk. in CM (1:4) prop. both inside and outside surfaces and including cost and conveyance of all materials to site, labour charges etc., complete for finished item of work.	Plumbing & Sanitary works	Supplying and fixing 150.00mmx100.00mm SWG gully t	As directed by Dept	851.00	No.s	1702.00

3.00	Supplying and fixing Indian make Flat Back Wash Hand Basin 1st quality conforming to IS:2556-Part-4:1972 of size 550mm x 400mm with waste fittings like rubber plug, chain, 32 mm nominal size C.P. Fitting with parallel pipe thread conforming to IS:2963-1979 and fitted with 15 mm nominal bore Chromium Plated Pillar Tap of 1st quality Indian make 400 grams Seiko/ Esso or equivalent complete with standard CI brackets including wooden block ,1 No.12.70mm PVC connection with brass union nuts CP coated , 1 No.15 mm brass angle stop valve of quarter turn spindle type of not less than 400 grams weight including cost and conveyance of all materials to site, labour charges etc. complete for finished item of work	Plumbing & Sanitary works	Supplying and fixing Indian make Flat Back Wash Ha	As directed by Dept	4023.20	No.s	12070.00
4.00	Supplying and fixing CP finish brass soap dish type complete including cost and conveyance of all materials, labour charges for fixing etc., complete for finished item of work in all floors	Plumbing & Sanitary works	Supplying and fixing CP finish brass soap dish type	As directed by Dept	736.95	No.s	2948.00
4.00	Supplying and fixing TV shape mirror with plastic frame of size 609.6mm x 457.2mm , plywood back with NP screws 1st quality including cost and conveyance of all materials, labour charges etc., complete for finished item of work in all floors.	Plumbing & Sanitary works	Supplying and fixing TV shape mirror with plastic f	As directed by Dept	640.80	No.s	2563.00
4.00	Supplying and fixing of 25.4mm dia , 609.6mm long aluminium anodized towel rods with brackets and aluminium screws including cost and conveyance of all materials, labour charges etc., complete for finished item of work	Plumbing & Sanitary works	Supplying and fixing of 25.4mm dia , 609.6mm long	As directed by Dept	206.80	No.s	827.00
10.00	S&F of 15 mm brass body CP finish self closing tap lift type conforming to IS 1711 including cost and conveyance of all materials, labour charges etc., complete for finished item of work in all floors	Plumbing & Sanitary works	S&F of 15 mm brass body CP finish self closing tap	As directed by Dept	353.80	No.s	3538.00

20.00	Supplying and fixing of SWR/ PVC pipes (as per ISI standards) 4 Kg/Sq.cm. Prince/sudhakar or any ISI brand and fixing all special such as plain bends, off sets, door bends, single junctions, double junctions as per site requirement, fixing with PVC clamps if necessary with required number of Bombay nails including cost and conveyance of all materials to site, labour charges etc.complete for finished item of work at all floor levels. (APSS No. 1302 1319 & 1326)-75MM DIA PIPE	Plumbing & Sanitary works	Supplying and fixing of SWR/ PVC pipes (as per ISI	As directed by Dept	136.30	Rmt	2726.00
20.00	Supplying and fixing of SWR/ PVC pipes (as per ISI standards) 4 Kg/Sq.cm. Prince/sudhakar or any ISI brand and fixing all special such as plain bends, off sets, door bends, single junctions, double junctions as per site requirement, fixing with PVC clamps if necessary with required number of Bombay nails including cost and conveyance of all materials to site, labour charges etc.complete for finished item of work at all floor levels. (APSS No. 1302 1319 & 1326)-110 MM DIA PIPE	Plumbing & Sanitary works	Supplying and fixing of SWR/ PVC pipes (as per ISI	As directed by Dept	237.80	Rmt	4756.00
2.00	Supplying and fixing PPR ball valve of 25 mm dia confirming to DIN standards 8077/8092 , Indian make heavy type including cost and conveyance of all materials , labour charges etc. complete for finished item of work.	Plumbing & Sanitary works	Supplying and fixing PPR ball valve of 25 mm dia c	As directed by Dept	303.35	No.s	607.00
1.00	Supplying and fixing PPR ball valve of 32 mm dia confirming to DIN standards 8077/8092 , Indian make heavy type including cost and conveyance of all materials , labour charges etc. complete for finished item of work.	Plumbing & Sanitary works	Supplying and fixing PPR ball valve of 32 mm dia c	As directed by Dept	315.85	No.s	316.00
1.00	Supplying and fixing PPR ball valve of 40 mm dia confirming to DIN standards 8077/8092 , Indian make heavy type including cost and conveyance of all materials , labour charges etc. complete for finished item of work.	Plumbing & Sanitary works	Supplying and fixing PPR ball valve of 40 mm dia c	As directed by Dept	645.35	No.s	645.00

1.00	Supplying and fixing PPR ball valve of 50 mm dia confirming to DIN standards 8077/8092 , Indian make heavy type including cost and conveyance of all materials , labour charges etc. complete for finished item of work.	Plumbing & Sanitary works	Supplying and fixing PPR ball valve of 50 mm dia c	As directed by Dept	751.00	No.s	751.00
5.00	Supplying and fixing UPVC/SWR Nahani traps 4" or 101.6mm dia 1st quality ISI marked conforming to IS:1729-1979 with 4" dia SS Grating fixing with white cement as per site requirements with standard practice for all floors including cost and conveyance of all materials to site, labour charges etc., complete for finished item of work.	Plumbing & Sanitary works	Supplying and fixing UPVC/SWR Nahani traps 4" or 1	As directed by Dept	232.95	No.s	1165.00
2.00	Supply, Installation and commissioning approved make floor mounted Close Coupled wash down EWC conforming to IS:2556 (Part 8)-2004 suit with 'P' ' trap with dual flush porcelain cistern fixed on wash down EWC with all internal parts of dual flush cistern, ultra solid seat cover of pproved make with rubber buffer and cap & 15 mm angle stop cock & 450 mm long PVC inter connection pipe wall flanges all of approved make etc. complete for finished item of work in all respects: White Colour, Make Jhonson/Kajaria/cera/parryware OR decided by Dept from approved by make in SSR	Plumbing & Sanitary works	Supply, Installation and commissioning approved mak	As directed by Dept	13654.47	No.s	27309.00
6.00	Constructing 457.2mm x 457.2mm (1'-6" x 1'-6") brick in CM (1:6) prop. Masonry inspection chamber upto 914.4mm (3'-0") and fitted with light weight 457.2mm x 457.2mm (1'-6" x 1"-6") frame and cover of 20kg., including cost and convenyance of all materials to site, all labour charges, sales and otehr taxes on all materials etc., complete for finished item of work	Plumbing & Sanitary works	Constructing 457.2mm x 457.2mm (1'-6" x 1'-6") bric	As directed by Dept	5237.65	No.s	31426.00

35.00	Supply and fixing of Ashirvad/Ajay/Astral Flowgaurd or equivalent CPVC pipes and fittings to meet the requirement of ASTM-D 2846 and are produced in CTS(copper tube sizes 1/4" to 2") ashirwad flowgaurd SDR11 and SDR 13.5 pipes are made from identical CPVC components having the same physical properties for Hot and cold Water confirming to (IS 15778-2007) -15.9 mm OD Pipe SDR 13.5	Plumbing & Sanitary works	Supply and fixing of Ashirvad/Ajay/Astral Flowgaurd	As directed by Dept	176.10	Rmt	6164.00
120.00	Supply and fixing of Ashirvad/Ajay/Astral Flowgaurd or equivalent CPVC pipes and fittings to meet the requirement of ASTM-D 2846 and are produced in CTS(copper tube sizes 1/4" to 2") ashirwad flowgaurd SDR11 and SDR 13.5 pipes are made from identical CPVC components having the same physical properties for Hot and cold Water confirming to (IS 15778-2007) -22.2 mm OD Pipe SDR 13.5	Plumbing & Sanitary works	Supply and fixing of Ashirvad/Ajay/Astral Flowgaurd	As directed by Dept	202.25	Rmt	24270.00
2.00	S&F of 15 mm premium variety Chromium plated finish brass body wall mixer with hand shower with a provision for over head shower with 115 mm long bend pipe on upper side, connecting legs & wall flanges conforming to IS 8931 with 10 years warranty	Plumbing & Sanitary works	S&F of 15 mm premium variety Chromium plated finish	As directed by Dept	4599.00	Rmt	9198.00
1000.00	Providing and placing on terrace (at all floor levels) polyetheylene water storage tank with double layer approved brand and manufacture with cover and suitable locking arrangement and making necessary holes for inlet and outlets and over flow pipes but without fittings and base support for tanks including cost and conveyance of all materials and labour charges for placing and fixing in position as directed by Engineer-in-Charge.	Plumbing & Sanitary works	Providing and placing on terrace (at all floor leve	As directed by Dept	11.40	Lit	11400.00
							943950.00

Tenderer

General Manager
TGFDC Ltd

BILL OF QUANTITIES

(PART- II)

Details of Maximum amount Reimbursable to the contractor.

"The rates mentioned in "BOQ" (Schedule – "A") are including overhead charges and contractors profit but excluding GST charges. The overhead charges include engaging technical persons by the contractor and work insurance. Hence, the contractor quoted rates is inclusive of engaging technical persons and work insurance and no reimbursement for these will be made separately".

FOOT NOTE TO SCHEDULE "A"

1. All the items of work will have to be executed as per standard specifications laid down in APSS and the special specifications and general features of design attached herewith. The quoted offer shall include all operations described in the specifications and general features.
2. All the rates quoted in the Schedule 'A' shall be through rates in rupees and paise for completed item of work as per APDSS inclusive of all charges such as leads, lifts, classifications and incidental charges, all taxes and royalties etc.
3. The quantities given here are those upon which the lumpsum cost of the work is based, but they are subjected to alternation, omission, deduction, or addition as provided for in the condition of the contract and not necessarily shown the actual quantities of work to be done.
4. It is to be expressly understood that the measured work is to be taken net (not withstanding any custom or practice to the contrary) according to the actual quantities placed and finished according to the drawing or as may be ordered from time to time by the Engineer-In-Charge 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 rate shown is for the works in situ and complete in every respect.
5. All items of work will have to be executed as per standard specification laid down in A.P.S.S. / T.S.S. the special specification and general features of design attached herewith. The quoted offer shall include all operation described in the said specification 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 etc., complete.
6. Vernacular signature should be translated into English.
7. Addition and alternation in schedule or condition will disqualify the tender.
8. Steel centering should be used for all members involving the use of centering.
9. The tenderer should inspect the site & checkup the possible water source for carrying out work though out the year, monsoons or non monsoons irrespective of the quantum of rainfall and quote their offer accordingly. No subsequent claims for extra water leads will be entertained under any circumstances.
10. The contractor will not be entitled to claim any interest on arrears which he may be get on the final settlement of accounts.
11. The contractor shall make his own arrangement for the acquisition of stone and other quarries etc.
12. Metal and chips of the specified gauges will have to be stacked separately in the standard size after screening as per specifications before using on work.

Tenderer

General Manager
TGFDC Ltd

PRICE BID

Name of work: : Renovation of TGFDC Camp Office at Kaghaznagar Division office complex

ESTIMATE CONTRACT VALUE: Rs. 9,43,950 only.

N I T No. 6.2.11/HDM/Civil/2024-25

I/We _____ do hereby express our willingness to execute the aforesaid work as per the conditions, standards, specifications, rules, regulations, etc., stipulated in the tender documents.

At an overall tender percentage of_____**(in figures)**

_____ _____**(in words) Less /Excess** over estimated value.

SIGNATURE, NAME OF THE TENDERER / AUTHORISED SIGNATORY

Tenderer

General Manager
TGFDC Ltd

FORMATS OF SECURITIES

PROFORMA

BANK GUARANTEE *FOR* EARNEST MONEY DEPOSIT

WHEREAS …….. (Name of the Contractor) (here in after called "the Tenderer") has submitted his tender response to NIT No…….. dated-……. for the work " ……." (Name of work) (hereinafter called "the tender").

KNOWN ALL MEN by these present that we …….. …….. (Name and Address of Bank) …….. (hereinafter called "the Bank" are bound unto VC & MD, TGFDCL in the sum of * …….. for which payment will and truly to be made to the said Corporation, the Bank binds itself, his successors and assigns by these presents.

SEALED with the Common Seal of the Bank this …….. day of ……..200….

THE CONDITIONS of this obligation are--

(1) If after Tender opening the tenderer withdraws or modifies his Bid during the period of bid validity specified in the Form of Tender.

(2) If the Tenderer having been notified of the acceptance of his bid by the Corporation during the period of validity.
   (a) fails or refuses to execute the Form of Agreement in accordance with the Instructions to Tenderers, if required; or
   (b) fails or refuses to furnish the balance EMD and additional performance Security in accordance with the instructions of Tenderers.

   We undertake to pay to the Corporation up to the above amount upon receipt of his first written demand, without the Corporation having to substantiate his demand, provided that in his demand the Corporation will note the amount claimed by him is due to him owning to the occurrence of one or both of the two conditions, specifying the occurred condition or conditions.

   This Guarantee will remain in force up to and including the date** ……. after the dead line for submission of Tenders as such deadline is stated in the Instructions to Tenders or as it may be extended by the Corporation, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this Guarantee should reach the Bank not later than the above date.

DATE…….. SIGNATURE OF THE BANK ……..

WITNESS…….. SEAL……..

(Signature, Name and Address)

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* The Tenderer should insert the amount of the EMD in words and figures denominated in Indian Rupee. This figure should be the same as shown in the NIT.

** 6 months for the deadline date for submission of Tender. Date should be inserted by the Corporation before the Tender documents are issued.

Tenderer

General Manager
TGFDC Ltd

PROFORMA

BANK GUARANTEE FOR BALANCE "E.M.D." (At the time of agreement)

_____(name & address of Corporation)
_____

WHEREAS_____ _____
_____ ____ __ _____(name and address of Contractor) (hereinafter called "the Contractor") has undertaken, in pursuance of Contract No. _____ dated- _____ to execute the work of _____ [name of work];

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a Schedule bank for the sum specified therein as balance EMD / EMD for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of _____ [amount of guarantee] _____ [in words], such sum being payable and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ [amount of guarantee] as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed there under or of any of the contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid up to…….. i.e., until 28 days from the date of expiry of the Defects Liability period.

Signature & seal of the Guarantor_____

Name of Bank_____

Address_____

Date_____

Tenderer

General Manager
TGFDC Ltd

PROFORMA

BANK GUARANTEE FOR ADDITIONAL FURTHER SECURITY
(At the time of agreement)

_____(name and address of Corporation)
_____

WHEREAS _____ (name and address of Contractor) (hereinafter called "the Contractor") has undertaken, in pursuance of Contract No. _____ dated- _____ to execute _____ [name of Contract and brief description of works] (hereinafter called "the Contractor");

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a Schedule bank for the sum specified therein as Additional further security bank guarantee for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of *Rs.*_____ [amount of guarantee] _____ [in words], such sum being payable and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ [amount of guarantee] as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed thereunder or of any of the contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid up toand until 28 days from the date completion.

Signature & seal of the Guarantor_____

Name of Bank_____

Address_____

Date_____

PROFORMA

BANK GUARANTEE FOR MOBILISATION ADVANCE
DELETED

FORM OF SOLVENCY CERTIFICATES BY MANDAL REVENUE OFFICER

ANNEXURE – I (A).

I, _____ Mandal Revenue Officer, of _____ do hereby certify, on being satisfied by the Examination of Revenue and other records and local enquiries that _____ _____ *[here the name and address of the contractor should be mentioned]* is solvent to the extent of Rs._____ [Rupees _____ _____.

Date -

Place-

MANDAL REVENUE OFFICER
SEAL OF THE OFFICE

ANNEXURE – I (B).

FORM OF SOLVENCY CERTIFICATE BY BANKS

I, _____ Managing Director / Manager / General Manager / Agent of _____ Bank Limited do hereby certify that _____ _____ *[here the Names and addresses of the contractor]* to be solvent to the extent of Rs._____ [Rupees _____ _____] as disclosed by the information and record which are available with the aforesaid bank.

For the _____ Bank

Date-
Place-

Signature of Bank Manager
[Authorised to Sign]

FORMAT FOR EVIDENCE OF ACCESS TO OR
AVAILABILITY OF CREDIT FACILITIES
(CLAUSE 8 (iii) OF TENDER NOTICE)
(From Nationalised Banks / Scheduled Banks)

BANK CERTIFICATE

This is to certify that M/s. …… is a reputed company with a good financial standing. If the contract for the work namely …… …… is awarded to the above firm, we shall be able to provide over draft/credit facilities to the extent of Rs.…… to meet their working capital requirements for executing the above contract.

Signature of Sr. Bank Manager
Name of Bank