



**ODISHA CONSTRUCTION CORPORATION LTD.
(A Govt. of Odisha Undertaking**

Subarnarekha Canal Group of Projects, Laxmiposi

TENDER SCHEDULE

Tender call notice No. 01 / 2023-24 /SM/OCCL/SCP, DT. 15.07.2023

(Percentage Rate Tender)

Name of work:-

**Extension of District Veterinary Hospital, Balasore.
(Electrical and PH Work)**

**Odisha Construction Corporation Ltd.
SUBARNAREKHA CANAL GROUP OF PROJECTS,
LAXMIPOSI, MAYURBHANJ**

Particulars of payment of Tender document cost
(To be filled up by the Bidder)

Tender call notice No. **01/2023-24/SM/OCCL/DGP, DT. 15.07.2023**

Full name & address of Jobworker/ Bidder :-

Telephone No. – Land line :

Mobile :

e-mail ID:

OCC Enlistment No. of Jobworker/ Bidder:

Amount paid by Jobworker/ Bidder towards cost of

Tender Document : Rs. 7,080.00(Including GST) (Rupees Seven Thousand Eighty) only.

Demand Draft No. _____ dt. _____

Issued by _____(Bank) in favour of

“Odisha Construction Corporation Ltd” payable at “Baripada”.

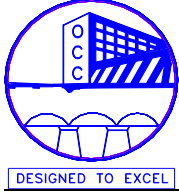
EMD and document deposit particulars

(To be filled up by the Bidder)

**DETAILS OF EARNEST MONEY DEPOSIT (EMD), AND DOCUMENTS SUBMITTED
ALONG WITH TENDER**

1. EMD amount Rs. _____ (Rupees _____)
only vide TDR No. _____ Dated _____ issued by
_____ Bank, _____ Branch in
favour of Odisha Construction Corporation Ltd payable at Baripada.
2. GSTIN Certificate
3. P.A.N. card
4. Any other documents. (As per Tender Call Notice)

Full signature of "Bidder" with date and seal



ODISHA CONSTRUCTION CORPORATION LIMITED

(A Government of Odisha Undertaking)

Office of the Senior Manager (Civil)

Subarnarekha Canal Group of Projects, Laxmiposi
Qr. No. D-4/2, Irrigation Colony, Laxmiposi, Baripada
Dist.- Mayurbhanj (Odisha), email- occlbaripada@gmail.com

TENDER CALL NOTICE

NOTICE NO. 01/2023-24 /SM/OCCL/SCP, DT. 15.07.2023

1. On behalf of M/s Odisha Construction Corporation Ltd. ("OCCL"), the Senior Manager (Civil), O.C.C. Ltd, Subarnarekha Canal Group of Projects, Laxmiposi invites sealed tender on percentage rate basis from the eligible class of Job-workers enlisted with "OCCL" for following works.

Sl No	Name of the work	Approximate Value of Work (Excluding GST) In Rs.	EMD @1 %	Cost of Tender Document + GST@ 18% in Rs. (Non refundable)	Period of Completion	Class of Jobworker
1	Extension of DVH, Balasore.(Electrical and PH Work)	₹ 28,17,606.00	₹ 28,200.00	Rs. 6,000.00 + GST @ 18% i.e. Rs. 1,080.00 = Rs. 7,080.00	5 (Five) Calendar Months	C-IV and above
2	Infrastructure Up-gradation of Block Veterinary Dispensary, Soro, Balasore. (Electrical and PH Work)	₹ 21,03,982.00	₹21,100.00	Rs. 6,000.00 + GST @ 18% i.e. Rs. 1,080.00 = Rs. 7,080.00	5 (Five) Calendar Months	C-IV and above

2. The tender document can be obtained from **office of the Senior Manager (Civil), OCC Ltd., Subarnarekha Canal Group of Projects, Laxmiposi** during office hour from **Dt. 15.07.2023 to Dt. 29.07.2023 up to 3.00 PM**. The Bidder (Jobworker) have to deposit the non-refundable cost of tender paper specified for the work in the table as above in shape of Demand Draft from any Nationalized / Scheduled Bank operative in Odisha, payable at Baripada in favour of Odisha Construction Corporation Ltd or by paying cash at the project office. The Tender notice shall also be available on OCCL website at www.odishaconstruction.com. Interested Bidders may obtain further information, if any, from the undersigned.

3. The tender must be accompanied with EMD (Earnest Money Deposit) of the amount specified for the work in the table as above drawn Term Deposit Receipt (TDR) pledged in favour of Odisha Construction Corporation Limited.

4. The tender must be submitted at the office of the Senior Manager (Civil), OCC Ltd., Subarnarekha Canal Group of Projects, Laxmiposi on or before **5.00 PM on dated. 29.07.2023** and will be opened in the office of the Senior Manager (Civil), **Subarnarekha Canal Group of Projects, Laxmiposi** on **Dt. 31.07.2023 at 11.00 AM** in presence of bidders or their authorized representatives. If there will be a

public holiday on the last date of receipt & opening of the tenders as specified above, the tender documents shall be received & opened on the next working day at the same time & venue.

5. Intending bidders are required to furnish the following documents duly signed by the bidders along with their tender.

- (i) Copy of valid enlistment certificate as Bidder issued by "OCCL".
- (ii) E.M.D. in shape of TDR.
- (iii) Copy of valid GST Certificate
- (iv) Copy of PAN card
- (v) Copy of No Relation certificate.
- (vi) Undertaking to pay minimum wages
- (vii) Undertaking to pay royalty as per prevailing rate during the time of execution
- (viii) Necessary affidavit for execution of Electrical Works through registered/certified Electrical Agency/Contractor.
- (ix) Affidavit in support of genuineness of certificate.
- (x) Complete tender document duly filled-in and signed on each page by the tenderer or his/their power of Attorney holder with date, full name, Designation, & Official Seal. In case of power of Attorney holder the copy of such delegation is to be enclosed with the tender documents.

6. The tender (sealed cover) must be super scribed – **"Tender Call Notice No. 01/2023-24 /SM / OCCL/SCP, DT. 15.07.2023"** and name of work on the envelope clearly and dropped in the tender box kept in the Office of Senior Manager (Civil), Subarnarekha Canal Group of Projects, Laxmiposi. The sealed tender document duly filled in properly must be signed by the bidder in each and every page with a token of acceptance of terms, conditions, specifications as laid down in the tender document. All other credentials/documents submitted by the bidder along with this tender document must also be signed by him in each and every page.

7. Additional Performance Security shall be submitted by the bidder when the bid amount is less than the estimated cost put to tender. In such an event, only the successful bidder who has quoted less bid price/rates than the estimated cost put to tender shall have to furnish an amount as stipulated below towards Additional Performance Security (APS) in shape of Demand Draft in favour of "Odisha Construction Corporation Ltd." payable at Baripada / Term Deposit Receipt (TDR) pledged in favour of Odisha Construction Corporation Limited/ Bank Guarantee in prescribed format in favour of Odisha Construction Corporation Limited from any nationalized/scheduled bank in India counter guaranteed by its local branch at Bhubaneswar within seven days of issue of Letter of Acceptance (LoA) by Odisha Construction Corporation Limited (by email) to the successful bidder otherwise the bid of the successful bidder shall be cancelled and further proceedings for blacklisting shall be initiated against the bidder.

Sl. No.	Range of difference between the estimated cost put to tender and bid amount	Additional Security to be deposited by the successful bidder
1	Below 5%	No additional Security
2	From 5% and above and below 10%	50% of (Difference between estimated cost put to tender and Bid amount)
3	From 10% and above	150% of (Difference between estimated cost put to tender and Bid amount)

8. The bidder shall have to furnish an **affidavit** in support of the authenticity/ genuineness of the documents/certificates and credentials along with the tender document. In case of production of forged document, the penalty shall be rejection of their tender and cancellation of their enlistment with the Corporation. The authority reserves the right to verify the authenticity of documents in case of any doubt or complain.

9. The tender received will remain valid for 90 (Ninety) days from the date of receipt of tender and the validity of tender can also be extended if agreed to by the bidder and OCCL.

10. The Job- Worker are to quote the % (percentage) excess or less or at par of the amount put to tender in the bill of quantity in the format enclosed with the tender document. For evaluation, the amount quoted in words shall be taken, if there is any difference in figure and words in tender document. If the amount quoted by the bidder is **less than 15%** of the tendered amount then such a bid shall be rejected & the tender shall be finalized basing on merits of rest bids. But if more than one bid is quoted **at 14.99%** (Decimals up to two numbers will be taken for all practical purposes) less than the tendered cost, the tender accepting authority will finalize the tender through a transparent lottery system, where all bidders / their authorized representatives and the Senior Manager (Civil) will remain present.

11. The successful Job-Worker shall have to execute the work as per scope of work, Methodology of work, technical specifications & price schedule as per direction of Engineer-in-charge and terms & conditions of agreement. The J/W (successful Bidder) has to submit work schedule for approval before drawal of Agreement.

12. The authority reserves the absolute right to accept or reject any or all tender and to split up work to award one or more Job-workers without assigning any reason thereof.

13. Any dispute arising out of the above tender call notice shall be subject to Jurisdiction of Hon'ble High Court of Odisha at Cuttack and their sub-ordinate courts at Bhubaneswar only.

For Odisha Construction Corporation Ltd.

Sd/-

SENIOR MANAGER (CIVIL)
Subarnarekha Canal Group of Projects

Memo No. **452** /SM/OCCL/SCP

Dt. **15.07.2023**

Copy submitted to the Managing Director, OCC Ltd., Gopabandhu Nagar, BBSR / General Manager (Civil), OCCL, Baripada for favour of kind information and necessary action.

Sd/-

SENIOR MANAGER (CIVIL)

Dt. **15.07.2023**

Memo No. **453** /SM/OCCL/SCP

Copy along with soft copy submitted to the Senior Manager, System Business Division, OCCL for information. He is requested to hoist the tender call notice in website of OCCL.

(By email - nanda8038@yahoo.com)

Sd/-

SENIOR MANAGER (CIVIL)

Dt. **15.07.2023**

Memo No. **454** /SM/OCCL/SCP

Copy to Notice Board of OCC Ltd., Baripada.

Sd/-

SENIOR MANAGER (CIVIL)

FORM OF AFFIDAVIT**AFFIDAVIT**

I,, son of
 do hereby solemnly affirm as follows :

- i) That, I/We, am/are enlisted with OCC Ltd. as Bidder/agency under category C-I and my/ our Enlistment No. is C-I..... valid up to
- ii) I/We have submitted tender for the work “_____” per terms and conditions of the tender document.
- iii) I/We have thoroughly understood the terms and conditions and provisions of the tender document and accordingly have quoted the amount. I/We understand that the quoted amount will remain firm and binding on me/us throughout the construction period of the work and no price escalation will be payable to me/us.
- iv) I/We have inspected the site, examined the site and working conditions and have thoroughly appraised myself/ourselves about all aspects of the work and the involvements/difficulties / bottlenecks. I/We will not raise any claim on account of this or any information not being available with me/us before quoting.
- v) I/We hereby undertake that I/We being an enlisted agency of OCC Ltd. will not raise any dispute/litigation in respect of execution of the work or on any issue with the Corporation in the event of the work being awarded to us and in all such issues the decision of the management of OCC Ltd. will be final and binding on us.
- vi) I am authorized on behalf of Bidder to tender for the work/works mentioned above.
- vii) I am swearing in this affidavit that all the information’s furnished in the Tender documents and accompanying papers, those being submitted by me are all authentic and bonafied in the eyes of the law of the land.

That, the facts stated in the affidavit are true to the best of my knowledge and belief.

(Signature of Bidder)

Name :

Address :

CERTIFICATE OF NO-RELATIONSHIP

I/We hereby certify that I/We* am/ are* related/ not related* to any officer of Odisha Construction Corporation Ltd. of the rank of Manager & above and any officer of the rank of Assistant Executive Engineer / Under Secretary and above of the Water Resources Department, Govt. of Odisha I/We* am/are* aware that, if the facts subsequently proved to be false, my/our* contract will be rescinded with forfeiture of E.M.D and security deposit and I/We* shall be liable to make good the loss or damage resulting from such cancellation.

I/We also note that, non-submission of this certificate will render my / our Bid liable for rejection.

Signature of the Bidder

** Strike out which is not applicable*

UNDERTAKING TO PAY MINIMUM WAGES

We do hereby undertake that, we shall pay wages of each labour at the rate not less than the wages as per Minimum Wages Act in force during the time of execution and as may be amended from time to time. The "Engineer-in-Charge" has the right to enquire into and decide on any complaint of the Labourers relating to non-payment or less payment of wages to them and his decision will be final and binding on us.

Signature of the Bidder

Name _____

Address _____

Date : _____

UNDERTAKING TO PAY ROYALTY

We do hereby undertake that, Royalty for stone products, sand, moorum and Borrow earth etc. are to be recovered from the work bills as per prevailing Govt. Notification during the time of execution.

Signature of the Bidder

Name _____

Address _____

Date : _____

BANK GUARANTEE FOR ADDITIONAL PERFORMANCE SECURITY (APS)

To

----- (name of Employer)

WHEREAS the bid of ----- (name and address of Jobworker) (hereinafter called "the Jobworker") has been accepted vide letter of acceptance (LoA) No. _____ dated _____ of Odisha Construction Corporation Ltd., ----- to execute the work _____ [name of work] (hereinafter called "the contract")

AND WHEREAS it has been stipulated by you for the said Contract that the Jobworker shall furnish you with a Bank Guarantee by a Nationalized/Scheduled Bank in India, counter guaranteed by its local branch at Bhubaneswar towards Additional Performance Security (APS), for compliance with his obligations in accordance with the conditions of Contract.

AND WHEREAS we have agreed to give the Jobworker such a Bank Guarantee.

NOW THEREFORE we hereby affirm that we are the Guarantors and responsible to you, on behalf of the Jobworker, up to a total of Rs _____ [amount of guarantee] _____ [in words], such sum being payable in the types and proportions of currencies in which the contract price is payable, and we undertake to pay you upon your first written demand declaring the Jobworker to be in default under the contract 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 Jobworker 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 Jobworker 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 _____ day of _____ 20 _____ i.e. up to 3 (three) months beyond the date stipulated for completion of work. We also agree for extension of this guarantee for a further period in response to the Employer's written request for such extension, which should be presented to us before the expiry of the guarantee.

We _____ (Name of Bank) hereby also undertake to have it counter guaranteed by our local branch at Bhubaneswar, _____ (name and address of Local Branch at Bhubaneswar, Odisha).

(Signature of the authorized officer of the Bank)

.....
.....

Name and designation of the officer

.....

Seal, name & address of the Bank and address of the Branch

We _____ (name and address of Local Branch at Bhubaneswar, Odisha) are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee depending on the filing of claim and only if it is served upon to us by the employer at our Bhubaneswar Branch by a written claim or demand and received by us at our Bhubaneswar branch on or before Dt. _____(subject to further extension on the Employer's written request for such extension before expiry of this guarantee), otherwise bank shall be discharged of all liabilities under this guarantee thereafter.

(Signature of the authorized officer of the Bank)

.....
.....

Name and designation of the officer

.....

Seal, name & address of the Bank and address of the Branch

GENERAL TERMS AND CONDITIONS

GENERAL TERMS AND CONDITIONS

1. DEFINITIONS

- (i) **“CORPORATION”** means **“ODISHA CONSTRUCTION CORPORATION LTD. (“OCCL” in short)”** with registered office at Unit-8, Gopabandhu Nagar, Bhubaneswar – 751 012 (Odisha) represented through its Managing Director or any other officer as designated by the “Corporation” from time to time.
- (ii) **“ENGINEER-IN-CHARGE”** means the engineer of the “Corporation” who will be in the charge of the work.
- (iii) **“BIDDER”** means the enlisted Jobworker/person/firm/organisation having men, machinery, materials etc. to execute the work satisfactorily as per scope indicated herein within stipulated period.
- (iv) **“CLIENT”** means the State Govt. or Central Govt. organization or any individual from whom “OCCL” has received the work for execution.

2. AGREEMENT

The “Bidder” shall enter into an agreement with the “Engineer-in-Charge” in the format on requisite value of stamp paper prescribed for the purpose by the “Corporation” within a stipulated period to be specified by the “Engineer-in-Charge” failing which the EMD and ISD shall be forfeited. The work may be awarded in favour of some other agency at the discretion of the “Corporation”.

3. RATE

The rate quoted by the bidder is to be indicated in % (Percentage) excess or less or at par of the total amount of the estimated value of work put to tender, which shall be valid for the full period of execution or till completion of work whichever is later. No escalation or price variation in whatsoever form shall be entertained. The % (Percentage) excess or less or at par quoted by the “Jobworkers” should be firm for the entire period of execution.

The “Jobworker” shall quote the rate in % (Percentage) excess or less or at par of total amount put to tender to complete the works as per specifications inclusive of all transportation, handling, loading, unloading, lift, de-lift, taxes, duties, levies, incidental expenses etc. that will be applicable on the work to be executed by him. No claim in this regard in whatsoever form shall be entertained.

4. PAYMENT TERMS

- (i) No advance shall be paid for the work. The rate shall remain firm throughout the agreement period.
- (ii) The payment to the “Bidder” shall be limited to the measurements taken and accepted by the client. The “Bidder” cannot raise any dispute over the measurements allowed by the “Engineer-in-Charge” for the purpose of payment.
- (iii) The Bidder will bear the full cost of rectification or replacement of works required as per direction of “Client” or “Engineer-in-Charge”.
- (iv) Any penalty levied by “Client” on “OCCL” due to delay in work will be borne by the “Bidder” in full, if the “Bidder” is responsible for delay.
- (v) The Agreement rate of the Jobworker shall be exclusive of GST. GST as applicable shall be paid extra over and above the Running account bills on production of GST invoice.
- (vi) Price adjustment/price variation as per Govt Circular, 2019 shall be applicable to the agreement with a condition that the same is accepted by the client. No claim towards price adjustment/Price variation will be entertained prior receipt of the same from the client.

5. INITIAL SECURITY DEPOSIT (ISD)

The “Bidder” shall deposit Initial Security Deposit (ISD) at the rate of 2(Two) % of the work/agreement value on receipt of letter of intent of work within a period of 15 days from the date of issue but before execution of agreement. After receipt of the full ISD, the EMD received along with the tender shall be returned.

If the bidder desires, the EMD can be converted to ISD and the balance amount of ISD has to be deposited. If the “Bidder” fails to deposit such initial security within the stipulated date, the EMD of the “Bidder” shall be forfeited and the work may be awarded in favour of some other agency at the discretion of the “Corporation”.

6. SECURITY DEPOSIT (SD)

The Security Deposit (SD) at the rate of 5 (Five) % shall be deducted on the gross amount of each bill of the "Job-Worker". The security will be released after 6(Six) months of completion of the work or settlement of final bill of the "Job-Worker", whichever is later, if no defect in the work is noticed and material account as well as all disputes including compliance of labour rules, ESI rules etc. are settled.

7. ADDITIONAL SECURITY DEPOSIT

The "Engineer-in-Charge" may, if he feels it necessary can deduct and withhold from the bill of the "Job-Worker" a sum not exceeding 10% and not less than 5% of the gross value of work done as additional security deposit for the rectification of defective and /or unsatisfactory work.

The additional Security Deposit shall be deducted in addition to normal security deposit. Such defects shall be rectified by the "Job-Worker" within such period as the "Engineer-in-Charge" may fix-up and if the "Job-Worker" fails to rectify the defects within the specified period, this shall be rectified by the "Engineer-in-Charge" at the cost and risk of the "Job-Worker"

The expenses so incurred in the rectification of the defective works and/or unsatisfactory work done by the "Job-Worker" shall be recovered from the bills or any other dues of the "Job- Worker" or otherwise as per law. In this connection, the decision of the "Engineer-in-Charge" shall be final and binding on the "Job-Worker". The additional security deposit shall be released in full, when the "Job-Worker" rectifies the defects in time at his cost.

8. WITH HELD AMOUNT FOR EPF, FPF AND ESI DUES

2(Two) % shall be deducted and kept withheld from R.A. bills of the "Job-Worker" towards EPF, FPF and ESI dues. If the "Job-Worker" produces clearance in support of deposit of EPF, FPF and ESI dues with the concerned authority within 3(Three) months from the end of each financial year, the above withheld amount shall be released. Otherwise, the "Corporation" shall deposit the same with Provident Fund Authority and ESI Authority. Penalty, if any, shall be recovered from the "Job-Worker".

9. INCOME TAX, GST, CESS OTHER TAXES, DUTIES, LEVIES ETC.

Income tax at the prevailing rate from time to time will be deducted from each bill of the "Job-Worker" and shall be deposited with Income Tax Authorities. GST applicable on purchased items and services rendered there of shall be released as per norms. All taxes, such as income tax, labour cess, fees, royalties payable under the local rule excluding GST as applicable will be borne by the Jobworker. GST will be paid to the Jobworker as per the prevailing rules.

10. OPTIMUM USE OF MACHINERY, VEHICLES, EQUIPMENTS, TOOLS, TACKLES, CONSUMABLES AND STEEL MATERIALS

The "Bidder" shall ensure optimum utilisation of the plants, machinery, equipments, tools, tackles, consumables, cement, steel materials etc. and shall not create any hindrance for others. The decision of the "Engineer-in-Charge" regarding the optimum requirement shall be final and binding on the "Bidder".

11. RECORD OF MATERIALS, CONSUMABLES, MACHINERY, EQUIPMENTS, TOOLS, TACKLES ETC.

The "Bidder" shall be responsible for maintaining the data and complete records of issue and consumption of materials and consumables as well as record of plants, machinery, equipments, tools, tackles, cement, steel materials etc. issued to him by the owner and "Corporation". The materials, plants, machinery, equipments, tools, tackles cement, steel materials etc. shall be issued as per requirement and availability only.

If the materials supplied by the "Corporation" will be received by the "Bidder" from the "Corporation" store on submission of indent by the "Engineer-in-Charge". Transportation of materials to site of work and storage at site are the responsibility of the "Bidder".

The "Bidder" will keep an accurate record of "Corporation" materials and furnish the consumption statement of such materials. The surplus materials, if any, are to be returned to the "Corporation" store at his cost failing which, the cost of excess materials will be recovered from the dues of the "Bidder" @ 5(Five) times the issue rate of "OCCL" or market rate, whichever is higher.

12. RETURN OF PLANTS, MACHINERY, EQUIPMENTS, TOOLS, TACKLES, MATERIALS, CONSUMABLES ETC.

The plants, machinery, equipments, tools, tackles, excess cement, excess steel materials, excess consumables etc. of the "Corporation" are to be returned by the "Bidder" in good working condition after completion of the work/termination of the contract by the "Corporation". The "Corporation" may hire plants, machinery, equipments, tools, tackles etc. from the owner as well as outside for use in work. The same are also to be returned by the "Bidder" in acceptable good working condition with original fittings after completion of the work/termination of the contract by the "Corporation".

Any damage to/ by the plants, machinery, equipments, tools, tackles etc. during use by the "Bidder" shall be booked to the "Bidder" for recovery from his bills.

The balance unused/excess cement, steel materials, balance consumables etc. of the "Corporation", if any, shall be returned by the "Bidder" in good condition at specified places as per direction of the "Engineer-in-Charge" failing which the cost at 5(Five) times the market rate shall be deducted from the "Bidder".

13. EMPTY CEMENT BAGS AND SCRAP STEEL MATERIALS/CUT PIECE RODS

The cost of empty cement bags against cement issued by "OCCL" shall be deducted by "OCCL" from the bills/dues of the "Bidder" as per applicable rate.

The steel if issued by 'OCCL', the entire cost of the same will be deducted from the bills of the Jobworker.

14. ELECTRICITY

Electricity required for execution of work is to be arranged by the "Bidder" or the "Bidder" shall arrange generator for execution of works.

15. MEASUREMENT OF WORK

The quantity of work executed shall be measured and payment made once in a month or on completion of work or on termination of the agreement, when final measurement will be made and account will be adjusted accordingly. The decision of the "Engineer-in-Charge" regarding the amount, progress, measurement and quality of the work shall be final and binding on the "Bidder".

16. INDIAN STANDARDS, DRAWINGS AND SPECIFICATIONS

The work shall be carried with due diligence and in a workman like manner in accordance with relevant Bureau of Indian Standard specifications on the basis of latest approved drawings and technical specifications supplied by "Corporation" in absence of which as per the direction of "Engineer-in-Charge".

The technical specifications in the relevant agreement between the "Corporation" & owner and approved drawings & technical specifications issued by the owner & "Corporation" shall be the basis for execution of work under the agreement. In the absence of approved drawings and technical specifications, the direction of the "Engineer-in-Charge" shall be final and binding on the "Bidder".

The "Bidder" shall make arrangements to take copies of the approved drawings from the office of the "Engineer-in-Charge" for reference during execution of work.

17. PAYMENT TO WORKMEN

The "Bidder" should maintain job register and payment rolls of their workmen and get those checked by the "Engineer-in-Charge" or his authorised representative from time to time. The payment to the workers/ supervisory staff shall be made by the "Bidder" in the presence of the owner and/or "Engineer-in-Charge" or his authorised representative. The paid pay roll register shall be signed by the "Engineer-in-Charge" or his authorised representative as a token of disbursement. The copies of paid pay roll shall be submitted to the "Engineer-in-Charge" within a period of 7(Seven) days from the date of payment failing which no further payment to the "Bidder" shall be released.

18. WORKMEN COMPENSATION

In case of any loss due to accident arising during/in connection with execution of the contract, the "Bidder" will pay compensation to his workmen. The "Bidder" will be fully responsible for his workmen as per workmen's compensation act and labour laws in force during entire period of execution of contract. In case, the "Bidder" fails to do so, the "Corporation" may pay the same and recover the same from the bills/ dues of the "Bidder".

19. INFORMATION OF WORKMEN

The "Bidder" will make his own arrangements for procurement of labour and shall furnish all information of workmen employed by him like name, father's name, full permanent address, sex and age to the "Engineer-in-Charge" along with the pay.

20. STATUTORY REQUIREMENTS

The "Bidder" shall comply all statutory requirements applicable at site of work such as minimum wage act, labour act, factory act, workmen's compensation act, provident fund rules, employee's state insurance rules etc. A certificate to this effect shall be enclosed by the "Bidder" with each Running Account Bill for payment.

21. MINIMUM AGE OF WORKMEN

The "Bidder" shall not employ any person, who is below the age of 18(Eighteen) years or unfit for the quoted items. The "Engineer-in-Charge" shall have right to decide, whether any labour employed by the "Bidder" is below the age of 18(Eighteen) years or unfit and refuse to allow any labour, whom he decides to be below the age of 18 years or unfit for any other reason.

22. LABOUR LICENCE

The "Bidder" has to obtain valid labour licence and maintain all records at his own cost as per the conditions laid down in the labour rules in vogue and amended from time to time.

23. MINIMUM WAGE ACT

The "Bidder" shall pay wages of each labour at the rate not less than the wages as per Minimum Wages Act in force and as may be amended from time to time. The "Engineer-in-Charge" has the right to enquire into and decide on any complaint of the labourers relating to non-payment or less payment of wages to them and his decision will be final and binding on the "Bidder".

24. NON-PAYMENT OF DUES OF LABOURERS

If the "Bidder" fails to pay the dues of labourers engaged by him for this work in time, the same shall be paid by the "Engineer-in-Charge" directly to the deserving workers. The expenditure so incurred on account of non-payment or less payment shall be recovered from the bills or any other dues of the "Bidder".

25. PROVIDENT FUND (PF)

Employees Provident Fund., wherever applicable, shall be payable by the "Bidder" as per the Provident Fund Rules in force and shall keep the "Corporation" indemnified for it. He should get the registration number for this from the Regional Provident Fund Commissioner, Odisha. He shall produce the records in support of payment of EPF/FPF dues to the "Engineer-in-Charge" for check and record by the "Engineer-in-Charge".

26. EMPLOYEES STATE INSURANCE SCHEME (ESI)

The Employees State Insurance Scheme(ESI), wherever applicable, shall be payable by the "Bidder" as per the E.S.I. Rules in force and shall keep the "Corporation" indemnified for it. He should get the Registration Number for this from the E.S.I. Deptt., Odisha. He shall produce the records in support of payment of ESI dues to the "Engineer-in-Charge" for check and record.

27. WORKMEN INSURANCE

The workmen insurance shall be the responsibility of the "Bidder". He shall produce the records in support of workmen insurance to the "Engineer-in-Charge" for check and record.

28. HUTMENTS/TEMPORARY ACCOMMODATION

The "Bidder" has to arrange hutments/temporary accommodation for his own labourers/workmen at the work site at his own cost.

29. IDLE LABOUR

"OCCL" will not be held responsible for idle labourers of the "Bidder" for any reason, whatsoever and no claim on this account will be entertained.

30. WORKING IN SHIFTS

If necessary, the "Bidder" may be asked to work in two(2) or 3(three) shifts. Normally, the work shall be executed in shifts. The "Bidder" may, if required, have to engage the workmen on overtime to complete the work in scheduled time. The overtime cost shall be borne by the "Bidder".

31. CLAIMS AND LIABILITIES

All claims/liabilities etc. arising out of Explosives act and labour laws shall be borne by the "Bidder" and he shall keep the "Corporation" indemnified against them and also in case of injuries or death of labourer(s) resulting from accidents during the execution of the work. In case the "Corporation" will have to pay for any such claims under Workmen's Compensation Act, the same shall be adjusted from the pending bills/dues of the "Bidder" or shall be recovered otherwise as per law from him.

32. SAFETY

The "Bidder" should abide by the safety laws and rules of statutory bodies, "Corporation" and owner as per directions of "Engineer-in-Charge" and Safety Officers inspecting from time to time.

33. WATCH AND WARD

The "Bidder" shall arrange watch and ward and safety of the site of work, constructed structures, machinery, vehicles, equipments, tools, tackles, consumables, cement, steel materials etc. of the "Corporation" and owner at his own cost.

34. AUTHORISED PERSON

The "Bidder" may in writing authorise his power of attorney holder or any other person to draw materials, avail facilities, and attend measurements etc. during the course of execution of work. All liabilities created by the authorised person of the "Bidder" by way of loss of materials drawn, amenities availed, unpaid wages created etc. shall be considered as the liabilities of the "Bidder" and such liabilities shall be made good by the "Bidder" or it shall be recovered from the bill/payment due to him.

35. SPLITTING UP WORK

The authority reserves the right to split up the work amongst various "Bidders" and increase or decrease the quantity of work mentioned in the tender document without assigning any reason thereof and no claim whatsoever will be entertained on this account. The quantity as per agreement may also increase or decrease as per actuals.

If "Corporation" desires, different agencies can be engaged at a single site of work for which each agency is to co-operate so that other agency does not face any difficulty in engagement of his machinery, equipments, vehicles etc.

36. BREACH OF CONTRACT

The ISD including EMD, SD and additional SD are liable to be forfeited in the event of breach of contract and the agreement shall be terminated. The dues of the "Corporation" including due of labourers/workmen and other statutory payable liabilities payable by the "Corporation" as principal employer shall be cleared by the "Bidder". The decision of the "Engineer-in-Charge" in this regard shall be final and binding on the "Bidder". The amount remaining as outstanding against the "Bidder" after adjustment of his dues shall be payable by him to "OCCL". If necessary, legal action may be taken for recovery of the dues of the "Corporation" including labour and statutory dues to be cleared by the "Corporation" as principal employer and "OCCL" reserves the right to recover the payable amount from the "Bidder" from works done by his under any other organization or from his properties.

37. TERMINATION OF CONTRACT

The "Engineer-in-Charge" may put an end to the agreement at his option at any time due to (a) Bad workmanship (b) Dis-proportionate progress (c) Non-compliance of labour rules or (d) Any other reason. The decision of the "Engineer-in-Charge" is final in this respect and no claim on this account will be entertained. "OCCL" also reserves the right to take ex-parte measurements, if the "Bidder" does not co-operate in taking final measurements after termination of contract.

38. RESPONSIBILITY OF BIDDER

The work shall be completed by the "Bidder" in all respect within the stipulated period of completion and the responsibility of the "Bidder" shall cease only, when the items are fully accepted by the owner after erection at project site.

39. PROGRESS OF WORK AND PENALTY

The "Bidder" will achieve the desired progress as per programme.. If the "Bidder" fails to achieve the contracted quantity every month as per programme, penalty at the following rates shall be imposed.

SI.	Failure percentage(%)	Penalty percentage(%)
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Bidder

Senior Manager

No.		
(i)	Less than 10(Ten)%	1(One)% of value of defaulted quantity
(ii)	Above 10(Ten)% and upto 20(Twenty)%	2(Two)% of value of defaulted quantity
(iii)	Above 20(Twenty)% and upto 30(Thirty)%	5(Five)% of value of defaulted quantity
(iv)	Above 30(Thirty)%	To be asked to demobilise with penalty equivalent to 10(Ten)% of value of defaulted quantity. The "Engineer-in-Charge" will off-load the work and get the work done through any other agency or of its own at the risk and cost of the "Bidder". No claim will be allowed to the "Bidder" in this regard.

40. REJECTION DUE TO BAD WORKMANSHIP

The rejection due to bad workmanship shall be charged to the "Bidder" at a cost of rejected items plus 20(Twenty) %.

41. TESTING OF WELDERS AND OTHER SKILLED/SEMI-SKILLED WORKMEN

The qualification test of welders and other skilled/semi-skilled workmen may be conducted at site by the "Engineer-in-Charge" and only qualified welders and other skilled/semi-skilled workmen shall be deployed for the work. The cost of testing shall be borne by the respective "Bidder".

42. QUALITY ASSURANCE AND QUALITY CONTROL

Quality Assurance/Quality Control Plan shall be prepared before commencement of site activities and shall be followed maintaining stage-wise up-to-date record of the work.

43. SITE VISIT

The "Bidder", interested to participate in the tender, should visit the site of work and get himself acquainted with site conditions and quoted work before submitting the tender.

44. DEVIATION OF PROVISIONS IN AGREEMENT

The "Bidder" will not vary or deviate from the provisions in the agreement without obtaining prior permission in writing from the "Corporation".

45. RIGHT OF THE "CORPORATION"

The "Corporation" reserves the right to cancel a particular tender call or all tender calls without assigning any reason thereof. The items can be splitted among two or more bidders at any stage. The offer of any bidder or all may be cancelled without assigning any reason thereof. The requirement shown in any tender call notice are only indicative and may vary.

46. APPROACH ROAD, HAUL ROAD ETC.

The approach road, haul road etc. if required, at site of work are to be constructed and maintained by the "Bidder" at his cost.

47. SUB-LETTING

The work under any agreement shall not be assigned or sublet to anybody by the "Bidder". If the "Bidder" shall assign or sublet or attempt to do so, the "Engineer-in-Charge" shall terminate the agreement and shall get the work done through any other agency or of its own at the risk and cost of the "Bidder". No claim will be allowed to the "Bidder" in this regard. "OCCL" reserves the right to have access also to units of the "Bidder" to verify, if works are actually executed by him.;

48. EXECUTION OF EXTRA ITEMS AND EXTRA QUANTITIES

All extra items are to be executed by the "Bidder" at current schedule of amount. All extra quantities are to be executed at agreement amount. If required, the "Bidder" has to furnish the working analysis as per actual to arrive at the extra items amount.

49. FORCE MAJEURE:

Neither party shall be liable to the other for any loss or damage occasioned by or arising out of acts of God such as unprecedented flood, volcanic eruption, earthquake or other convulsion of nature and other acts such as but not restricted to invasion, the act of foreign countries, hostilities, or war-like operations before or after declaration of war, rebellion, military or unrobed power which prevent performance of the contract and which could not be foreseen or avoided by a prudent person.

50. JURISDICTION

Bidder

Senior Manager

For all liabilities created under the various contractual obligations/impositions under this agreement, the "Bidder" undertakes not to raise any dispute or litigations in connection there with and shall make all endeavors to resolve all disputes amicably through conciliation and in all such cases, the decision of the Managing Director, "OCCL" shall be final and binding on the "Corporation" as well as on the "Bidder" failing which all such disputes arising out of the agreement shall be subject to jurisdiction of Hon'ble High Court of Odisha at Cuttack and their sub-ordinate courts at Bhubaneswar only. Both the parties agree by mutual consent that any dispute relating to this agreement is barred from arbitration.

SPECIAL TERMS & CONDITIONS

1. The Jobworker is to supply labour for giving section and profiles. All materials necessary for such work will be supplied by the Jobworker at his own cost and responsibility and profiles are to be maintained till the work is completed.
2. The offer submitted by the Jobworker will remain valid till finalization of the award of the work. He is not entitled to withdraw his offer during the period of consideration of his offer. Withdrawal of offer prior to finalization of the tender will entail for actions as deemed fit.
3. The Jobworker shall furnish the postal address of his site office as well as his permanent registered office along with Phone numbers (both Landline & Mobile) and valid e-mail id. Any notice shall be deemed to have been served if it is delivered to his authorized agent/representative at site or sent by Registered Post or sent by e-mail to the said site office.
4. The Jobworker shall arrange to obtain drawings and specification of the work from the Senior Manager's Office. He has to carry out the work at the agreement rates including any additions/alternations in drawings/specifications as may be instructed by the Engineer-in-Charge during course of execution of the work.
5. The Jobworker will install display board at his cost mentioning information about the work at worksite after drawal of the agreement.
6. The work has to be executed strictly as per drawings and specifications. The Jobworker has to engage technical persons to assist the corporation for taking initial levels, final levels, giving layout and to supervise day-to-day work.
7. Required Engineering personnel for day-to-day supervision of works will be provided by the Jobworker. Engineering personnel of OCCL will monitor the quality and progress of work and will do check measurement for payment.
8. The quantities mentioned against each item of work are subject to variations. Such variations shall not vitiate the contract. The rates quoted shall apply for increased or decreased quantities of different items.
9. The bidder has to visit the site and quote his rate which should include cost of haul road, dewatering if required by suitable method and other ancillary works for completion of work and no extra payment shall be made.
10. **PERIOD OF COMPLETION:**
This work is to be completed in all respect within **4 (Four)** calendar months (including rainy season) from the date of issue of work order. The Jobworker, whose tender is accepted must submit a programme of work within 7(Seven) days after issue of work order for approval of the Engineer-in-Charge. The Jobworker will execute the work strictly as per the programme submitted by him, failing which action will be taken by the Senior Manager as per clauses indicated in the general terms and conditions of OCCL
11. Due to non-issue of design and drawings by the client in time and any hindrances caused due to non-settlement of rehabilitation and resettlement problems if any by the client which may likely to affect the progress of work or stoppage of work, the Jobworker shall have no right to claim any compensation in whatsoever manner from OCCL. The Senior Manager (Civil) in-charge of the work may direct the Jobworker to suspend the work or any part of the work temporarily for any period as may be necessary. This temporary suspension shall not vitiate the contract and the Jobworker shall not be entitled to any claim on account of such temporary closure. However this temporary suspension period will be considered towards extension of time for completion of the work.

12. All materials required for the work shall be approved by the Engineer-in-Charge before use in the work. The Jobworker must extend necessary co-operation for sampling and testing of materials by OCCL/client. However, testing charges shall be borne by the Jobworker.
13. The Jobworker has to obey all rules and regulations for movement of transport vehicles in main roads, village roads, in factory and colony areas. He has to obtain necessary permission from the concerned authorities at his cost and risk. Necessary permission/license for borrowing earth from borrow areas whether Government or private will be borne at his own risk and cost. The rate quoted is inclusive of such expenditure.
14. The Jobworker shall allow the quality control organization to take as many samples as may be required by them during course of execution of different items of works. He shall also extend necessary co-operation to carry out any number of field tests as may be necessary. Any portion of work or material rejected by Quality Control Organization/ Department shall be treated to have been finally rejected by the Engineer-in-Charge.
15. Maintenance of the work during construction and during the **Defect Liability Period of 1 (one) year after completion of the work** is the responsibility of the Jobworker.
16. The Jobworker shall display notice both in English and Oriya indicating prevailing wages of different categories of labour in a conspicuous place. He shall also maintain wage book of each worker and shall issue wage cards in the prescribed forms to different workers.
17. Payment for the work done by the Jobworker shall be based on actual field measurement. The Jobworker or his authorized representative shall be present at the time of recording the measurement at each stage and sign the field level book and measurement book as token of acceptance.

The payment for the quantity of different items executed by the Jobworker shall in no case exceed the quantity admitted by the Department/client for the respective items and certified / paid to OCCL.

18. Statutory deductions, such as security deposit, income tax including surcharge, hire charges of machineries, cost of materials, EPF contribution, labour clearance etc. shall be deducted from the R/A bills. If the Jobworker fails to submit the receipt in support of payments towards royalty, cess, tolls and other taxes, the same shall also be deducted from the R/A bills.
19. **SAFETY PROVISIONS:**
The Jobworker shall at his own expenses arrange for the safety during construction as required including the provisions in the safety manual published by the Central Water and Power Commission, New Delhi (January'1962) edition). In case the Jobworker fails to make such arrangement, the corporation shall be entitled to cause them to be provided and to recover the cost thereof from the Jobworker. For failure to comply with the provision of the safety manual, the Jobworker shall without prejudice to any other liability pay to the Corporation a sum not exceeding **rupees five hundred per day** for each day of default.

20. **ACCIDENTS :**

It shall be the Jobworker's responsibility to protect against accidents on the works. He shall indemnify the corporation against any claims for damage or for injury to person/ machineries/ transport/ vehicle property resulting from any in the course of work and also under the provision of the workmen's compensation Act. On the occurrences of an accident arising out of the works which results in death or

which is so serious as to be likely to result in death, the Jobworker shall within twenty four hours of such accident report in writing to the Senior Manager (Civil) in charge of the work stating the fact clearly and in sufficient details the circumstances of such accidents and the subsequent action. All other accidents on the works involving injuries to persons or damage to property other than that of the Jobworker shall be promptly reported to the Senior Manager stating clearly and in sufficient details the facts and circumstances against all loss or damage resulting directly or indirectly from the Jobworker failure to conform to the provisions of the said act in regard to such accidents. In the event of an accident in respect of which compensation may become payable under the workmen's compensation Act including all modifications thereof. The Senior Manager (Civil) in charge of the work may retain. Out of any money due and payable to the Jobworker such sum or sums of money as may be in opinion of the Senior Manager be sufficient to meet such liability. On receipt of award from the Labour Commissioner in regard to quantum of compensation, the difference in amount will be reimbursed or recovered from the Jobworker

21. **WAGES :**

Wages shall have the same meaning as defined in the payment of wages Act and include time and piece rate wages, if any.

(i) **Display of notices regarding wages etc.**

The Jobworker shall :

- (a) Before he commences his work, continue to display and correctly maintain in a clean and legible condition in conspicuous places on the work, notices in English and in the local India language spoken by the majority of the workers, giving the rates of wages prescribed by the State Public Department/Electricity Department for the district which the work is done.
- (b) Send a copy of such notice to be Engineer-in-Charge of the work.

(ii) **Payment of wages :**

- (a) Wages due to every workers shall be paid to him / her directly.
- (b) All wages shall have to be paid in current coin or currency or in both.

(iii) **Fixing of wages period :**

- (a) The Jobworker shall fix the wage period in respect of which the wages are payable.
- (b) No wage period shall exceed one month.
- (c) Wages of every workman employed on the contract shall be paid before the expiry of ten days, after the last day of the wage period in respect of which the wages are payable.
- (d) When the employment of any worker is terminated by or on behalf of the Jobworker, the wages earned by him shall be paid before the expiry of the day succeeding the one on which his employment is terminated.
- (e) All payments of wages shall be made on a working day.

(iv) **Wage book and wage cards etc. :**

- (a) The Jobworker shall maintain a wage book of each worker in such as may be convenient, but the same shall include the following particulars.
- (b) Rate of daily/monthly wages.
- (c) Nature of work on which employed.
- (d) Total No. of days working during each wage period.

- (e) Total amount payable for the work during each wage period.
 - (f) All deductions made from the wages with an indication in each case of ground for which the deduction(s) is/are made.
 - (g) Wage actually paid for each period.
22. During excavation of cut-off-trench and other components, shoring, shuttering including cost, carriage of materials including all taxes and cost of dewatering is to be borne by the Jobworker. Only the designed sectional quantity will be paid. Dewatering from the foundation trenches including and running charges of pump and coffer dam if required will be borne by the Jobworker.
 23. It must be definitely understood that the Corporation / Government do not accept any responsibility for the correctness and completeness of the trial borings shown in the cross sections.
 24. Excavated materials and debris unused in the area are to be removed from the site by the Jobworker at his own cost and responsibility as per the direction of Engineer-in-charge.
 25. The work will be executed as per approved drawing, design and B.I.S. specification and as per the instruction of Engineer-in-charge.
 26. No claim whatsoever on account of interest will be entertained under any circumstances.
 27. The Jobworker will remain responsible to arrange all mechanical means whenever required to complete the work in time at his own cost.
 28. Any damage caused to the work due to any cause except major natural calamity whatsoever during the execution will be made good by the Jobworker until it is handed over to the Department in complete shape.
 29. The quantities provided in the tender schedule are tentative which is likely to vary during execution as directed by the Engineer-in-charge.
 30. If use of explosives is necessary for the purpose of blasting of rock required at any stage of the execution, the Jobworker is to obtain necessary blasting area license from the appropriate authorities and procure the explosives and store them at his own responsibility and arrange in the work sites. The procurement and storage of the explosives is the sole responsibility of the Jobworker & he shall abide by all the laws of explosive act.
 31. No extra cost is to be paid to the Jobworker towards construction of coffer dam, diversion channel, approach road & haul road etc. required for execution of work. The approach road / haul road to work site will be maintained by the Jobworker.
 32. The detail specification enclosed with the tender papers for different item of work should be strictly adhered to during course of execution of work. The work is to be carried out strictly as per OPWD code, BIS specification and as per prevailing standards of State Govt. and Central Govt.
 33. If departmental land is available, the Jobworker will be allowed to use the same for accommodation of his labourers, stores and machineries free of rent. If department land is not available the Jobworker will make his own arrangement for land for such requirement at his own cost.
 34. The quantity mentioned can be increased or reduced to the extent of 10% for individual items subject to a maximum of 5% over the estimated cost. If it exceeds the limit stated above, prior approval of competent authority is mandatory before making any payment.
 35. The period of completion is fixed as **4 calendar months (including rainy season)** and cannot be altered except in case of exceptional circumstances with due approval of next higher authority / Client Department.
 36. Royalty for stone products, sand, and Borrow earth are to be recovered from the Jobworker's bill as per prevailing Govt. Notification.
 37. The Jobworker is required to establish a field labour with required equipments for quality control testing at site at his own cost.
 38. The Bidders are required to inspect the site and satisfy themselves regarding availability of land for the work and other facilities for execution of same. It may be noted that, he is to complete the work within the time specified. No extension of time will be allowed in any account. If the Bidder fails to complete the work

within the scheduled time or leaves the work incomplete, he will have no claim on the work so executed and in this matter the decision of the Engineer-In-Charge of the Corporation is final & binding.

39. The work has to be executed conforming to ISI standards and specifications.
40. The rate quoted will be inclusive of all taxes, duties and cess etc. but excluding GST. The rates will be firm and binding during the entire period of execution and extension thereof.
41. The contract price will be inclusive of all ancillary works such as approach road to work site, dewatering, desilting, cofferdams, water diversion measures, shoring, strutting, gangways, chutes, ramps, ladders, scaffolding, the quality control testing charges and any other such works, which will not be measured but are necessary for carrying out the proposed construction. No extra payments will be made to the Jobworker for such ancillary works/jobs.
42. The price of the Jobworker will be inclusive of all finishing jobs and rectification works as and when required. The defect liability period will be for a period of 1 year after the date of handing over. Successful completion and handing over on the part of the Jobworker will not resolve him from the responsibility of attending to all the required rectifications and maintenance of the system during the defect liability period.
43. The Jobworker will be fully responsible for the safety of the work, property and workmen. The Jobworker will provide proper insurance cover for the work and property against any damage due to accidents, natural calamities or otherwise from the date of commencement till the end of defect liability period and also insurance cover against possible accidents and personal injuries to workers and workmen during the period of construction.
44. The Jobworker has to extend all necessary co-operation in collection of soil samples and preparation of structural plan before execution of the work.

PERCENTAGE RATE TENDER AND CONTRACT FOR WORKS

GENERAL RULES & DIRECTIONS FOR THE GUIDANCE OF JOBWORKERS

1. The work proposed for execution by contract will be notified in a form of invitation to tender posted through websites www.tendersodisha.gov.in & www.odishaconstruction.com

This notice will state the work to be carried out, the items and approximate quantities thereof as well as the date for submitting and opening tenders also the amount of earnest money to be deposited and the amount of the security deposit by the successful bidder and the percentage if any to be deducted from bills. Copies of the specifications, designs and drawings and any other documents required in connection with the submission of tender signed for the purpose of identification by the Sub-divisional Officer/Executive Engineer shall also be open for inspection by the Jobworker at the office of the Sub-Divisional Officer/Executive Engineer during office hours.

2. In the event of the tender being submitted by a firm it must be signed separately by each member thereof, or in the event of the absence of any partner, it must be signed on his behalf by a person holding a power of attorney authorizing him to do so.

3. Receipts for payment made on accounts of works, when executed by a firm must also be signed by the several partners, except where the Jobworkers are described in their tender as a firm in which case the receipts must be signed in the name of the firm by one of the partners, or by some other person having authority to give effectual receipts for the firm.

4. The memorandum of work tendered for and the memorandum of materials to be supplied by the OCCL and their issue rates shall be filled in and completed in the office of the Senior Manager (Civil) before the tender form is issued. If a form is issued to an intending tender without having been so filled in and completed, he shall request the office to have this done before he completes and delivers his tender.

5. The Jobworker/Bidder have to submit EMD amount in shape of TDR.

6. The Engineer-in-charge or his duly authorized assistant will open the tenders in the presence of any intending Jobworkers who may be present at the time and will enter the amounts of the several tenders in a comparative statement in a suitable form. In the event of tender being rejected the earnest money shall thereupon be returned to the bidder.

7. The Engineer-in-charge shall have the right of rejecting all or any of the tenders.

8. In the event of a tender being selected for acceptance the Engineer who opened the tenders will, if he is competent to accept the tender, inform the bidder of the selected.

tender who shall there upon sign copies of the specification and other documents with the agreement. The bidder of the selected tender shall also deposit the required amount of the security money within the prescribed time. If the bidder fails to deposit the required amount of the security money within the prescribed time the Engineer-in-charge may reject the tender.

If the Engineer is not competent to accept the tender himself, he will inform the bidder of the tender which he decides to recommend for acceptance, such bidder shall thereupon sign forthwith copies of the specification and other documents mentioned in rules 1 and 4 and shall deposit the required amount of the ISD/PSD within the prescribed time. The tender with the specification and other documents signed by the bidder will then be forwarded for acceptance to the Engineer who is competent to accept the same. If the said Engineer rejects the tender the ISD/PSD deposited shall be refunded to the bidder.

9. When a tender is selected for acceptance, the bidder shall deposit the required amount of the ISD/PSD. No tender shall be finally accepted until the required amount of the ISD/PSD has been deposited.

10. The amount of Initial security Deposit to be deposited by the bidder whose tender is selected for acceptance shall be 2 (two) percent of the agreement value of the work, failing which tender shall be liable to rejection.

Taxes as per provisions of Government shall be deducted from the bills of bidder.

11. When tender has been selected for acceptance and the required amount of the security money has been deposited the Engineer shall scrutinize all pages of the form of item, Rate Tendered/quoted percentage in case of percentage tender and Contract for works to see that the form has been properly filled up and signed by the Jobworker and the signature witnessed. He shall then, if he is competent to accept the tender, sign the acceptance of the tenders or if he is not so competent to, shall send the form for signature of the acceptance to the officer competent to accept it.

12. All bidders are required to submit a list of works, which are in hand at the time of submitting their tenders. The list of works are required to be submitted in the proforma by the Executive Engineer under whom he has executed the work in order to judge their past performance (vide Works Department Circular No. 15443 dt. 01.08.2005.)

13. The earnest money deposited is liable to be forfeited to Corporation, if the bidder backs out from the offer before acceptance of the tender by the competent authority.

14. IT towards GST will be deducted at the rate prescribed in the Odisha Goods & Service Tax Act-2017 or as amended from time to time.

TECHNICAL SPECIFICATION

SECTION – 1

GENERAL INFORMATION

1.0 General Information & Scope of Work

1.1 Description of work to be executed: **“Extension of DVH, Balasore(Electrical & PH Work)/Infrastructure Upgradation of District Veterinary Hospital, Angul (Electrical and PH Work)**·

1.2 Location of work site:

The work sites are well communicated from Balasore Town (5km).

1.3 Transport communication facilities.

Private buses and trucks are playing through frequently from work site. The Jobworker has to make arrangement at his own cost to transport all his construction equipments, construction materials and labour to work site, as stated via above root.

1.4 Climate :

The project area has moderated climate with mean temperature from 26 °C to 37 °C during summer month. The rainy season is generally confined to four months from 16th June to 15th October during which about 90% of the total annual precipitation is received.

1.5 Availability of Labour:

Both Semi-Skilled & unskilled labour required for the work are available in project area and it is preferable to engage local labourer, However the Jobworker must make his own arrangements for labour / machineries / equipments.

1.6 Nearest Town:

The nearest town to the work site is Angul.

1.7. Availability of Petrol, Diesel and other lubricants:

The nearest petrol pumps for procurement of petrol, diesel and other lubricants are available at Indian Oil Petrol Pump, Similipada, Angul with a distance of 1.70 Km. The Jobworker shall make his own arrangement for procurement of same at his own cost required for the machineries and equipments engaged for the work.

1.8 Electric Supply:

Electricity supply is available at work site. The Jobworker shall make his own arrangement for extension of electric connection at his own cost if so required by him.

1.9 Observation of Rules:

The Jobworker shall take precaution to ensure safety to the workers. The department/Corporation will not take any responsibility for accident if any that may occur during the period of execution. The Contactor shall take immediate action to rectify the defects, immediately if any during the period of execution pointed out by the Department. Labour licence must be produce before the starting of work.

1.10 Housing Facilities:

Private house may or may not available in the vicinity of the work site. The Jobworker shall make his own arrangement for housing the labourers, workers and staff at the work site.

1.11 Medical Aid:

The nearest Health Centre available at with a distance of 450 Mtr at Angul Govt. Hospital. However, the Jobworker shall make first aid arrangement at his own cost in accordance with rule and regulations of prevailing Labour Act.

1.12 Post, Telegraph & Telephones:

Post, Telegraph, Telephones, & Fax are available at Head Post Office, Angul.

1.13 Local Roads:

The existing available approach road to the work site can be used by the Jobworker. The Jobworker shall however construct and maintain the connecting roads in the working areas including drainage, sanitary etc. at his own cost. The Jobworker shall construct haul road and other approach road as maybe necessary for proper execution of the work at his own cost.

1.14 General Information:

1.14.1 The information and the data related to work site conditions described above represents the site condition in general and for information of the bidders/Jobworkers. The department does not guarantee the reliabilities or accuracy of any other data. The Jobworker shall undertake at his expense such studies as are necessary to assess the reliabilities and accuracy of information presented.

1.14.2 It shall be presumed that the bidder / Jobworker visits sites of proposed works at his expense and satisfy himself as to the nature and location of work and local condition in general and particularly about the availability of construction materials electricity supply, water supply, storage and handling of materials, disposal of soil, road communication, availability of labour and other related matters, planning for execution etc. before quoting his rates for different items of work. The department therefore will not bear any responsibility for any interpretation or conclusion made by the Jobworker in respect of site condition and consequence thereof.

1.15 Sources of Fund :

DIRECTORATE OF ANIMAL HUSBANDRY & VETERINARY SERVICES, ODISSA, CUTTACK

SECTION – 2
P.H. PORTION OF WORK

1. WATER SUPPLY & SANITARY INSTALLATIONS :

Materials of following standard manufacturers are to be used in the work. The contractor shall indicate, in the offer, the brand or make of the materials, for which the rates are quoted.

2. Sanitary fixtures :

To be of best quality vitreous ware of porcelain.

3. Indian water closet

(i) Foot Rests

4. Wash Hand Basin

(i) Kitchen Sink Hindware/Parry

(ii) Urinals Ware / Neycer/ ISI marked

(iii) Drain Board

(iv) Orissa Closet

(v) European Water Closet &

(a) Low Level Flushing Cistern.

(b) C.I. High Level Flushing Cisterns : Sushila Industries Prabhat Iron Foundry/

East India Steel / I.S.I. marked. “

(c) H.C.I. Soil Waste Pipes: Confirming to I.S.I. 1729-1954, having

I.S.I.Mark.

(d) C.P. Bath Room Fittings: Plaza/ / Jaquar I.S.I. marked &

confirming to-latest ISS

(e) Brass Fittings : Shakti/Anupama /Luster/1.S.I.Marked.

(f) Gunmetal Valves : Anupama / Leader / B.S.I.S.I. marked.

(g) G.I. Pipes (Medium Class): Manufactured by TATA / JINDAL / B.ST.

having I.S.I. Mark.

(h) Galvanised Iron fittings : I.S.I. marked C/R brand.

(i) Paints: Asian / Berger / Jonson/Confirming to I.S.S

(j) Cast Iron Manhole cover frame: Sushila Industries / Prabhat Iron Foundry /

East India Steel make confirming to I.S.S. 7.26

(k) Stone Ware Pipes & Fittings : Manufactured by Orissa Ceramic Industries

/ Orissa industries / Keshab Ceramic confirming to I.S.S. Specification No.651 /1980 {Grade A}

(l) P.V.C. (S.W.R.) & Manufactured by the Supreme Industries P.V.C (Rigid.) Pipe/Fittings: Ltd., Bombay / Oriplast, Balasore Duroplastconfirming to I.S. Specification No. 4985/81 (Class IV)

(B) BUILDING MATERIALS:**(a) Bricks:**

Bricks shall be of locally available best quality kiln burnt. Bricks shall be well burnt, uniform deep red, cherry or copper colored, free from cracks and flaws, well shaped, uniform in size, homogeneous in textures and shall emit a clear metallic sound when struck, bricks shall have a minimum crushing strength 75 Kg/Cm² and shall not absorb water more than 20% by weight.

(b) Cement Mortar:

Mortar shall be well mixed to a uniform colour and consisting in the proportion as specified in the items of work. Sand shall be measured on the basis of its dry volume and the quantity shall be adjusted for bulking of damp sand. Cement shall be mixed, taking 50 kg. Or 0.035 Cum. In volume only required quantity that can be consumed within 30 minutes of adding water shall be mixed at one time.

(c) Cement:

Cement should conform to IS-269/IS-455.

(d) Sand:

Locally available best river sand medium size.

4. Course Aggregates:

The course aggregate shall be of hard granite stone and shall generally conform to I.S. 389. Porous Course aggregate shall not be used. The aggregate shall be free from clay films and other adherent coatings. Aggregate containing clay films over the stone materials shall be thoroughly washed. The aggregate shall be from approved quarry and crusher broken. Course aggregates shall be composed of particles ranging between the sizes 2.36 to the maximum size as may be specified in the relevant item of work, within the range, the aggregates shall be well graded so as to produce a dense concrete.

5. Reinforcements:

Mild steel Round Bars, cold twisted and deformed bars of steel of medium tensile strength will be used as reinforcement as per drawing and design and directions. Mild steel bars shall conform to I.S.;226/1962 standard quality or IS:432/1966 – Grade-I. Black annealed wire (Not thinner than 24 gauge for tying the reinforcements shall be used).

TECHNICAL SPECIFICATION FOR SANITARY & PLUMBING WORKS**(A) Sanitary ware & allied fittings :****6. General:**

All Sanitary fixtures and their allied fittings, should be of first quality, manufactured by Hindustan Sanitary Ware / Parryware / Nycer, These should be approved by the Engineer-in-charge of the G.P.H. Wing before use.

7. Squatting Pattern W.C. (pan) (Orissa Pattern Closets):

The water closet shall be of vitreous China of specified size and pattern, with an integral flushing rim. It shall have the flushing inlet at the back. The Orissa closet should be of approved quality conforming to I.S.S.-2656 (Part-III). The squatting type Indian Water Closet (Orissa Closet) shall be sunk in floor sloped towards the pan in a workmanship like manner. The closet shall be fixed on a proper cement concrete base of 1:3:6 proportion, taking care that the cushion is uniform and even, without closet, to receive the specified thickness of the floor finishing. The joint between the Closet and the P.V.C. (S.W.R) trap shall be made with W.C. ring and rubber lubricant and shall be leak proof.

8. Flushing Cistern:

The flushing of the Indian water closet (Orissa Closet) shall be done by C.I. or Polyethylene High Level low level porcelain valve-less urinal flushing cistern of approved brand and quality I.S.I. Marked and capacity as specified. The connection between the cistern and water closet shall be made by 32 dia O.I. flush pipe, made from G.I. Pipe (Light Quality) or 32 dia P.V.C. Pipe as specified in the tender schedule. The flush pipe with an offset should be fixed to wall by using C.I. Holder Bolt Clamps. The capacity of the cistern should be 10 Ltrs. As

per I.S.S. 15 Ltrs. In case of low-level cisterns. The Cistern shall be fixed on cast Iron or Rolled Steel Cantilever Brackets (Bulltin type), which shall be firmly embedded in the wall, with C.C. 1.2.4. The Cistern shall be provided with 20mm dia P.V.C. Overflow Pipe with fittings, which shall terminate into mosquito proof coupling secured in a manner that will permit it to be readily cleaned or renewed. The 32mm dia Flush Pipe shall be connected to the Water Closet by means of approved type joint. The Flush Pipe shall be fixed to wall by using C.I. Holder Bat Clamps. The bend and the Offset as required in the Flush pipe shall be made cold. The inside of the Cistern shall be painted with two coats of approved black bitumen paint. The Outer face of the Cistern, Brackets Overflow pipe and Flush Pipe etc., shall be painted with two coats of any synthetic enamel paint of approved shade and make, over a coat of priming. The cost of the rate quoted for the flushing cistern. The inlet connection to the Cistern shall be made with 450 mm 1 cmg 15 mm dia P.V.C. Heavy type connection Pipe.

9. Wash Hand Basin :

The Wash Hand Basin shall be of the White Vitreous China of approved quality, make and brand I.S.I, marked. It shall be one-piece construction with an integral combined overflow. The size of the basin shall be as specified. Each basin shall be provided with one 15 mm dia C.R Brass Pillar Tap, 32mm dia C.R Waste, C.R. Chain and Rubber Plug, Unions, Joints, C.P Bottletrap cast complete in all respects of approved quality. The Basin shall be supported on a pair of R.S. or C.I. Cantilever brackets (built in type) embedded and fixed in wall with cement concrete, 1.2.4. These brackets shall be painted to the required shade with two coats of approved synthetic enamel paint over a coat of priming. The waste of the Basin shall discharge into a floor trap or Channel through bottle traps as specified. One 32mm dia C.P. Bottle Trap is to be fixed to the Waste of the Basin & the outlet of the bottle trap is to be connected to the waste pipe to discharge the waste to the Pipe, to discharge the waste to the aforesaid floor trap. The inlet connection to the Basin shall be made with 450mm Long 15mm dia Heavy type P.V.C. connection pipe.

10. Kitchen Sink:

Unless otherwise mentioned the Kitchen Sink and drain board (if used) shall be of white Vitreous China or fire clay as specified and approved quality, make a brand, confirming to T.S.S, It shall be of one piece construction with integral combined overflow. The size of the sink and Drain Board shall be as specified. Each Sink shall be provided with one 15mm dia C.P. brass, Bib Cock, long body, 40mm C.P. Waste with overflow C.P. Chain & Rubber Plug, unions etc., complete in all respects as specified and of approved quality. The sink shall be supported on a pair of M.S. or C.I. Cantilever Brackets (Built in type) embedded or fixed in position in the wall by Cement Concrete 1.2.4. The brackets shall be painted to required shade with two coats of approved synthetic enamel paint over a coat of priming. The waste should discharge into a floor Trap or Channel. The waste pipe should be 40mm dia P.V.C. Pipe jointed to the waste of the Sink with a Brass union nut.

11. Standing Urinals :

The Urinals shall be flat pattern lipped front basin of required dimension of White Vitreous China and one piece construction with internal flushing box rim of an approved make and brand as specified. It shall be fixed in the position by*using wooden plug embedded in the wall with screws of proper size. Each Urinal shall be connected to a 40mm dia RV.C. Waste Pipe, which shall discharge into a channel of floor trap. The lip of Urinals shall be kept at 525mm from floor level, while fixing the Urinal on wall. Where no. Of Urinals are fixed in a line, the distance between the centre to centre of each Urinal shall be kept 750mm. And each Urinal should be separated from one to other by a partition plate. The centre to centre of partition plates shall be kept 750mm apart. The partition plate shall be of one-piece 25mm thick marble plates, cut to size and front corners rounded. The partition plates shall be embedded in wall with cement concrete and finished smooth. The bottom of the partition plate should be kept 350mm above floor level and top should be kept at 1250mm above floor level. The plates should project 600mm from wall surface. The width of the plates to be embedded inside the wall should not be less than 100mm. The thickness of the plates shall be minimum 25mm. For flushing the Urinals each Urinals shall be connected with one 20mm dia G.I. Pipe (Medium Class), One of this pipe shall be inserted into the inlet of the Urinal and jointed with Jute and putty where as the other end is connected either with a Tee or Bend with the 25mm dia size Water Pipe Line fixed on the wall horizontal above the Urinals. In each 20mm dia flush pipe one 20mm dia cum-metal Gate value, the water will flow to thermal of Urinal through the inlet pipe and flush the Urinal. After flush, the valve can be closed to avoid wastage of water. One 40mm dia P.V.C. Waste Pipe shall be connected to the waste of each Urinal, to discharge the Waste into the Channel of Trap. One end of this Waste pipe shall be made a cup size to fit into the projected waste and tightened with screws.

12. Squatting Urinal Plates :

The Urinal Plates shall be of White Glazed Vitreous China with integral flushing rim of size 450 X 350mm of approved make and brand as specified. There shall be white vitreous channel with stop and outlet pieces in front. These plates shall be fixed on C.C. at 75mm to 100mm above floor level. For flushing arrangement, one 25mm dia G.I. Common Water Pipeline (minimum size) shall be fixed on the wall parallel to floor. For each urinal one 20mm dia G.I. Branch Pipe shall be taken down up to t200mm from floor level just at the centre of each plate, in which one 20mm dia Gate Valves is fixed at 350mm above floor level. At 1200mm height, the 20mm dia flush

pipe shall be divided into two branches shall be taken downward and connected to the inlets of the urinals plate at floor level. By operating the valve as above, the water will rush into the rims of the urinal plate and flush it. Where there are number of urinals fixed in a line, each urinal should be separated by a partition plate fixed in the centre of two urinal plates. The centre-to-centre distance of the partition plates shall be kept 750mm. The partition plates shall be of one-piece marble plate, 25mm thick, cut to sizes and front corners rounded. The plates are to be embedded in wall with cement concrete and finished smooth. The bottom of the partition plates shall be kept flushed to urinal top level and the top level of partition plate shall be kept at 1200mm from the urinal plate top and the projection from the wall shall be 600mm. The width of the plate to be embedded inside the wall should not be less than 100mm.

Soil and waste pipes and fittings

13. H.C.I. Pipe Fittings

The Cast iron Soil, Waste and design pipes (spigot & socket joints) shall be of make and brand as specified (under specification of materials), confirming to I.S.S. 3989-1970 and ISI marked with approved clamps are to be used. The pipes and fittings shall be free from cracks, laps, pinholes, and other imperfection and carefully cited. The access door fittings shall be designed and made so as to avoid dead space in which filth may accumulate and door shall be provided with 3mm thick rubber insertion packing when closed and bolted.

WEIGHT OF HCI PIPES

1. Dia of Pipe in mm Thickness in mm Length of pipe & width piece

1.8mtr. D/s 1.8mtr. 50 mm 5mm 16.00kg.

15.00kg.

75 mm 5mm. 13.83kg.

16.52kg.

100 mm 8mm 24.00kg.

22.00kg.

150mm 8mm 26.70kg.

31.82kg.

Tolerance 10%

2. The jointing should be done with pig lead confirming to I.S. 782-1966 – grade 99.94. The spigot and of Pipes and Fittings should enter into the socket end. The annular space shall be packed with spun yarn gasket, compacted so as to leave a depth for receiving required quantity of lead in a continuous pouring from ladder. After pouring lead in the joints in full, caulking is to be done three times round with the caulking chisels, so that the joints may be sealed with lead. The depth of lead in a point should be 35mm and the rest depth of the joint should be packed with spun yarn Gasket.

3. Requirement of lead and Gasket cement for jointing H.C.I. Pipes (Each Joint)

Dia of pipe in mm. Lead in kg. Gasket in kg. Cement kg.

(same for lead & cement joint)

100 1.2kg. 0.13kg. 0.12kg.

500.36 kg. 0.06 kg. 0.06 kg.

4. The inside of the pipes and fittings shall be well coated with special tar or bitumen solution of approved quality. Where the pipe and fittings are laid below the ground, the outer surface of the pipes and fittings shall also to be painted with two coats of black anticorrosive paint of approved quality. On completion of the work, the exposed pipes and fittings are to be painted with two coats of synthetic enamel paint of approved colour & quality over a coat of red oxide primer. The cost of paint should include in the rates.

5. Soil pipes for ventilation Is to be connected to the sewer at its floor and without a trap and be carried to such a height, at least above roof level, to prevent damage to health by commission of foul air, The pipe shall terminate as open and protected by a cowl.

6. The waste water pipe shall be connected with the nearest yard gully or a surface drain.

7. The traps should be of hard cast iron and should have a water seal at least 50mm deep.

8. All the soil and waste pipes and fittings, after laid and fixed shall be smoke tested, to the entire, satisfaction of the Engineer-in-charge. The Cost of testing is to be included in the offer. For smoke-test the materials usually burat greases cotton waste, which gives out a clear pungent smoke, which is easily detected by sight and smell. Smoke shall be pumped to the drains from the lower end from a smoke machine, which consists of lower, and burner.

Bidder

Senior Manager

P.V.C (S.W.R.) & P.V.C. (Rigid) Pipes & Fittings

9. The P.V.C. (S.W.R.) and P.V.C. (Rigid), soil Waste & Vant Pipes (Spigot & Socket, & couples joints), shall be of make & brand as specified (Under Specification of materials) confirming to I.S.S., B.S.S. & DIN are tube used.

The main specification of P.V.C. Soil & Waste pipes and fitting are as below.

a) Materials – Un-plasticised Poly Vinyl-Chloride (UPVC).

b) Colour - Grey

c) Dimensions -

(i) Diameter - Fittings - 75mm/110mm/63mm & 63mm.

Pipes - 75mm, 110mm, on lengths of 3.or 6 mtr.

d) Wall thickness - Fittings – Minimum 3.2mm at any port.

Pipes - As per application

For Rainwater - 75mm-1.8. to 2.2.mm, 110mm-2.5. to 3mm

Waste & Soil - 75mm -1.8 to 2.2mm, 110mm -2.5 to 3 mm,

63mm – Underground drainage with

light/NIL Traffics - 110mm – 2.5 to 3mm

Light/Nil in Heavy traffic - 110mm 3.7 to 4.3mm

e) Standard Confirming to Attributes Confirms to Standard No.

i) Fittings & Wall B.S.4514, DIN 10531

Thickness - DIN 19534 I.S.7834 – PVC (Rigid)

ii) Pipe Wall thickness - IS 4905

iii) Rubber ring - IS 5382

iv) Fitting dimensions - DIN 19531 – P.V.C.,

DIN 19534-S.W.R.

IS – 7834 V.C. (Rigid)

v) Pipe Dimensions - IS 4985

(a) Laying instructions & Jointing Procedure

a-1 Jointing of P.V.C. (S.W.R.) Pipes & Fittings

Clean the outside of the pipes spigot and the inside of the sealing groove of the fitting. Apply the rubber lubricant, to the spigot end, sealing ring and pass the spigot end into the socket, containing sealing ring, until fully homed. Mark and position of the Socket edge with pencil on the pipe, then withdraw the pipe from the socket by approx. 10mm towards thermal expansion gap.

a-2. Fixing of the Pipes and fittings on wall surface.

P.V.C. pipes both (S.W.R.) & (Rigid), fixed on wall surface, are to be supported by P.V.C. pipe clips, specially made for these pipes, with horizontal runs, the pipe clips should be spaced at intervals of more than 10 times the outside diameter of the pipes. In vertical lines the clips are to be spaced at intervals of one meter to a maximum of two metres according to pipe diameter. •

a-3 Jointing of P.V.C. (Rigid) Pipe Fittings

Clean the Outside of the pipes and inside of the socket of a fitting of the inside of the couplers (where 2 plain ended pipes are jointed) of. Apply solvent cement solution, evenly and smoothly on the outer surface of the pipe end and inside surface of either the coupler of the socket and pass the pipe end into the socket of the fittings. Up

to full depth of socket. In case of jointing 2 plain-ended pipes 1st. Push the coupler up to half depth on the end of one pipe and the outer half of the coupler should be pushed to the end of other pipe and thus, both pipes are jointed.

a-4 Fixing of P.V.C. pipes and Fittings through holes of Walls or Chajja of roofs etc.

The Wall/concrete slots should allow for a stress free installation, Pipes and fittings to be inserted into the slots, without a cement base, have to be applied first with a thin coat of P.V.C. Solvent cement, followed by sprinkling of dry sand (medium size). Allow it to dry. This process gives a sound base for cement concrete fixation, around the pipes/fittings while mending the damages.

a-5 Anti syphonage Pipes

All the antisiphonage pipes and fittings to be used are of 63mm. If these are not available under the items of P.V.C. (S.W.R.) materials, 63mm pipes and fittings, manufactured under P.V.C.(right) materials can be used, since the raw materials for both is same.

a-6 All traps should have a minimum water seal of 50mm as per I.S. 5329 and IS 2556 (Part XIII). Where antisiphonage connection is required, the traps to be supplied and used should have a 50mm antisiphonage gent horn on the outlet side. All the Traps used with the closets, should be of the size 125mm X 110mm i.e. Inlet (Socket end) of 125mm & outlet (spirot end) of 110mm only.

a-7 Installation of Water Closet

Determine the correct Location of the P/S Trap & set on a firm base, relative to the floor finish by pouring concrete on a slab. Bedding can be carried out by pouring concrete around the trap, ensuring that the traps outlet is left clear of concrete. Place the W.C. Connector ring to the socketed end of 125/110mm R/S

trap. Apply rubber lubricant on W.C. Connector ring as well as outer side of water closet (connection point) and now complete the joint by pushing the W.C. to home of 125mm socket of the trap.

a-8 P.V.C. (Rigid) Pipes and Fittings

63mm (O.D.) P.V.C. Pipes to be used for these work either in antisiphonage system or else where, should be of "Quick Fit" Pipes Class 2 (4kg. F/Cm²), Quick Fit, Pipes have one and socketted.

The P.V.C. (Rigid) fittings, such as 63mm elbow, 63mm equal Tees 110mm x 63mm reducer etc. Used in the work, should be of injection-moulded fittings.

a-9 One –jointing rubber ring will be available, with each P.V.C. (S.W.R.) pipe and fitting and hence, the cost of therein will not be added in the joint.

10. Measurement

All pipes shall be measured not/length as laid or fixed and shall be measured over all fittings such as bends, junctions, traps etc. The length shall be taken along the counter line of the pipes and fittings. Fittings will be counted extra over.

11. Before fixing and painting, the pipe shall be tested hydraulically to pressure 0.4Kg/Cm² for pipes under I.S.-1729/1964 and at a pressure 0.7 Kg/Cm² for pipes under I.S. 3989-1970 without showing any sign of leakage, sweating of or her defect of any kind. The pressure should be applied internally and shall be maintained for not less than 15 seconds.

(c) Water Supply Pipes and Fittings :

1. Materials.

All galvanised Iron Pipes are to be of mild steel continuous welded, screwed tubes, medium quality confirming to I.S.S. and bearing ISI Marks manufactured by reputed Firms and approved brands as specified. The pipes shall confirm to LS.1239 (Part-!) -1975.

All G.I. Fittings shall be of 'R' Brand manufactured by M/s. R.M. Engineering Ltd., Ahemadabad and 'C' brand manufactured by Present Engineering works or equivalent best quality.

2. Laying of Pipes- The layout of the mains and service pipe set etc., will be done in accordance with the drawings. The contractor is to mark out the exact position of the pipes and fittings at site and take approval of the Engineer In-charge, before taking up the work.

3. Where the Pipes are laid, underground these must not be laid less than 450mm below ground level and coated with one coat of approved black bituminous paint. For laying the G.I. pipes and fittings below ground level, the width and the depth of the trenches for different dimensions for the pipes shall be given as below :

Dia of Pipe Width of Trench Depth of Trench

15mm to 50 mm 300 mm 600 mm

65mm to 100mm 450 mm 750 mm

4. The pipes shall be laid on a layer of 75mm thick sand and filled up with sand up to 75mm above pipes and the remaining portion of the trench shall then be filled up with proper ramming as described in "Excavation and refilling". The surplus earth shall be disposed of as directed. Thrust or anchor blocks of cement concrete 1:2:4 in hard granite chips shall be constructed on all bends or branches to transmit the hydraulic pressure without impairing the ground and spreading it over a sufficient area. Pipes shall not be laid to pass through manholes, catchpit, drain, where, it is unavoidable the pipes shall be carried in sleeve pipe of M.S./G.I., as approved by the Engineer-in-charge. The rate should include such a situation.

152. Where Pipes run along walls, the same are to be fixed to the wall with holder bat clamps /M.S. Hooks as below:

Dia of pipe in mm 15 20 25 32 40 50

Horizontal line 2m 2.50m 2.50m 2.50m 3m 3m

Vertical line 2.5m 3m 3m 3m 3.5m 3.5m

5. Where the pipes are passing through the R.C.C. / Masonry wall / Column / beam or pillars, these must pass through the appropriate higher sizes of C.I./G.I Sleeve Pipes and are to be included in the rates. In case the pipes are embedded in walls and floors it should be painted with one coat of anticorrosive paint of approved quality. ,

6. All pipes should be fixed horizontal and vertical. For taking the pipes through the walls and floors & roof slabs etc. The holes shall be made by filling with chisels or jumper and not by dismentling the brickwork or concrete. After fixing, the holes shall be made good with cement concrete 1:2:4 and properly finished with

Plaster 1.4 to match the adjacent surface.

7. Union Nuts are to be provided in each of the vertical riser or drop on and from G.I. Tank and near the Valve and as and where necessary. The long screw fittings of 3 mtrs. For long horizontal lines and inside the lavatory / Kitchen etc.

8. After laying and jointing the pipes and fittings shall be inspected under working condition of pressure and flow. Any joint found leaking pipes should be removed and replaced without extra cost. The pipes and fittings after they are laid shall be tested to hydraulic pressure of 6 Kg/Cm². The test pressure should maintain without loss of for at least half an hour.

9. Painting

On completion of the test, the exposed pipes and fittings are to be painted with two coats of synthetic enamel paint of approved colour and brand over a coat of priming.

10. Measurement

The length shall be measured in running meter. Correct to centimetre for the finished work, which shall include the pipes and fittings such as Bends, Tees, Elbows, etc., but excludes brass or Gun-metal fixture like tap, Cooks, Valves, PVC connection pipes etc.

11. Ball Valve

The ball valve shall be high or low pressure class as stipulated in the Tender Schedule and shall confirm to I.S. 1703-1968, The nominal size of ball valve shall be that corresponding to the size of Pipe for which it is used. The Bal valve shall be of brass or gun-metal and the float for low pressure polyethylene and for high pressure in copper.

Each and every ball valve while in closed position shall withstand and internally applied hydraulic pressure of 20 Kg/Cm² for a minimum period of two minutes without leakage or sweating.

Every high pressure ball valve when assemble in working condition, with the float immersed to not more than half its volume shall remain closed against a test' pressure of 10.5Kg/Cm² and a low pressure ball valve against a test pressure of 5.3 Kg/Cm².

Polyethylene floats shall be watertight and non-absorbent and shall not contaminate water and with do jointing adhesive jointing parts. The minimum thickness of the copper sheet used for making copper floats shall be of 0.45 mm. The thickness of materials of the float shall be uniform throughout.

12. Ferrule

The ferrules for connection with C.I. main shall generally confirm to I.S. 2692-1964 and shall be of nominal bore as specified. The ferrule shall be fitted with 3 screw and 1 plug or valve capable of complete cutting off the supply to the connected pipe as and when required. For fixing the ferrule, the C.I. main shall be drilled and tapped during non-supply hour at 45 to the connected Pipe as that when required. The ferrule must be so fitted, that no portion of the sunk shall be left projecting within the main on which it is fitted. After the ferrule is connected, one C.I. bell mouth cover or with bricks (as specified) shall be kept over the ferrule to cover the ferrule to protect it and the cost thereof is to be included in the item, even if there is no mention.

13. Non-return Valve (Check Valves)

The non-return valve shall be of Brass or Gunmetal and shall be of horizontal or vertical flow type and of the size as specified and confirm to I.S. 7810-1959 and I.S. 778-1957. The approximate weights of the valves are given below.

Dia Horizontal type (in kg) Vertical type (in kg)

15 0.30 0.25

20 0.55 0.25

25 0.90 0.75

32 1.25 0.90

40 1.70 1.20

50 2.90 1 .45

65 5.25 2.15

80 7.70 4.10

±Tolerance 5%

14. Foot Valve

Foot valve is generally placed at the lower end of the suction pipe of the centrifugal pump to prevent the suction pipe from emptying. On vertical non-return valve may also be fixed in place of foot-valve. The foot valve shall confirm to I.S.038-1967.

15. Water meters (Domestic types) Water meter up to 50m nominal size shall confirm to I.S.-779-1968.The meter body shall be of bronze/

Gun-metal and marked to read in liters complete with registration box and lid. The water meters shall be provided with Strainers. Strainers shall be of material, which is not susceptible to electrolyte, clean and shall be fitted on the inlet side of water meter. It shall be possible to remove and clean the strainer and not permit disturbing the registration box. The offer should include the same. The water meters shall bear ISI Mark.

16. Bibcock & Stopcock

These shall confirm to I.S.781-1967 and bear ISI Mark. The bibcock is a draw off tap with a horizontal inlet and free outlet and stopcock is a valve with a suitable means of connection for Insertion in a pipeline for controlling or stopping the flow. This shall be of screw down type. The cock shall open in anti-clockwise direction. The stopcocks should be of C.P open type/concealed type/angle valves type as specified in tender schedule. Bibcock should be also C.P Brass bibcock.

17. Full way Valve (Brass)

Full way valve is a valve with suitable means of connection for insertion in a pipeline for controlling or stepping the flow. The valve shall be of brass fitted with a cast-iron wheel and shall be of gate valve type confirming to I.S, 780-1960, opening Full way and of the size as specified.

Dia Flanged End Valves in kg Screwed End Valve in kg

15 1.021 0.567

20 1.503 0.680

25 2.498 1.077
 32 5.232 1.559
 40 6.082 2.268
 50 6.691 3.232
 65 10.149 6.840
 80 13.281 8.845

18. Gun Metal Full way Valve

This shall be of the Gun-Metal fitted with wheel and shall be of Gate-Valve type opening full way. This shall confirm to I.S, 778-1971. Class I. The Valves should bear ISI Mark.

TECHNICAL SPECIFICATION FOR STONEWARE PIPE ETC.

1. Stoneware Pipes (Materials)

The S.W. pipes & fitting should be of Grade 'A' confirming to I.S 651/1965. The pipes shall be sound, free from visible defects such as fire crack or hair crack and flow or blister. The pipes shall give a sharp clear line when struck with a light hammer and should be perfectly salt glazed.

Internal dia of Pipe in m.m. Thickness of the Barrel in m.m. Weight of each pipe in kg.

100	12	14
150	16	23
200	17	33
230	19	44
250	20	52
300	25	79
350	30	100
400	35	125
450	38	147

The length of pipes is 600mm exclusive of the internal depth of socket.

2. Excavation of Trench for laying Sewer Pipes

The trenches for the pipes shall be excavated to the lines & level as directed. The bed of the trench shall have to be evenly dressed throughout from one change of grade to the next. The gradient is to stout by means of sight rails and boning rods and required depth be excavated at any point. The depth of the trench shall not less than one metre, measured from top of the pipe to the surface of the ground underroads and not less than 0.75m elsewhere. The width of the trench shall be the nominal diameter of the pipe plus 350mm. The bed of the trench if in soft or made up earth, shall be well watered and rammed before laying the pipes and the depressions if any shall be properly filled with sand and consolidated in 200mm layers. Depending on soil condition, piling may even be necessary if so desired by the Engineer In-charge. If rock is met with, it shall be removed 150 mm below the level of the pipe and the trench will be refilled with sand and consolidated.

The excavated materials shall not be placed within One Mtr. Or half of the depth of the trench whichever is greater from the edge of the trench. The trench shall be kept free from water. Shoring and shuttering shall be provided wherever required. Excavation below water level shall be done after dewatering the trenches. After the excavation of the trench is completed, foundation of cement concrete 1.4.8 in hard granite metal (size 40mm) shall be laid with proper level all along under the length of the pipe with launching on all around concrete as per drawing.

3. Laying, Jointing, hunching of the Pipes and fittings.

Drain Pipes (S.W. pipe & other pipes used for drain and Sewer) shall be laid in straight lines and to the even gradients as shown in the layout drawings. The socket and of the pipes shall face stream. Adequate care shall be exercised in setting out and determining the level of the pipes and the contractor shall provide suitable instruments, templates, sight rails, boning rods and other equipments necessary for the purpose. In the case of pipes with joints to be made with loose collars, the collars shall be slipped on before the next pipe is laid. In those joints, a tight ring of twisted tarred jute soaked in cement mortar filling to ensure proper alignment and prevent. Cement entering the pipes, Cement compound joints is to be finished with proportion 1.1 with 45 beveling. The joints are to be kept wet with wet bag until the same are properly set with. The cement mortar joints shall be cured at least for 7 (Seven) days. In the case of S.W. Pipe joints (socket & spigot), they should be caulked first with tarred jute (Spun) of required diameter, almost quarter depth of the socket, after which cement mortar 1:1 is pushed in with wooden chisel and finishing uried d at outside at 45 degree. Instead of jute of hump rubber gasket of proper size may also be used. The whole joint must be cured for not less than three days. In case of pipes less than 250mm dia, joints should be made at ground level with three pipes at a time and for larger ones two pipes at a time and after curing they should be soiled in foundation with the help of the ropes. All pipes should be properly launched with cement concrete 1.3.6 with washed gravel where the pipes are crossing the drain or all round concrete 1.3.6 with washed gravel is to be done to 150 mm thick over the barrel of the pipe. The whole of the drain work shall be tested when laid, and at the completion of the contract, to the satisfaction of the Engineer-in-

charge and shall be retested if necessary until found satisfactory. The test shall be made by means of water under pressure at the highest point of the Section under test and providing an air pipe at the lower end of the line. Maximum head of 5 (five) feet (1.5m) must be maintained.

4. Excavation and refilling.

Excavation for drain and pipe trenches shall be straight and to correct depth and gradient. The trench bottom shall be of required width as per specification to allow working space for pipe jointing. Excavated materials shall be dumped away from the site as directed by Engineer-in-charge. Suitable precautions are to be taken to prevent in flow of water into the excavated area, during construction. The contractor at his own expense shall pump out or otherwise remove any or all water which during the continuance of contract may be found in the excavated trenches to keep the trench clear of water during the work under progress. The pipeline shall not be refilled and covered, until the line therein has been passed and tested.

5. Buried Services

All pipes, cable mains and other services exposed by the excavations shall be effectively supported by timbering or other means for which no extra payment will be allowed. The contractor shall be responsible for any damage occurring to buried services and make good the same at his own cost to the satisfaction of the Engineer-in-charge.

6. Trench condition:

Where a trench is excavated and refilled after laying the pipe, settlement of the earth in the refilled trench take place. The filling above the top of pipe, settles relatively, more than the sides of the trench, thereby developing frictional resistance. The contractor is required to take special precaution against this, while refilling the trenches. Procedure for backfilling as stipulated earlier should be strictly followed.

7. Inspection Chambers/Manholes

At every change of alignment, gradient or diameter of a drain there shall be a manhole or Inspection Chamber. The maximum distance between man hole chamber shall be 30 metres for the line laid straight. All manhole and inspection chamber shall have internal dimension as shown in drawing and B.O.Q. The depth of invert shall be fixed to the gradient. The foundation for Manhole shall be 175mm thick & with cement concrete 1.3.6 in hard stone metal / granite metal of 40mm size. The concrete shall project 150mm beyond the external faces of the brickwork. The brick masonry shall be done in cement mortar in the proportion of 1:4 and thickness of the brick wall should be 250mm thick up to 1200mm depth from Ground Level and beyond that the wall thickness shall be maintained 375mm. The inside surface of the walls of the chamber, shall be finished with cement plaster 1.3 and out side with cement pointing 1.3. In addition to this, the inside surface should also be provided with cement punning. On the top of base concrete channelling on C.C. 1.2.4 with granite chips is to be done keeping the diameter equal to the dia of drain pipe and depth equal to half of the dia of pipe. The channel, 'should be done longitudinally at the centre, connecting both the ends of the pipe. The channel is to be hunched up with concrete 1.2.4 with hard granite chips of size 12mm sloping upwards from the edge of channel to meet the side of chamber at gradient of 1.6. The channel and benching are to be finished smooth and cement mortar 1.3 and punning unless it is unavoidable. The branch should deliver sewerage in the Manhole in the direction of main flow and the junction must be made with care so that the flow in the main is not impeded. Channels for drains coming from the side of the Manhole Chamber, shall be curved to meet the main drainage channels. The Manhole and Inspection Chambers shall be covered with R.C.C. cover slab of thickness 100mm to 150mm according to the requirement at site. One C.I. Manhole cover of diameter and weight as stipulated in the tender schedule shall be fixed, on the cover slab. Unless otherwise mentioned the C.I. Cover and Frames and shall conform to I.S. 1726/1960. Heavy duty covers etc., under heavy vehicular traffic condition and capable of bearing wheel loads up to 11.25 tons, are to be used and medium duty under light type wheel traffic loads and light duty for domestic premises are to be used. Covers and Frames shall be clearly cast, double water seal type and they shall be free from all sand holes. The cover shall be as tight and water tight with proper water-seal. The C.I. Cover and frame shall be coated with two coats of black bituminous paint. The frame of Manhole cover shall be fixed on the slab while the slab is cast. R.C.C.M.H. covers of 50cm dia and 100mm thickness shall be fitted in line of C.I.M.H. cover if stipulated in the bill of quantity of the tender schedule.

8. Gully Trap Chamber

The size of chamber for 100mm HCl yard gully shall be of 300mm X 300mm (Inside). Foundation with 100mm thick cement concrete 1.3.6 with hard granite metal of size 40mm from outer surface of wall and Brick work in cement mortar 1.4, 125mm thick, depth up to 600mm maximum. The finishing of masonry wall both inside and outside should be done in cement mortar 1.4 cement punning should be provided on the inner surface the trap should be buried in cement concrete 1.2.4 in H.G. chips up to the mouth and one hinged C.I. Grating of size 300mm x 300mm are to be fixed on the top of mouth of Gully trap to arrest rubbishes shall be provided. The foundation, should project 75mm from outer.

9. Kota/Marble Stone flooring Bidder

The Kota/Marble stones shall be of thickness specified but not less than 20mm and of uniform with edges absolutely square & straight. They shall be laid in Cement Mortar (1.4) over masonry or concrete base. The sides of the stones shall be arranged to butt against each other truly so as to come the joints practically invisible and certainly not more than 0.8mm in width any where. The joints shall not be filled with mortar but may afterwards be grouted with neat white cement mixed with matching colour pigment. When the floor has completely set, it should be polished with pumice stone and finally with pads of felt.

10. Glazed tile dado

The glazed porcelain tiles shall be of approved size and thickness 5mm to 6mm with edges absolutely straight & surface accurately plain. They shall be fixed in 6mm. Thick cement mortar 1.3 using cement slurry over pre-cement plastered base. The sides of the tiles shall be arranged to but against each other truly so as to make the joints practically invisible. However, the joints may be grouted with white cement mixed with colouring materials to match the tiles and neatly cleaned leaving no trace of excess grouting materials. The tiled surface and edges should be perfectly vertical and straight. The corner points must be normally right angled unless the site condition demands otherwise

SANITARY & WATER SUPPLY

Description of Items

1. General

All sanitary ware shall be vitreous china of fire clay as specified in the schedule, and shall be best quality and Hindustan Twyford's make or approved equal. The sanitary ware shall be free from any warp, cracks, blemishes and shall have a smooth surface, free from crazing, blister, deformities and uneven glazing.

All sanitary fittings and fixtures shall be approved by Engineer prior to installation of fixtures and the approved samples shall be maintained at site till the completion of the work.

All rates for fixing shall include the provision for making holes in walls providing wooden plugs and cleats where necessary, cutting floors, chasing in walls and floors etc. and making good and restoring the same to original conditions. The rates are for the completed work as laid down in the schedule and the contractor is not entitled for any payment.

The contractor in carrying out the construction work shall take effective steps to carefully open out all existing channels, culverts, bridges, pipe lines, conduits, water courses, sewers, drains, electric cables, transmission lines and their supports and all other works buried or otherwise, where such have to be interfered with for the purpose of the construction of the works. He shall provide and arrange all necessary, temporary, supports and diversions if necessary therefore, across, under, over, through and alongside the trenches and all other parts of construction work and shall leave all such existing channels, culverts, bridges, pipe lines, conduits, water courses, sewers, electric cables, transmission lines, telegraph and telephone lines and all other works in their original condition to the satisfaction of their owners and Engineer.

The sanitary fittings and fixtures will be handed over complete in all respects on the completion of work. No incomplete items will be taken over. Any loss or damage of these due to any reason whatsoever before the handing over shall be at the contractor's cost and charges.

All exposed pipes and specials, C.I. or G.I. shall be painted with three coats of approved paint of approved colour shades. The rate for all piping shall be inclusive of cost for such painting.

The materials and workmanship shall conform with the provision of the latest versions of the following codes in particular and with such other standards as are mentioned hereinafter.

IS: 1172 Basic requirements for water supply, drainage and sanitation.

IS: 1742 Code of Practice for building drainage.

IS: 2064 Code of Practice for selection installation and maintenance of sanitary appliances.

IS: 2056 Vitreous sanitary appliances

IS: 771 Glazed earthenware sanitary appliances

IS: 774 Flushing cisterns for closets and urinals.

IS: 1728. Sheet metal rain water pipes, gutters, fittings & accessories.

For items such as earthwork, concrete, masonry, plaster etc. the relevant specification of this series shall apply.

The internal plumbing and sanitary work shall be executed accordance with the regulations of the municipal Corporation Act of the state concerned.

2. Sanitary Fixtures to the Appurtenances

European Water Closet suites.

- a. The rate shall include providing and fixing the following components as described in schedule. a) Wash down closet in white vitreous chinaware b) 'P' or 'S' trap with or without vent c) Solid plastic seat of approved type with rim, C.P. brass pillar hinges, with rubber buffers. d) Pressed steel porcelain enameled low level flushing cistern 15 liters capacity, with
 - i. C.P fittings, mounted on a pair of porcelain enameled m.s brackets, valve less syphone, 12mm silent acting ball cock, C.P, flush bend.
- b. e) 12mm. lead inlet connection with 12mm C.P. stop cock, C.P overflow pipe of required length
- c. f) C.I. soil pipe and bend with cleaning cap upto outside face of wall and vent piping upto outside face of wall.
- d. g) Making chases and opening in walls and floors and making good the same to match complete.

3. Indian Water Closet Suites

The rate shall include providing and fixing the following components as described in the schedule:

Best Indian type water closet pan in white vitreous china ware with 'P' or 'S' trap with or without vent with raised foot treads, the size of the pan as shall be as described in the schedule.

High level pressed steel flushing cistern 15 liters capacity porcelain enameled 'Fordham' or equal mounted or porcelain enameled M.S. brackets, 32mm G.I. flush pipe of appropriate length and bends with joints embedded in wall. G.I. pull chain and 122 mm.

G.I. over flow pipe lead, supply pipe with C.P stop cock G.I. branch including C.P push tap and all fittings of the cistern complete exposed piping shall be painted with 3 coats of approved paint and shade.

The rate shall also include cutting, floor and other structural members excavation of pit and fixing the closet pan in cement concrete 1:2:4 and make good the surface to original conditions complete.

4. European Water Closet – Syphonic – Pattern.

The rate for this item shall include for providing and fixing the following components and as described in the schedule

- i. European water closet symphonic pattern with integral 'P' or 'S' trap in vitrious China ware
- ii. Cistern with lid (15 liters capacity) in Vitreous Chine Ware.
- iii. Complete fittings for siphon, cistern, flush bend, air pipe etc.
- iv. Solid plastic seat of approved colour
- v. Rubber joints for inlet connections.
- vi. 12 mm lead inlet connections 12mm. cp. Brass, stop cock easy clean type.

Wash Hand Basin

The rate shall include for providing and fixing the following components.

- a) Wash basins of size as specified in the schedule in Vitreous Chine ware with anti-splash rim with one side, tap hole on the left side.
- b) Supporting bracket as specified.
- c) 12mm. cp. Pillar cock with triangular knob marked 'C'
- d) 32mm. cp brass waste coupling with rubber plug and chain.
- e) 32mm. cp brass bottle trap with extension pieces and C.P. walls flanges.
- f) 12mm. cp brass stop cock and 12mm lead inlet connection necessary pipe connection complete.

5. Showers

The rate shall include provision and installation of plated brass rose of 175.mm dia and 12mm C.P. brass arm of appropriate length, C.P. wall flange.

6. Mirrors.

The mirrors shall be of the size specified in the schedule with beveled edged (Pilkington's make) mounted on asbestors sheet fixed to walls with C.P brass screws with detachable C.P. caps. The rae shall include for making necessary holes in walls and fixing plugs. Etc.

7. **Soap Dispenser**

The soap dispenser shall be C.P or glass with chromium plated brass cap anodized or aluminum fixed on to chromium plated brass holder brackets. The rate includes for fixing to walls with C.P brass screws complete.

8. **Toilet paper Roll holder.**

- a) The toilet paper roller holder shall be of size specified in the drawing in white glazed earthenware (surface mounted type). Rate includes for fixing the holder to wall with necessary raw plugs and C.P brass screws.
- b) C.P projecting type.

9. **Towel Rails.**

The towel rails shall be of C.P brass tube with a pair of C.P brackets Materials to be of best and approved quality of sizes as specified in schedule. The rates shall include fixing the towel rails to walls with necessary C.P screws with required provision of wooden plugs etc. complete.

10. **Stop cocks and Bib cocks**

They shall be of C.P brass approved heavy quality "Ego" make easy clean type with capstan head. The size shall be as specified in the schedule.

11. **Lead Connections**

These shall be of specified size, appropriate, length made out of heavy lead with brass union and wiped solder joint, cost include bending to proper shape, fixing, painting etc., complete.

12. **G.I Pipe work**

The galvanized iron pipes and specials shall be of 'C' class, heavy type first quality and shall conform to I.S No. 1239-33. The rate includes for cutting to required length, threading, jointing, fixing, testing and removal of leakages. When fixed to walls exposed, the pipes shall be fixed on wooden packing, with G.I clamps and screws, such that they are away from the wall to the extent required. All pipes and specials shall be got approved by Engineer- before incorporation in work. The rate includes for cutting through walls and floors and making good the same thoroughly whenever pipes are concealed, to the entire satisfaction of Engineer. The pipes shall be tested for 91.5m head of water and the pressure maintained for 12 hours. Leakage if any, shall be made good by contractor and the pipes and specials rendered absolutely water tight. The measurement for the finished work shall be taken along the longitudinal axis of the pipe line. The rate of pipes shall include the cost of all specials and painting, the pipes with 3 coats of approved paint to the exposed surfaces, as instructed by Engineer.

13. **Peet Valves.**

The peet valves shall be of gun metal heavy quality and of approved make provided with hand wheels. The rate shall include testing and making good leakages.

14. **G.I. Soil Waste, Vent and Antisyphonage pipe & rain water pipes.**

The soil waste, vent and antisyphonage pipes and specials shall be approved quality and make. The rate shall include provision of specials with access doors wherever necessary, jointing with spun yarn and lead including caulking, testing and removal of leakages. The rate shall also include making holes in walls, floors etc. and making good the surfaces and restoring to original conditions. All measurements shall be taken along the longitudinal axis of the pipe line. The pipes in exposed position shall be fixed to walls by M.S or heavy flat iron clamps on wooden packing, 5cm. thick or any other manner as instructed by Engineer so that the stacks are at least 5cm. away from wall surface.

15. **Nahani Traps.**

The nahani traps shall be of cast iron with the outlet of required size. The rate shall include fixing the trap in cement concrete 1:2:4 and C.P brass hinged heavy type grating on top.

The lead pipes shall be of the diameter and weight as specified in schedule. The rate shall include cutting, jointing with wiped solder joints, bending, fixing the pipes as required, brass thimbles, cleaning eyes wherever required, complete.

16. **White Glazed Traps for Urinals.**

The trap provided for urinals shall be of type and size specified with approved C.P. hinged dome grating to match. The traps shall be fixed in cement concrete 1:2:4 to correct elevations.

17. **Half Round Channels for Urinals**

The half round channels for urinals shall be of best Indian made white glazed earthenware and of the specified size. They shall be bedded on 7.5 cm. thick cement concrete bed (1:2:4) laid to proper slope and pointed with cement mortar 1:3.

18. **Marble Partitions for Urinals.**

The marble partitions shall be 40 cm. thick best Indian white marble, machine cut and polished with rounded corners and of sizes as specified built 2.5 cm. into the wall, including cutting groves in the wall where required and fixing etc. complete.

19. Automatic Flushing tanks for Urinals

The automatic cister shall be porcelain enameled ("Nomos" or equivalent) of capacity as specified in schedule, supported on a pair of porcelain enameled brackets fixed to the wall as directed and the rate shall include the following fittings in addition to the cistern.

- a) C.P brass distributors as required for the range.
- b) 12mm C.P spreader, C.P wall clips, as required for the range.
- c) 12mm G.I. overflow pipe with specials from the cistern upto 15cm above floor level terminated with 12mm. C.P brass perforated cap complete.

20. Valve Chamber.

The rate for these items shall include excavation of dimensions as required.

- a) 1:4:8 cement concrete of specified thickness in foundation. This shall have 7.5cm. off set over the overall size of masonry.
- b) Brick masonry in cement mortar as specified to give the inside clear size given in the schedule.
- c) 12mm. cement plaster (1:3) from side with 8mm. thick floating coat of neat cement and outside with trowel finish.
- d) C.I. manhole cover and frame of specified clear opening and weight fixed in cement concrete 1:2:4. The C.I. covers and frames shall be painted with three coats of anti-corrosive black bitumastic paint.

21. Automatic Ball Valves.

These shall be of best Indian made of available for high pressure and of heavy quality. The connecting rod from the valves to the copper float shall be of brass and shall withstand the high pressure encountered. The float shall be of copper. This shall be soldered/ blazed to render it leak proof. The material will be as approved by Engineer.

22. C.I. Manhole frames and covers.

The C.I.M.H frame and cover shall be of size and weight as specified in schedule. The rate shall include provision and fixing in position and finishing. The cover & frame shall be painted with three coats of anticorrosive paint.

23. M.S Tanks.

These shall be of required dimensions, welded construction together with suitable internal stays and supports frames. The rate shall provide for all accessories like inlet, outlet scour and over flow by welding flanges, painting inside and outside surfaces of the tanks with 3 coats of paint of approved colour and shade. The rate for item shall include transport, hoisting and installing, making connections, testing access frame and cover with locking arrangements 2m long 12mm diameter G.I. overflow pipe with brass mosquito-proof coupling.

The rate shall also include for necessary staging as described in the schedule.

24. Fire Clay sinks.

- i. The rate for this item should include provision and fixing the following components: a) Best Indian make white glazed fire clay sink of size and type as specified in the schedule. b) 4cm. chromium plated bars waster, heavy quality with rubber plug C.P. chain and
- ii. stay. c) cm. C.P. brass bottle trap with C.P wall flanges and extension pieces to suite. d) A pair of C.I Cantilever brackets built into the wall painted with three coats of approved paint of approved colour.

25. Stainless Steel Kitchen Sinks.

The kitchen sinks shall be of stainless steel of size noted in the schedule. These shall be of approved type seamless on piece pressing. The rate shall include for necessary waster coupling, bottle trap and piping upto waster pipe and placing or fixing over the benches or tables in a manner as required by Engineer.

26. Soap Tray

The soap dish shall be of size 15 cm x 7.6 cm white glazed earthenware (recessed type). Rate includes for fixing the holder to wall with necessary rawl plugs and C.P brass screws.

27. Tumbler Holder. The tumbler holder shall be white vitreous china ware.

28. Flat Back Urinal.

The rate shall include for providing and fixing the following components.

- a) Flat back urinal approved Indian makes in white vitreous chinaware with automatic flushing.

- b) C.P brass bottle trap with extension piece, C.P spreader pipe 10mm. lead connector with cock to flushing cistern G.I. overflow pipe complete.

29. Laboratory Sink

The rate shall include for providing and fixing the following components.

- i. Plain edge sink of approved Indian made in white vitreous china ware.
- ii. Supporting C.I. brackets painted with 3 coats of deluxe or approved white enamel paint.
- iii. 32mm C.P brass waster coupling with rubber plug including C.P. chain and stay.
- iv. 32mm C.P brass bottle trap with extension piece upto C.I. waste pipe, C.P. wall flanges and 12mm. dia C.P. bib cock all complete.

30. C.P Coat hooks.

The rate shall include for providing and fixing the following components. C.P coat and hooks, C.P screws and raw plugs for fixing to wall.

31. Painting.

The C.I. brackets, lead connection pipe and waster pipe shall be painted with two coats of an approved paint over a coat of approved primer. The inside and outside of cistern shall be painted with an approved bitumen paint, conforming to Indian Standard Specifications.

32. Cast Iron Waterman

All C.I. pipes and fittings for water main shall be of 'B' class and shall conform to Indian Standard specifications. The pipe shall be socketed at one end and spigotted at the other. All joints shall be lead caulked with lead and spun yarn.

33. Brass Water Fittings.

All water fittings shall be of approved manufacture and shall in all respects comply with Indian Standard Specifications. The brass fittings shall be fixed in the pipe line in a workmanlike manner. Care shall be taken to see that joints between the fittings and pipes are made leak – proof. All defective fittings and joints shall be repaired, redone or replaced free of cost.

Bibcock and stop cock: These shall be of approved manufacture of plain C.P brass, of easy clean, screw down pattern and of the size specified.

Bibcock and stop cock: These shall be of approved manufacture of plain C.P brass, of easy clean, screw down pattern and of the size specified.

The ferrule for connection with C.I. water main shall be of plain bent brass tube with coupling, cast in one piece, with C.I. bell mouth cover. Ferrule with stop may be used if specified. The ferrule with stop must be so fitted that no parts shall be left projecting with the main line into which it is fitted.

34. Laying and Joining of Pipes.

All pipes and fittings shall be laid truly vertical or along the lines as directed by the Engineer and shall be secured to the wall with M.S holder bat clamps made from M.S flats. The clamps shall be fixed to the wall by embedding it in cement concrete of approved grade. For all cast iron pipes the joints shall be made with spun yarn and molten lead properly caulked with tools as per standard practice. In the case of exposed work, the pipes shall be fixed clear of the wall and for underground work, they shall be laid strictly in accordance with the 'slope specified'. Traps, heelrest, bends, gully trap etc. shall be jammed in position with cement concrete of approved thickness. Stoneware pipes shall be jointed with tarred gasket and cement mortar and shall be laid on a base of concrete or shall be embedded in concrete where specified. G.I. pipes and fittings shall be jointed together with red lead paint and fine spun yarn. All joints must be perfectly water-tight when put under maximum test pressure.

35. All exposed pipes shall be painted with two coats of an approved paint over a coat of approved primer. Underground pipes shall be treated with two coats of an approved bituminous paint.

36. Rate for Pipe Work.

The rate for all pipe work shall include for supplying, laying and fixing in position including necessary fixtures, jointing, painting, necessary earthwork in excavation in all kinds of soil and rock, refilling in 15cm. layers including watering, consolidation, top dressing, removal of spoils, providing warnings signs and barricading where necessary, making holes and chases, making good all damages and is for the completed work.

37. Storage Tank (Overhead)

This shall be of galvanised iron sheets of 2.032mm. thickness minimum (14 gauges) riveted to M.S angle iron framework unless otherwise specified. The sheets must be riveted or welded together with angles at the corners. The tank shall be provided with an inspection hole with hinged water-tight cast iron cover with locking arrangement, a ball cock, coupling for inlet, outlet, and overflow and washout pipes. The surface shall be given two coats of an approved paint over a coat of approved primer.

38. Cement Concrete (1:4:8)

The rate shall include for providing and laying all the necessary materials, labour and tools land plant required for the same. It shall consist of 50kg. of cement to 14cum. of clean washed coarse sand and 28cum. of well graded washed aggregate 20 to 40 gauge. It shall include cost of laying from work, rough moulds, boxing and curing. The rate shall include the cost of laying of concrete to grade or to shapes as required.

39. Cement concrete (1:3:6)

The rate shall include for providing and laying all the necessary materials and providing labour, tools land plants required for the same.

It shall consist of 210 kg. of cement 0.44m³ of clean washed sand and 0.88m³ of well graded aggregate 20mm to 40mm. It shall include cost of laying, framework, rough moulds, boxing and curing. It shall include the cost of laying of concrete to grades or to shapes as required.

40. Cement Concrete (1:2:4)

The rate shall include for providing and laying all the necessary materials land providing labour, tools and plants required for the same. It shall consist of 300kg. of cement to 0.41 m³ of hard stone aggregate 10mm to 25mm gauge. It shall include cost of laying, boxing, mixing in mixer frame work and curing. The rate shall include the cost of laying of concrete to grades or to shapes as required.

41. Brick Work

The rate shall include for providing and laying all the necessary materials, labour, tools, and plants required for the work. It shall be in 1st class bricks in a mortar consisting of 425 kg. of cement and 0.9m³ of clean washed sand or in the proportion as in the schedule of quantities. It shall include the cost of scaffolding and curing.

42. 20mm/12mm Thick cement Plaster

The rate shall include for providing and laying all necessary materials, labour, tools and plants required for the work. The plaster shall be 20mm/12mm thick and shall consist of 425 kg. cement to 0.9m³ of clean washed sand or in the proportion as in schedule of quantities. 1mm thick floating coat of neat cement will be given on the plaster. It includes the cost of raking out the joints of brick masonry, finishing smooth the floating.

43. R.C.C 1:2:4

The rate shall include for providing and laying all the necessary materials labour tools and plants required for the work. It shall consist of 300 kg. of cement to 0.41 m³ of clean washed sand and 0.82m³ of hard stone aggregate 10 mm to 25mm gauge and M.S. reinforcement up to 110 kg. M³ of concrete. The rate shall include the cost of cleaning, cutting, bending, binding and scaffolding. The rate shall also include rendering and finishing of all exposed surfaces and edge smooth, with neat cement.

SEWERS, MANHOLES AND STORM WATER DRAIN**1. Scope of Work**

The work covered by these specifications consists of furnishing labour, materials, tools, plant, equipment necessary for the proper execution of work and installation of drains/sewers in strict accordance with the stipulations and applicable drawings.

2. General

The general arrangement of drainage sewers and all related works shall be as indicated in drawings. If actual field conditions or any other causes necessitated any modifications to the arrangements detailed in the drawings, the contractor shall submit to Engineer details information, report and drawings, showing such proposed modifications, for approval, prior to the commencement of the works. The contractor shall carefully examine all related drawings, sketches, specifications, schedules and shall be responsible for proper installation and workmanship.

Contractor shall be responsible for the provision of all materials fittings and also for the workmanship which shall be of the highest standard. All materials forming part of the installation work shall be submitted by the contractor to Engineer for approval prior to the commencement of works. The contractor shall submit all technical literature and other information in regard to the proposed materials, if required and asked for by Engineer.

The contractor shall investigate all actual conditions and other details affecting the planning and execution of his work and shall arrange the work accordingly, so as to procure and furnish all materials, plant and workmanship to meet such conditions and to meet the demands of the work.

Dismantling and cutting of any constructed work shall be undertaken by the contractor, after receipt by him, of a written permission by Engineer. Any damage to the buildings, piping, wiring, other installations in the area, surroundings, property, road, lawns, etc. caused as a result of the contractor's dismantling or cutting of the existing construction work or as a result of his opening trenches for drainage works, shall

be made good by him at his own cost by employing skilled tradesmen for such repair.

3. **Alignment and Grades**

- i. S.W. drains and sewers shall be laid to the alignment and grades as shown on drawing, subject to such modifications as shall be required by Engineer from time to time, to meet the requirements of the works. No deviations from the lines, depths of cutting, gradients of drains and sewers shall be permitted except by the specific prior approval of Engineer in writing.
- ii. Before commencement of work, accurate surveys and levels of the ground proposed to be excavated or filled up, shall be taken jointly by the representative of Engineer and the contractors. These surveys and levels shall then be plotted and drawings prepared. These drawings/ sketches and information shall be signed by the contractors and Engineer quantities and measurements, to the extent applicable, obtained from these signed and accepted documentary basis, shall be final and binding on both parties, subject however to the powers of Engineer to vary the works. If the contractor or his agent shall fail to present himself at the time of such survey and levels, the same shall be done by engineer through any suitable agency, at the cost of the contractor. Quantities and measurements to the extent applicable, drawn out of such surveys and levels shall be binding on the contractors.
- iii. All lines, levels, surveys referred to above, shall be based on bench marks and other related data which shall be informed by Engineer. The contractor shall make his own arrangements to obtain for use at site such instruments necessary for surveys and levels, as may be indicated by Engineer. These instruments unless permitted otherwise, shall be kept and shall be made available for use for works, whenever asked for by Engineer.
- iv. The contractor shall provide all materials required for the construction and maintenance of all bench marks and other reference points that would be required and determined by Engineer to be established at site, for the execution of the work. All pegs, iron rods, pipes, indicators, concrete, brick pillars, paints etc. shall be so provided by the contractor in accordance with the direction of Engineer.

4. **Setting out works.**

- a. S.W drains and sewers shall be laid in accordance with the lines and grades and at such inverts as shown on drawings and as instructed by Engineer. The drains/sewers shall be laid and constructed with a true grade and in straight lines between chambers with the aid of suitable boning rods and sight rails, which shall be fixed to suit the requirements of work as determined by Engineer at intervals of not exceeding 25m.
- b. All sight rails and boning rods shall be provided, fixed and maintained by the contractor. Necessary surveys and leveling instruments in an accurate order, shall be provided and maintained as site by the contractor.
- c. The contractor shall set out the alignment position and levels of the S.W drains/sewers according to the drawings given and/or as per instructions given by Engineer and he shall be responsible for the accuracy and correctness of the same throughout the work. The contractor shall, at his own cost, provide all labour, materials, and instruments to Engineer to enable Engineer to check the levels and dimensions of the work.
- d. All sight rails and posts shall be of well seasoned timber and of such sizes as would be required by Engineer. Sight rails and boning rods shall be accurately planned. No warped or otherwise defective timber shall be used. All posts shall be fixed sufficiently away from the edges of trenches, shall be properly embedded in concrete and shall be truly vertical. Sight rails shall be fixed to posts by heavy wrought steel clamps so that they are rendered immovable with respect to the correct lines and levels. All boning rods shall be suitably shod with iron. The sight rails and boning rods shall have the centre line accurately marked thereon by a thin saw cut and shall be painted black and white.
- e. At any time, at least four separate sight rails shall be always maintained in correct level and alignment along the centre line of pipes/drains/sewers. Wherever required the contractor shall provide, erect and maintain such additional sight rails as Engineer would require. The contractor shall at all times, see that his workmen/agent or other unauthorized persons do not accidentally or otherwise tamper with or interfere with site rails, alignment and level marks etc.
- f. At every place where the work is proceeding, the alignment levels and centers of site rails shall be checked at least twice a day in order to ensure that no disturbances or interferences of the alignment levels and centers has occurred.
- g. Location of sight rails, additional sight rails, posts etc, number of sight rails, construction of sight rails and boning rods, manner of securing sight rails to posts, type and sizes of timber to be used for

sight rails and boning rods shall be as approved by Engineer.

h. All bends and changes in the directions of the alignment shall be set out in a manner as directed by Engineer. To avoid kinks.

5. **Excavation.**

a) Excavation for S.W drains/sewers and for other works shall normally be in open cutting, unless otherwise directed by Engineer in writing. Engineer may order excavation to be made partly in open cutting and partly by tunneling, if necessary. On the merits of location, Engineer may order the contractor to remove excavated spoil at once and to bring it back for refilling. Under such circumstances, the Contractor shall be paid extra on the basis of mutually agreed rates. The contractor shall be responsible to provide and maintain during the progress of works, at all times, all necessary traffic diversion arrangements, barriers along trenches across roads, danger signals, red light, watch and ward and personnel to guide traffic, to the requirements of Engineer.

b) Dimensions of excavation shall be approved in advance by Engineer. Unless permitted otherwise not more than 20 meters of any trench in advance of the end of the already laid drains/sewers shall be open at any time. Trenches shall be excavated to their full depth for a distance of at least 5 meters more than the minimum length of pipe drains permitted to be laid in such trenches.

c) Maximum widths of trenches in respect of which payment shall be allowed for excavation in soils shall be as follows:

- i. Trenches not exceeding 2 meters in depth-60 cm. plus the external diameter of barrel of pipe to be laid.
- ii. Trenches exceeding 2 meters but not exceeding 5 meters in depth 67-5. cm. plus the external diameter of the barrel of pipe to be laid.
- iii. Maximum widths of trenches in respect of which payment shall be allowed for excavation in hard rock shall be as decided by Engineer at site. These shall not however be more than those indicated in (c) (i) and (ii) above.

d) Minimum widths of trenches down to the crowns of barrels for pipe drains of 45cm. in diameter or less shall be the external diameter of pipe plus 20 cm. clearance on each side and for pipes above 45 cm in diameter, the clearance on each side shall be 22.5 cm. All such trenches shall have a clear width at the bottom equal to the widths of the cradles of the pipe drains to be laid in them. The minimum clear width of trenches for other pipe drains shall be the greatest external width of structures to be built herein.

e) For manholes junctions with junctions chambers, storm water overflows, and such similar works the minimum dimensions of excavation would be that contained in a prism with vertical sides and a horizontal section equal to the smallest rectangle enclosing such structures with their foundations and 30cm of clear working space all around.

f) Engineer shall have power to order in writing to the contractor, modifying the dimensions of excavation and maximum and / or minimum widths and other dimensions, for excavation in all soils, including bad soils and in rock

g) During excavation of road surfaces, soiling, road metalling, pavement, kerbs, turf and rock (excavated) shall be stacked as directed by Engineer and preserved for reinstatement. Prior to reinstatement, road metal shall be shifted carefully. All filled up area shall be properly consolidated and surfaces dug shall be properly restored and maintained till the completion of works to the satisfaction of Engineer owners of the roads, accesses and/or owners of other properties using such roads. The contractor shall not cut any fences, cables, pipes, drains, culverts and any other construction in the line of excavation. Such obstructions shall be brought to the notice of Engineer and instructions obtained, as soon as such obstacles are met with or foreseen. All such constructions met with during excavation shall be properly supported, to the requirements of Engineer. Employers and owners of such services, Trees on alignment or nearby shall not be cut unless permitted by Engineer.

i. .

h) The contractor shall clear the area to be excavated of all shrubs, grass, tree, roots, stumps and other burden affecting the work to keep the area of work clean. During excavation of work, excavates soil shall be sprinkled with water to avoid dust nuisance.

i) The contractor shall not occupy or obstruct more than half the road width when working along/across such roads. No vehicular traffic shall be obstructed by the contractor unless specific written permission of Engineer is obtained to that effect. Sturdy foot walks shall be provided whenever a trench crosses accesses, roads, country paths, cart tracks.

j) Any offensive matter (like filth,, night soil, etc.) met with during excavation shall not be deposited along the trench but shall be removed away as directed by Engineer.

a. All excavation shall be taken to required depths, so that inverts are placed at levels given by

- Engineer. In bad or slushy ground, Engineer may instruct the contractor to excavate deeper than required and to fill up the extra depth with concrete or broken stone or gravel or other materials. In case of such extra work, the contractor shall be paid extra at the rates in Schedule or at rates derived there from. Should the contractor excavate deeper than required by drawings, without specific written order by Engineer he shall fill up the extra excavated portion at his own cost, as directed by Engineer and to the satisfaction of Engineer.
- i. The contractor shall at all times, support effectively the sides of the trenches and other excavation by suitable method of timbering, piling sheeting, which shall be close timbered in all loose or sandy strata and below subsoil water level. Cost of timbering, shorting, piling, planking and any other supporting and protection works shall be borne by the contractor and shall be deemed to have been included in the rates of excavation. All timbering, etc. shall be removed as work proceeds. Any timbering, unless ordered to be left in place, by Engineer in writing, shall be removed. No claim shall be considered if the contractor retains timbering in excavation without written order of Engineer.
 - k) Engineer may require any portion of timbering, piling or sheeting to be left in the ground for protection of sides. In such cases, written orders shall be given by Architect/Engineer to contractor detailing sections where such precautionary measures are required, quantity of timber to be left in place etc. Such left in place timber shall be paid for at negotiated rates on the basis of cu. Ft. of timber so left. In soft of water logged ground close planking with tongue and groved joints shall be close driven to such depths below the bed level, as shall be ordered by Engineer and no extra shall be payable to the contractor for such extra work.
 - l) All timbering shall be of adequate dimensions and shall be placed at required centers as instructed by Engineer. Timbering shall be fully braced and strutted to avoid any falls, side slips, subsidence and all cavities shall be solidly filled in. In case of left-in-trench timbering all cavities behind such sheeting and timbering shall be solidly filled in as directed by Engineer. The contractor shall be responsible for sufficiently of all timbering, bracing sheeting, piling, strutting and for all damages to persons, property and surroundings due to improper quality, strength, placement, maintenance and removal of timbering.
 - m) The contractor shall shore up all buildings, walls, foundations other structures, stability of which is in the opinion of Engineer is liable to be endangered by the execution of work, the contractor shall be fully responsible for any such damage to persons, properties and surrounding, resulting from any accident to any such structures.
 - n) The contractor shall resort to blasting operations with prior permission of Engineer. Adherence to regulations regarding blasting, permits storage, upkeep, accounting of blasting materials shall be always observed by the contractor. Blasting shall be carried out by the contractor with all precautions, at appointed times as decided in advance by Engineer in such a manner so as to avoid damages to buildings plant, personnel, workmen and structures at site. Numbers of holes to be blasted, type of blasting materials to be employed, extend of charge per hole, location blasting operations, and names of actual agencies and workmen employed for blasting operations shall be sent to Engineer 24 hours in advance and Engineer orders permitting these operations obtained prior to commencement of work of blasting.
 - o) In trenches and other excavation, at locations where blasting is likely to cause damage to surroundings, structures, plant, these operations shall be muffled by use of steel plates of weights and dimensions as required by Engineer or alternatively by the use of close waven solid bamboo matting weighted down by rubble. Blasting shall not be permitted in such areas where these operations, in the opinion of Engineer shall constitute danger, vibrations, injurious to equipment installed in plants and buildings, danger to traffic or workmen.
 - p) The contractor shall be responsible for all claims arising out of his blasting operations land shall keep Architect/Engineer and Employer indemnified in respects of the same. He shall at his own cost apply for, arrange and be in possession of valid blasting permits and licenses for storage, upkeep and use of blasting materials. At all times during the progress of works, the contractor shall keep the trenches and excavation free of water, which shall be disposed of by him in a manner which shall not cause injury to public health, property accesses, roads as well as to works completed or in progress
 - i. .
 - q) The contractor shall, always provide adequate plant materials, labour, fuel, lubricants, spare parts, other contingent items stores and accessories required for dewatering trenches and excavation. The contractor shall plan in advance such arrangements for dewatering and shall keep at site spare plant to meet any contingency. Particulars of dewatering arrangements shall be periodically reviewed for

adequacy and Engineer informed of the same, by the contractor. The contractor shall keep all trenches and excavation free of water at all times, in a safe proper and effective manner; and shall be fully responsible to all risks, damages to neighboring building plants, roads, areas and structures.

- r) The contractor shall take adequate precaution to ensure the safety of trenches and excavation. Under no circumstances shall be dewater the trenches to such an extent as to cause the sand bottom of excavation to flow, thereby endangering nearby buildings, plants, structures and surroundings.
- s) In case any damages to buildings, property, plants assesses and surrounding is caused due to contractor's dewatering and pumping operations, he shall be wholly responsible for the same, and shall pay and satisfy all such claims or otherwise make good all such damages at his own cost. If he fails to do so with diligence Engineer and/or employer shall be at liberty to take such adequate steps as may be considered essential and sufficient by them and Engineer and /or Employer shall be at liberty to pay the costs of such damages and to get the work done by other agencies, and deduct the amount expended from any moneys due or may become due to the contractor. Decision of Engineer and/or Employer in respect of adequacy of action to be taken in respect of such damages and in respect of expenses and costs towards such damages, shall be final.
- t) After laying of drains/sewers and completion of construction in parts/in full, after testing for water tightness and after approval of Engineer to commence backfill, the excavation shall be refilled with utmost care to avoid all damages to works constructed, piping and other constructions, Backfill in haunches and upto 75cm. from the crown of piping laid, shall be done with fine selected earth, laid in 15cm. layers each layer being profusely watered and consolidated. The rest of the backfill shall be made, in similar manner, in 15cm, layers, watering and consolidating each layer, using excavates soil after keeping aside rubble, boulders, concrete lumps, etc. During backfilling timbering shall be removed or withdrawn gradually, carefully, in stages, so as to avoid damages. During the withdrawal timbering the same shall be extracted after the refilling is done, in a manner, ensuring that the sides of excavation are not left unsupported.
- u) The contractor shall make his own arrangement at his own costs, for the removal of surplus and for its disposal at places as instructed by Engineer. In case the surplus is not required at site, the contractor shall make his own arrangements at his costs, for removal and dumping at nay place to be selected by him and approved in writing by Engineer. In case the site of disposal is located within the areas, belonging to the Employer or otherwise required by the employer to be filled and reclaimed, the contractor at his own cost make arrangements to fill up the same within surplus soil and to level up the same at levels order by Engineer. The site of works shall be rendered tidy, clean, even and to original conditions by the contractor.
- v) In the event of the surfacing materials excavated stacked and stored from the excavations, being insufficient to restore surfaces to original conditions, the contractor shall arrange to make up the deficiency with his own materials of identical quality, at his own costs. The contractor shall at his own cost replace all such surfacing or otherwise useful materials, removed/ excavated during the progress of works, land rendered unsuitable on faulty storage or worn out or damaged during the execution of works.
- w) k. The contractor shall, at his own costs and charges, expeditiously, make good, during the complete period of works, any settlement that may occur in surface of roads, berms, footpaths, gardens, open spaces, public or private, caused by his excavations. He shall be liable for any accidents caused thereby. He shall, at his own costs and with his own materials, make good all damages to buildings, roads, gardens, footpaths, and surrounds as required by Engineer and Employer. If he fails to make good or to pay and satisfy the expenses of making good such works expeditiously, Engineer and/or employer shall be at liberty to get the work done by any other means, and expenses incurred and paid therefore, shall be recovered from any moneys due or that may become due to the contractor, in any other manner according to the laws of the land.
- x) The rates for excavation shall be deemed to include operations described in V (a) to (k) above.
6. **Laying and Jointing of Plain and Reinforced concrete pipe Drains.**
- a. Pipe shall be of class "A" and shall comply with related I.S specification for R.C.C spun pipes. Pipes shall be approved by Engineer in advance. R.C.C spun pipes shall be laid on concrete bed or cradles if specified in the schedule or otherwise directed by Engineer.
- b. After laying concrete in bed or in cardles as require by Engineer the R.C.C spun pipes shall be

lowered gradually and carefully into the trenches, in position. Extra earth shall be scooped and holes made for the collars, depending upon their locations, and length of pipes. Pipes shall be leveled properly so that they are in alignment and grade as required, and they rest on the bed at every point on alignment throughout the length. In cases where concrete bed and or cardles are used, the undersides of pipes shall be grouted with a thin slurry made out of cement mortar and a clean fine sand in the proportion of 1:3 of cement and sand, in order to ensure that the pipes laid and aligned previously rest at all points throughout their lengths.

c. The contractor shall take care to see that no dirt, earth or any other foreign matter is allowed over the cardles or concrete beds if provided. After alignment is completed, the contractor shall have the same checked by Engineer and then grouting if required shall proceed if the alignment and levels and gradients are found to be correct. Concrete bedding or cardles shall be cured for three days prior to commencement of laying of pipes. In case of any damages to bedding or cardles, the same shall be made good by repairs/replacement as directed by Engineer by the contractor at his own cost.

ii. Joints shall be made with collars. Connecting space shall be minimum possible. Collars shall have a rough inside face to secure good grip. Adjacent pipe ends shall have concentric grooves or recesses and matching projections so that, the joint of pipes is fitted properly. Cement mortar in the proportion of 1:2 of cement and sand shall be placed in the concentric grooves or recesses and the pipes close-pushed. Cement mortar paste made in the proportion of 1:2 cement and fine sand would then be placed in between the ends of the pipes. Space between the pipe barrels and collars shall then be caulked thoroughly with cement mortar 1:2 made with fine sand. Every joint shall be finished off smooth, at an angle of 45 degree with the longitudinal axis of the pipe on either sides of the collar. Curing then shall be carried out. Interior of the pipe shall be cleaned of all foreign, loose matter and dirt.

d. After joints are sufficiently cured, and when required by Engineer the pipe drains shall be tested under a head of at least 1:2m. of water above crown of pipes. A strong colour shall be added to the water for testing. Pipes shall also be tested for ingress of subsoil water into the drains. All testing shall be carried out as per Engineer's instructions. Any defective pipes shall be replaced or rendered water right as required by Engineer. All defective joints and leakages shall be made good by cutting out the joints and making them good again. Removal of all defects shall be carried out by the contractor at his own cost. Such joints where leakage persists after repairs shall be rendered water right by embedding the same completely with 1:2:4 cement concrete boxed to required dimensions, laid compacted and sufficiently cured prior to commencement or encasement works or backfilling. The pipe drains shall then be retested to required pressure to ensure their water rightness. The test shall be continued at least for one hour after the application of tests water head. All costs and expenses on account of testing, replacement of defective pipes, collars, joints, dismantling of joints recaulking and rejointing, placing 1:2:4 cement concrete at such joints as are persistently leaking and rejointing, placing 1:2:4 cement concrete at such joints as are persistently leaking and retesting the drains to the satisfaction of Engineer shall be borne by the contractor and shall be included in his rate for the item in contract:

e. If required, by Engineer and if ordered by Engineer in writing, specifying the locations, extent, methods and dimensions of bedding and /or encasement of pipe drains in plain cement concrete of specified proportions, the contractor shall carry out the same in a manner that would ensure proper protection to constructed work. Engineer shall have the power to eliminate, reduce, increase or alter the dimensions of the encasement.

7. **Manholes and Chamber Etc.**

- a) The contractor shall build and construct various manholes/chambers etc. at locations and as shown on drawings or at places as directed by Engineer.
- b) The floors shall be in cement concrete as per dimensions, thickness and proportions of concrete as detailed in drawings and as instructed by Engineer. Side walls shall be in masonry/concrete as given in drawings. Proper channel shall be formed across the manholes as instructed made with the use of concrete of given proportions and finished with workman like manner, so as to lead the effluent/storm water from one pipe to another without interruption to flow and without kinks, sharp bends. All pipe required for branch pipe drains shall be built into walls at invert shown in drawings and as instructed by Engineer, when these pipes are to be built in masonry, the contractor shall provide relieving arches in order to prevent any undue load of pipes. All ladders, step irons shall be of such sizes and materials as required by Engineer and they shall be solidly built into walls as instructed by Engineer.
- c) i) If Foundation and floors of manholes and chambers shall be in cement concrete, plain or reinforced, and of such dimension and depths as detailed in drawings or as otherwise instructed by Engineer laid at required levels.

Sides of manholes/chambers shall be in masonry or in concrete. When the sides are to be constructed in

concrete relevant specifications of concrete, framework, aggregates, workmanship, mixing, placing, vibrating, curing and finishing shall be followed.

All bricks to be used on construction of manholes/chambers shall be table moulded, of good quality, of a deep red colour, homogeneous in texture, free from flaws, cracks, stone, floats, nodules of lime and such other undesirable blemishes. Bricks shall have sharp edges and uniform size. Bricks shall not be stratified, overburnt, underburnt and soft. Bricks shall not absorb water more than 20% of their own weight, after 24 hours of immersion in water. The contractor shall get the bricks, he proposes to use, tested at an institution approved by Engineer at his own costs, and shall submit test reports to Engineer whenever asked for. Bricks shall be well soaked in water before use, till the bubbles cease to come up.

No half or quarter bricks shall be used except as horizontally placed closures. All bricks work shall be raised uniformly and in plumb. Joints of brick work shall be 10mm thick. Not more than 10 courses of bricks shall be raised in a day. All brick work shall proceed in lines, levels, in plumb and shall be raised uniformly so that no part of brick work is more than three feet above the level of any other part. All joints shall be thoroughly flushed with mortar at every course. Care shall be taken to see that bricks are properly placed and bedded and all joints fully filled in. All brick work shall be constructed with the use of cement mortar as stipulated in the schedule. All joints shall be raked clean to depth of 12mm. to receive plaster. All brick work shall be cured for seven days and shall be watered at least thrice a day. All piping, step irons supports for ladders, etc. shall be built into the brick work at approximate stages.

Sand and cement to be used for plaster shall be of the best quality and shall be approved by Engineer. Clean, sharp, siliceous and free from organic and inorganic impurities dust, clay and calcareous matter shall be washed taken for use and mixed with Portland cement in the specified proportions. Mixing shall be done on an approved hard standing and well soted platform. The materials shall be first dry mixed and then clean water shall be added to this mixture so as to bring the mortar mass to the required plastic condition. Use of excessive water shall be avoided. Use of mortar which has commenced setting partially, shall not be permitted. Such mortar shall be removed from site.

Surface to be plastered shall be soaked with sufficient water 24 hours in advanced. Joints shall be raked clean, to a depth of 12mm. Plaster shall be applied in two coats, for the required thickness. First coat shall be of thickness, enough to cover the unevenness of the brick work and shall be floated and well pressed on to the surfaces, and made rough to receive the next coat which shall be applied to make up for the required thickness, while the first coat is still raw. The second coat shall be well floated and firmly pressed to form an even true and plain surface. On completion of the second coat, a floating coat of about 8mm thick, of neat cement, while the second coat is raw, shall be given, traveled and floated and finished smooth.

External cement plaster shall be carried out using cement mortar in the proportion as given in schedule, and shall have the neat cement floating coat is specified. Plaster shall be cured for a period of not less than seven days to the satisfaction of Engineer Mortar fall on floor, during the process of plastering shall not be reemployed for use.

Channels inside the manholes and chambers shall be formed to shape sizes and inverts, in 1:2:4 p.c.c as shown on drawings. Width of the channels shall be to the full width of the pipes. Depths and slopes of the channels shall be as detailed in drawings. Where branch drains join in manholes/chambers, to the main channel, suitably curved channels of suitable widths, depths and inverts shall be made, with suitable slopes. All concrete, plain or reinforced, shall be carried out according to relevant specification for concrete.

Sharp bends, kinks, sharp edges, reent-rant angles, etc. shall be avoided. All the manhole floor shall be suitably sloped to channels. All work in benching and channeling carried out inside manholes chambers shall be finally finished to required level, inverts, with a 8mm. thick floating coat of neat cement floated trowelled and finished smooth. Curing shall be continued at least for seven days.

Manhole/ chamber frames and covers shall be of the clear sizes and weights specified. They shall be of cast iron, best foundry metal, close grained, tough, without any flaws, blisters and all other casting defects. They shall be clean and accurately moulded, close fitted. They shall have smooth and even surfaces. Frames and covers, their sizes, weights and quality shall be approved by Engineer. All frames and covers, their sizes, weights and quality shall be approved by Engineer. All frames and covers shall be set to correct levels and alignment and shall be embedded in a layer of cement mortar of 1:2 proportion. All exposed surfaces of embedments shall be finished smooth with neat cement rendering. All frames and covers shall receive three coats of anti corrosive black bitumistic paint to be approved by Engineer.

i. All manholes shall be water tight. To achieve this requirement, all internal surfaces of the manholes shall be neatly plastered, rendered smooth and the floating coat of neat cement 8mm, thick shall be worked to polished faces. Manholes shall be tested along with the pipe drains. During testing the external surfaces shall be checked for any visible signs of leakages. Any leakages found shall be corrected in a manner to be approved by Engineer. All expenses and costs incurred for the testing, inspection, corrective measures, and retesting to satisfaction of job requirements shall be borne by the contractors. On completion of the testing, the excavation shall be refilled and portions of drains between two adjacent manholes shall be flooded with water. The manholes shall be examined from inside for any leakage into the manholes. If any such spots are observed, the same shall be redone in a manner to be approved by Engineer. Rate for manhole/ chambers shall include all operations (a) to (h) above.

8. Stone ware pipe

- a) S.W pipe shall be of the best quality stone ware, salt glazed thoroughly burn throughout the whole piece and thickness, free from air holes, fire blisters, cracks and other blemishes. They shall be of a close land even texture. They shall be of the manufacture approved by Engineer.
 - b) Pipes shall be properly stacked and protected against all damage, stacking and laying shall be done without inconvenience to public, traffic and other works, cracked pipes at barrels and / or sockets shall be rejected. All pipes shall be fitted on ground to ensure a close fittings, before lowering.
 - i. Barrels, spigots, sockets shall then be cleaned scrapped and brushed. Pipes shall be carefully lowered by hand to the bottom and placed on the bottom of trench carefully.
 - c) Pipes shall be laid carefully, to be alignments, levels and gradients as given in drawings, care being taken to prevent any foreign matter, earth, sand and mortar entering into the pipes during laying. Pipes between manholes shall be laid to correct line and slopes without undulations, vertical or horizontal. All inverts shall be laid and fixed from the sight rails, with the help of boning rods. S.W pipes shall be laid, sockets facing up the gradient, beginning at the lower end up and all sockets laid to levels in the holes or scoops cut of the purpose. Each pipe shall be laid singly and brought upto the exact placement.
 - d) Jointing shall be commenced after the alignment is made, gradient and inverts checked by Engineer. A gasket of tarred hemp yarn shall be placed around the joint, between the annular space between the spigots and sockets and the same shall be inserted by suitable tools. Additional strands of yarn shall be added if necessary and the yarn rammed home. The additional yarn shall be moistened to avoid absorption of water from cement mortar.
- i. After full and complete caulking operations cement mortar in the proportion of 1:1 of cement and sand, or as otherwise specified in the schedule, shall be made in suitable small quantities and shall be packed with wooden caulking tools to fill up the annular space completely and fully. On finishing of caulking of cement mortar, each joint shall be struck off at 45° to the longitudinal axis of drain using the same mortar and finishing the joint with neat cement rendered smooth. Depths of sockets, yarn depths, mortar depths shall be as follows:

9. Depth of Depth of Depth of Dia of pipe Internal clear Socket Yard mortar

- a) 100 mm. 50 mm. 22 mm. 29 mm.
- b) 150 mm 57 mm. 29 mm. 29mm.
- c) 230 mm. 62 mm. 29 mm. 35 mm.
- d) 300 mm. 75 mm. 32 mm. 45 mm

Each joint shall be adequately cured by placing wet gunny bags or canvas, wrapped around the joints and kept wet continuously. After the joints are completed the pipe drain shall be tested, to a water head of 1.8m. in a manner to be approved by Engineer.

Testing shall be deemed to be satisfactory if the water level does not fall by more than 1.2m. in a length of 100m. of piping filled with water, to a head of 1.6m. kept standing for at least one hour. Upon application of test head, all joints shall be inspected for any leakages and leakages if any shall be corrected after the water is drained off. Final retest shall than be made. On satisfactory completion of testing, further works such as embedment, filling with selected fine earth, etc. shall proceed; after Engineer orders in writing to the contractor to do so.

Rate for pipes shall be inclusive of provision, laying, jointing and testing and all other operations detailed in (a) to (d) above.

Depths of manholes shall be measured from the top of the C.I. cover to the top of the foundation concrete. For the purposes of classification for payments on the basis of depths of 0.15 m. and above, shall be taken as 0.30m. and depths of 0.0 to 0.15m shall be taken as 0.0m.

SECTION – 3

ELECTRICAL INSTALATION / ILLUMINATION OF OFFICE BUILDING.

1. Internal Wiring

System of Wiring

The system of wiring shall consists of single core PVC insulated copper conductor wires shall confirm in all respects to relevant Indian Standard in polythene conduits concealed in the wall/roof and wherever required.

2. General

Laying of conduit/Polythese pipe

Prior to laying and fixing conduits, carefully examine the drawings indicating the layout of conduits about the sufficiency of the number and size of conduits, location of junction boxes, sizes and locations of switch boxes and other relevant details.

3. Drawing and conductors.

The drawings and jointing of 650/1100 volts grade single core PVC insulated copper wires of IS standard shall be executed with due regard to the following precautions. While drawings insulated wires into the conduit, care shall be taken to avoid scratches and link which cause breaking of conductor. There shall be no sharp bends. Insulation should be shaved off like sharpening of a pencil. Oxide inhibiting grease shall be applied at all terminal points. All the ends of wires and cables shall be properly soldered with ALCOPIN solder and CYRE soldering flux. Stands of wires and cables shall not be cut for connecting at terminals and only shall have flat ends. Conductor having nominal cross sectional area exceeding 10 sqm. shall always be providing with cable sockets. At all bolted terminals, brass flat washers of large area and approved steel spring washers shall be used. Brass nuts and bolts shall be used for all connecting. No joints shall be done in the length of conductors. The minimum size and the copper conductor wires for all sub-circuit fan/light points shall be 1.5 sqm. or 3/22 swg. In case of power circuit no more than 2 nos. of power outlets shall be carried out with 6 sqm. PVC insulated copper conductor wires. All power outlets shall be provided with 2mm. dia OR 16swg. Copper earth wire.

Only certified wiremen and cable jointers shall be employed to do jointing work. All wires and cables shall bear the manufacture's label and shall be brought to site in new and original packages.

4. Connections.

All joints shall be fully water tight. Joints between conduit and iron clad distribution board and control gear shall be effected by means of conduit couplers in to each of which will be coupled by smooth PVC bushes from the inside of board or case.

Conduit system shall be erect and straight as far as possible. To avoid traps where water may accumulate from condensation, unless unavoidable, suitable provision for draining the water shall be made. Separate conduit shall be run for 15 Amps power outlet wiring. Connection between screws conduit and sheet metal boxes shall be by means of brass hexagon smooth brass buds inside the box and connected through a coupler to the conduit. The joints in conduits shall be free of burrs to avoid damage to insulation of conductors while pulling them through the conduits. All the panel Boards main distribution Boards which will not of concealed type should be connected with M.S. conduits shall be screwed metal to meal and be painted with one coat of self etching Zinc chromate primer and two coats of enamel paint. The threads and sockets shall be free from grease and oil. All other conduits which will be in open air should be M.S conduit instead of polythene pipe.

5. Projection.

To minimize condensation or sweating inside the conduit pipes, all outlets of conduits systems shall be adequately ventilated. All screwed and sockets connections shall be made fully water tight by use of proper joining compound. White lead shall be used for metal conduit.

6. Bunching of Wires.

Wires carrying current shall be so bunched in the conduit that the out going end return cables are drawn into the same conduit. Cables originating from two different phases shall not be run in the same conduit.

All joints shall be made at main switch, Distributions, socket outlets, lighting outlets and switch boxes only no. joints shall be made in conduits. Conductors shall be continuous from outlet to outlet. Joints where un avoidables, shall be made to conform to approved standards.

Balancing of circuits in three phase installation shall be planned before the commencement of wiring and shall be strictly adhered to. Colour code shall be maintained for the entire wiring installations. Red, Yellow, Blue for three phases, Black for newtral and green for earth.

7. Mains and submains.

Every mains and sub main shall be drawn into an independent adequately sized conduit. Adequately size of draw boxes shall be provided at convenient locations to facilitate easy drawing of the sub mains and main cable. An independent earth wire of proper rating shall be provided for every single phase sub main. The earth wire shall be fixed to conduit by means of suitable copper clips at not more than 30 cm. distance.

8. Switch-outlets and junctions boxes and inspection boxes.

All outlets for switch and other receptacles shall be equipped with rust proof outlet boxes of MS as called for, having external and internal surface true to finish. Outlet boxes for switch, socket and regulators shall be fabricated to approved sizes and shall have adequate number of knock out holes of required diameter and an earthing terminal screw and covered with approved white polycarbonate modular coverplates screwed to the box with brass counter sunk screws. Outlets exposed to the weather shall be fully water tight, complete with rubber gasket cover; glass where used shall be of heat resitant. Rust proof inspection boxes of coat iron and of required size, having smooth external and internal finish shall be provided to permit periodically inspection and to facilitate replacement of wires when required. The wall thickness of the boxes and spouts shall be of 2 mm. thick and depth of the boxes shall be 50mm.

9. Telephone and Inter com System

Conduits, junction Boxes, Draw boxes, outlet boxes and cover plates of all boxes for the telephone system shall be at least : 100mm. for boxes and 75mm. for the conduits. The telephone conduits/wiring shall be at least 300 mm. away from the electrical wiring. The

0.6 mm. thin core single strand copper conductor shall have no joints from the main distribution box/exchange to end outlets.

10. Switches, Receptacles and Fixtures.

All 5 amps, switches shall be enclosed type flush mounted switches of 250 V AC grade. All switches shall be fixed inside the switch boxes on adjustable M.S strips/plates with tapped holes and brass machine screws, leaving ample space at the back and sides for accommodating wires. Where two or more switches are installed together, they shall have gang plates, unless otherwise called for.

The plug sockets shall be erected approximately 450 mm above floor level, unless otherwise specified. The controlling switch shall be on the phase wire. The earth terminal of the socket shall be connected to the earth terminals provided inside the box by means of PVC insulated copper conductor earth wire.

The light fixtures and fans shall be assembled and installed in position complete and ready for service in accordance with the detailed drawings, manufacturer's instructions. Fixtures shall be suspended to alignment plumb level and cable resisting of all lateral and vertical forces and shall be fixed and as required. This shall be done at the appropriate stage of construction / civil work.

Exhaust fans, Air conditions, Geysers, shall be fixed at the locations shown on the drawings. They shall be wires to plug sockets at a convenient location near the fixtures. Wires brought out form junction boxes shall be encased in all flexible pipes for connecting to fixtures concealed in suspended ceiling/finished wall.

All tube light fittings are of reputed make with ISI mark and shall be of box type fitting with acrylic sheet cover and all toilets and balconys shall be lighted with 2' x 20 w single box type fittings and all other placed of the area should be lighted (where tube light fittings shall be used) with 2 x 40 w box type fitting with acrylic cover and with all accessories including tube.

All 20 amps. Industrial sockets with starters shall be used to run the Air conditioner machines and 20 A Industrial socket shall be used in kitchen to energize electric cooking range this provision shall be made for future requirements with Conductor size 7/20 PVC insulated copper wire. No more than 2 nos. of this type of points shall be looped.

All 5 Amp/15 Amps. Plug points shall be of 5 in one type fixtures which shall be connected directly from BDB with 7/20 PVC insulated copper wire as power point. Maximum 2 nos. power points can be connected by looping.

ELCB/RCCB shall be used as preventive materials and only reputed Firm's materials with ISI marked materials shall be used and rating should be 63A Amps. 4 pole system with 10 MA accuracy with 30 Milli-seconds sensitivity.

BDB shall be used for proper distribution and MCBs shall be used in place of cutouts and all MCBs shall be of reputed make with ISI mark.

Junction Box, switch Box shall be made out form 2 mm. M.S sheet duly painted with 2 coats of anti corrosive metal primer with 3 coats of B.S gray spray paint. All knock holes should be properly pressed as the shape of the box should not be hampered during knocking out the time of fixing and connection.

11. Main distribution Board/Panel Board.

The distribution Board/Panel shall be suitable for operation on 3 phase/single phase 415/230 volts, 50hZ, neutral grounded at transformer and short circuit level not less that 31MVA at 415 volts and shall comply with the latest addition of relevant Indian Standards and Indian electricity rules and regulations. The distribution panel board shall be metal enclosed, sheet steel cubical, indoor, dead front, floor mounting type. The board shall be completely dust and vermin proof. Gaskets between all adjacent units and beneath all covers shall be used to render the joints dust proof. All doors and covers shall be duly gasketed with foam rubber and shall be lockable. All MS sheet used in the construction of panel board shall be 2mm. thick and shall be folded and braced as necessary to provide a rigid support for all components. Joints of any kind in sheet metal shall be seam welded and should be wiped smooth with plumber metal. Fixing screws shall be entered into holes topped into an adequate thickness of metal or provided with hank nuts. Self threading screws shall not be used in the construction and a base channel of 75mm x 75mm x 9mm. thick shall be provided at the bottom and back.

Knockout holes of appropriate size and number shall be provided in the board in conformity with the locations of incoming and outgoing cable and removal sheet steel plates shall be provided at top and bottom to drill holes for cable entry at site if required.

12. Bus Bar and Interconnections.

The Bus bar and interconnections shall be electrolytic copper and of rectangular cross sections suitable for full load current for phase bars and half rated currents for neutral bars and shall be extensible on either side. All bars and inter connections shall be insulated with insulation non adhesive tapes and colour coded. The bus bars shall be supported on unbreakable non-hygroscopic insulated supports at regular intervals to withstand the forces arising from short circuit in the system. All bus bars shall be provided in separate chambers and properly ventilated. All connections between bus bar and switches shall through solid copper strips of proper size to carry full rated current and insulated with non adhesive insulating tapes of colour coded.

13. Circuit compartment

Each switch fuse units shall be housed in separate compartments and shall be enclosed on all sides. Lockable doors shall be duly interlocked with the SFU in 'ON' and 'OFF' position.

14. Instrument compartment.

Separate and adequate compartment shall be provided for accommodating instruments, indicating lamps, control fuses etc. These shall be accessible for testing and maintenance without danger of accidental contract with live parts of SFU, Bus bar and connections.

15. Cable compartment

Cable compartment of adequate size shall be provided in the distribution panel board for easy termination of all incoming and outgoing cables entering from bottom. Adequate supports shall be provided in cable compartments to support cable.

16. Switch Fuse Unit.

The switch fuse units shall be 3 pole double break type and a separate neutral link shall be provided in the switch. SFUs shall be provided with hinged doors duly interlocked with operating mechanism, so as to prevent operating of the door when the switch is in 'ON' position and also to prevent closing of the switch when the door is not properly secured. Fuses shall be High Repturing capacity (HRC) fuse links and shall be in accordance with IS: 2208-1962 and having repturing capacity of not less than 31 MVA at 415 volts.

All sheet shall undergo a process of degreasing, pickling in acid, cold rinsing phosphating, passivating and then sprayed with a high currossive resistant primer. The finished treatment shall be by application of two coats of synthetic enamel paint of approved colour and stoved.

17. Earthing

Main earth shall be 50mm. diameter of heavy gauge wall thickness and 10' long and a copper plate of 12" x 12"x ¼" shall be attached vertically with the G.I pipe by Gas welding and nut and bold. The GI pipe shall be duly perforated with 10mm drill and distance shall be maintained 15cms. From hole to hole A 20gauge wire messed funnel shall be attached on the top of the pipe and all flange will not be used

except 2 nos of saddle clamp with adjusting nut and bolt.

2 nos. of earthings shall be done in either sides of the funnel board at least 10' away from the wall of the main building and 12' part from each other and 2 nos. of no 4 copper wire shall be run separately from the panel board to earth electrode and also the 2 nos. of earth electrodes shall be interconnected with each other by No.4 copper wire.

A layer of 15cm. charcoal and a layer of 15cm. salt shall be laid 50cm. height from bottom of the earth electrodes to 180 cm (6 layers of charcoal and 6 layers of salt) in the earth pit. The earth pit shall be 50 cm x 50 cm x 10mtr. depth and refilled with charcoal sand and balance in soft soil.

A No. 4 copper wire shall be connected from bottom of the electrode and another 4 copper wire shall be connected from the clamp to the panel board separately for each other. All the copper earth wire shall be connected with approved sized copper sockets duly bolted with brass washer and nut and bolt. The maximum earth resistance shall be 0.5hm. tested with 1000v earth 4 pole earth tester.

18. Cable.

MV cables of relevant Indian Standard Specifications and cable manufacture's instruction shall be laid and no joints shall be made except 2 terminals/end points. The cables shall be PVC insulated aluminum 4 core conductor armoured cable conforming to IS: 1554-1972 (Part-I) laid in trenches, ducts, cable trays or and underground as required or otherwise call for. All cables shall be inspected upon receipt at site and checked for any damage.

Cable shall be laid by skilled and licensed workman using adequate rollers to minimize stretching of the cable. Great care shall be exercised in laying cable to avoid forming kinks. Cable shall be laid at a depth of 0.75. mtrs. Below ground level. A cushion of sand not less than 0.8 mtrs. shall be provided both above and below the cables. Cable shall not be laid in the same trench or alongside a water main. The cable shall be protected by bricks on the top layer of the sand in the full length of the underground cables and distribution cables shall be laid inside the GI pipes duly clamped with G.I saddles and required bends as required. Prior to laying the cable it shall be duly inspected and tested for insulation test, continuity test and high voltage test.

Two nos. of lightning arrestors shall be installed at the highest level of the building to prevent the electrical as well as the entire building from damage, due to lightning, The sensitivity of the arrestor shall be 31 MV of 415 V grade as per IS specification.

19. Change over switch

One no of 4 pole change over switch of required rated current with high ruptured current fuses shall be installed near panel board to operate D.G sets when required.

20. List of main materials and points and makes

G.L.S Lamp/Decorative light point. Ceiling light	Philips, Crompton Graves
2'20 W tube light fittings (box type with cover)	Philips, Crompton Graves
s x 40 w 4' Tube light fittings (box type with cover)	Philips, Crompton Graves
	Reputed firms as per IS and duly approved & inspected by company representative.
Switch Board with 5A Socket.	
5/15 Amps (5 in one type)switch socket combined	-do-
Ceiling Fan	Usha
Exhaust fan	Crompton Graves
Large Decorative light	Philips, Crompton Graves
20 AMP, industrial plug socket with starter, BDB with main switch (MCB shall be fixed in place of cutout)	
Air conditioner	Cosmos
150 watt SV lamp comble fitting	Philips, Crompton Graves
Gizzer	Crompton Graves
	Reputed firms as per IS and duly approved & inspected by company representative.

ELCB or RCCB	
Pannel board & changeover	-do-
Earthing 2" x 10" with earth plate cable	-do-
Polythene pipe conduit, M.s conduit	Universal

21. Distribution of System.

3 phase distribution system shall be so distributed that the lighting system should not be affected by the power lines due to high current draining at the time of starting of Air Conditioner or any power systems. Hence this system shall be distributed like all light, fan and 5A plug points loads to be connected with 'RED' phase and 'YELLOW' phase shall be connected with Air conditioner and kitchen room. YELLOW phase shall be connected with Air conditioners and Gyzers and 'BLUE' phase shall be connected with Air conditioners and kitchen room. YELLOW and BLUE phases are properly balanced by calculating load.

22. List of I.S codes for Electrical Installations.

1. Electrical wiring installation (system voltage not exceeding 650 v) IS: 732-1963 2
2. Graphical symbols used in Electrotehcnology. Part-II
Electrical installation in building 2032-1969
3. P.V.C Insulted cables 694-1964
4. P.V.C Insulted cables (heavy duty) 1554-1964
5. 5A Flush Switches 1987
6. 15A Flush Switches 2120
7. 3 pin plugs and sockets 2193
8. Aluminium conductors for insulated cables 1753-1967
9. Recommended current ratings for cables 3961-1967
10. Installation and maintenance of paper insulated power cables 1255-1967
11. Earthing 3043-1967
12. Rigid steel conduits for electrical wiring 1653-1964
13. Fittings for conduits for electrical wiring 2067-1964
14. AC circuit breakers. 2516-1972 (and BS 3659)
15. AC isolators and earthing switches 1818-1972
16. General requirements for switch gear and control gear for voltage not exceeding 1000 v. 4237-1967
17. Installation and maintenance of switch gear. 3073-1965
18. Enclosed distribution fuse boards and cutouts for voltage 1000v. 2675-1964
20. Selection, installtion & maintenance of fuses (voltage not 3106 exceeding 650 v)
21. General and safety requirements for electrical lighting fitting 1913-1969
22. Lighting public through fares. 1944-1970
23. Waterproof electric lighting fares. 3528-1966
24. Water right electric lighting fitting 3553-1966
25. Luminaries for street lighting 2149-1970
26. Ceiling fans. 374-1951

C O D E S (ELECTRICAL)

Codes shall mean the following including the latest ascendants and / or replacement if any.

- a) Indian Boiler Act, 1923 and Rules and Regulations made their under
 - b) Indian Electricity Act, 1923 and Rules and Regulations made there under
 - c) Indian Factories Act, 1948 and Rules and Regulations made there under
 - d) The minimum wages Act
 - e) The Women's Compensation Act
 - f) The Payment of Wages Act
 - g) The Fatal Accident Act
 - h) The Industrial Employment Act
 - i) The Employment provident Fund Act
 - j) Indian Explosive Act 1984 the Rules and Regulations made there under
 - k) Indian Petroleum Act 1934, and Rules and Regulations made there under
 - l) A.S.M.E. Test Codes
 - m) AIRE Test, Codes
 - n) American Society of Materials Testing Codes
 - o) Standards of the Indian Standards Institution
 - 1) Low Tension Circuit Breakers : IS 2516-1955 Part I Sec.1
 - 2) Switchgear Bus Bars IS 375-1963
 - 3) HRC fuse links IS 2208-1962
 - 4) Distribution fuse boards IS2675-1966
 - 5) Enclosure for Low Voltage switchgear IS214701962
 - 6) PVC Cables IS1554-1975
 - 7) Tabular fluorescent lamps for Cameral lighting service IS2418-1963
 - 8) Tungsten Filament Lamps for cameral service IS415-1963
 - 9) Ceiling Fans IS274-1966
 - 10) Flood lights IS1947-1961
 - 11) Wall Glass flame-proof electric light fittings IS2206-1962 (Part 1)
 - 12) Water Tight Electric Light Fittings IS3553-1956
 - 13) Steel Boxes for Enclosure of Electrical Accessories IS5133-1969
 - 14) Fittings for Rigid Steel conduit IS2667-1979
 - 15) Rigid steel circuits for electrical wiring IS3837-1966
 - 16) Accessories for Rigid Steel Conduits for Electrical Wiring IS3837-1966
 - 17) Switch Socket Outlets IS3837-1966
 - 18) PVC Wiring IS694-1977
- Bidder

- 19) Switches for domestic and similar purpose IS3854-1966
- 20) PVC wiring IS694-1977
- 21) Call Bell and Buzzers IS2268-1966
- 22) Straight through joint boxes and leads sleeves or paper insulated cables- EID-0032-1964
- 23) Earthing IS3043-1966
- 24) Electrical Wiring installations IS732-1963
- 25) Switchgear IS3072-1965(Part I)
- 26) Lighting protection IS2309 –1969
- 27) Public Address system IS1882-1962
- 28) Low Tension switch use units IS4064-1978
- 29) Code of Practice for Automatic FIRE ALAM system IS2189-1970
- 30) Specification for Heat Sensitive Fire Detectors IS2175-1977
- 31) Guide for Safety procedure in Electric work IS5216-1969
- 32) Rubber Mats for Electric works IS5424-1969

Other internationally approved standards and / or Rules and Regulations touching the subject matter of the contract

BILL OF QUANTITY AND PRICE SCHEDULE

Name of the work :- Extension of DVH,Balasore.(Eletrical & PH Work)**ABSTRACT OF COST**

SI No	Description of items.	Qty	Rate	Unit	Amount in Rs
1	2	3	4	5	6
	PART-A-Electrical Works				
1	Recessed wiring to light point/Fan point/ Exhaust fan point/Call bell point With 1.5 sq.mm FR PVC insulated single core multistrand copper conductor of ISI marked with 20 mm dia non-metallic PVC flexible conduit with 6Amp, 250V Modular switch ISI marked and ceiling rose ISI marked mounted on metal box having front Modulator cover of suitable size, metal box with 1,5 sq.mm FR PVC insulated single core multistrand copper conductor as earth wire including all accessories and connection. (Make of wire-L&T/Anchor/Havells/V-Guard/Great White/HPL) Group-A -L.P-	40	602.00	Point	24,080.00
2	Group-B L.P-	40	839.00	Point	33,560.00
3	Group-C L.P-	45	1,136.00	Point	51,120.00
4	Group-B F.P-	18	839.00	Point	15,102.00
5	Group-C F.P-	24	1,136.00	Point	27,264.00
6	Group -C Exhaust fan	6	1,136.00	Point	6,816.00
7	Supply and fixing of 6Amp plug with 6Amp switch on existing board (Modular type)	28	197.00	Each	5,516.00
8	Supply and fixing of Modular metal box on surface or in recess with suitable size of Modular cover in front including providing and fixing of 6Amp and 6Amp Modular switches connection (Make - Anchor /Legrand /Roma/Great White/HPL)	18	328.00	Each	5,904.00
9	Supply and fixing of Modular metal box on surface or in recess with suitable size of Modular cover in front including providing and fixing of 6pin 6Amp & 16Amp socket outlet and 16Amp Modular switches connection (Make -Anchor /Legrand /Roma/Great White/HPL))	16	505.00	Each	8,080.00
10	Supply and fixing of Electronics step type Modular fan regulator. (Make -Cona/ Anchor /Usha/Bajaj)	42	297.00	Each	12,474.00
11	S/F of Modular Computer board consisting with 3 nos of 5-15 amp switch and 3 nos of 5-15 amp socket.	26	1,378.00	Each	35,828.00
12	Recessed wiring to submain in the following sq.mm FR PVC insulated single core multistrand copper conductor of ISI marked conforming to IS-694/1990 in the following mm dia non-metallic heavy duty flexible conduit 1.6 mm thick along with the following sqmm FR PVC insulated single core multistrand copper conductor as earth wire as required. (Make of wire-Finolex /L7T /Anchor/Havells/V-Guard//HPL) 2X1.5 sq.mm +1x1.5 sq.mm in 20mm dia	790	131.00	Mtr	1,03,490.00
13	2 X 2.5 sq.mm +1 X 1.5 sq.mm -do-	644	145.00	Mtr.	93,380.00
14	2 X 4 sq.mm +1 X 1.5 sq.mm -do-	305	163.00	Mtr.	49,715.00
15	2x6 sq mm +1x2.5 sq mm in 25mm dia	145	194.00	Mtr.	28,130.00
16	35sq.mm 3 1/2 core Cable	35	325.00	Mtr.	11,375.00
17	Supply and fixing of following way single pole and neutral sheet steel MCB distribution board 250V on surface/recess complete with tinned copper bus bar,neutral bus bar, earth bar, din bar, detachable gland plate, interconnections, phosphatized and powder painted including earthing etc. as required (but with out MCB/ RCCB/ Isolator) Make -HPL /Havells /Legrand /L&T /C&S.)8way, Double door	8	1,730.00	Each	13,840.00

18	Supply and fixing of 5Amp to 32A rating 240 V/415 V "B" series MCB suitable for lighting and other loads of the following poles in the exiting MCB DB ISI marked complete with connections testing and commissioning etc. (Make -HPL /Havells /Legrand /L&T /C&S) Single pole (SP)	64	130.00	Each	8,320.00
19	Supply and fixing of Earthing with G.I earth pipe 3mtr. Long 40mm dia ISI marked including accessories and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. with charcoal and salt as required.	1	2,504.00	Each	2,504.00
20	Providing and fixing 8 SWG (4 mm) dia copper wire on surface of in recess for loop earthing along with exiting surface/recessed conduit/submain wiring/cable as required.	21	51.00	Mtr	1,071.00
21	A.C Ceiling fan 48" size. (Make -Usha-Striker/Orient PSPO Summer cool Breeze)	42	2,215.00	Each	93,030.00
22	Exhaust fan 10"/12" size.(Make -As approved by PWD Odisha)	6	1,801.00	Each	10,806.00
23	S/F of A.C Point consisting of 15 Amp Industrial switch socket and 32Amp FTDP with 02 way MCB. (Make -Cona/Anchor/Havells)	10	1,682.00	Each	16,820.00
24	S/F of Portico Light	1	1,936.00	Each	1,936.00
25	10 watt LED Bulb	6	123.00	Each	738.00
26	Angle Holder	6	98.00	Each	588.00
27	S/F of 3 pin, 5Amp ceiling rose ISI marked on the exiting junction box/ wooden block including connection etc as required (Make -As approved by PWD Odisha)	98	45.00	Each	4,410.00
28	20 watt LED Tube Light (Havells,Crompton,Bajaj)	98	358.00	Each	35,084.00
29	S/F of 45 Watt LED Light	8	6,542.07	Each	52,336.56
30	S/F of 1.5 Ton 3 star Split A.C. Machine (Make as approved by PWD Odisha)	2	45,371.00	Each	90,742.00
31	S/F of AC Stand	2	1,833.79	Each	3,667.58
32	S/F of 5KVA voltage stabiliser (Make-CG/Shakti/V-Guard/Autotec)	2	8,353.94	Each	16,707.88
33	Installation charges for AC machines	2	1,500.00	Each	3,000.00
34	SF of 2.5 KVA Inverter Machine	2	21,394.24	Each	42,788.48
35	SF of 250 AH Battery	4	23,228.03	Each	92,912.12
36	250 Amp PANNEL-SOPPLY AND FIXING OF 1no of cubicle panel of 2 mm thic CRCA anel box of following dimensuion:- 1.5m x 1.5m (30cm depth)=2.25 sqmtr in complete fabrication of metal clad, power coated, compartmentalised cubicle panel as per CPWD Electrical specification including insulated busbars, supports, interconnettions, erection of switchgears and maing provisions of incoming/outgoing cables etc.	2.25	34,425.00	Sqmtr	77,456.25
37	250 Amp MCCB, 4 Pole DU400N Type, Breaking capacity 50 KA (L7T)	1	20,069.83	Each	20,069.83
38	100 AMP MCCB/ Thermal Release Range 80-100 Amp, 4 Pole DU100H Type,Breaking capacity 30KA (L&T)	1	5,756.07	Each	5,756.07
39	63 AMP 4 pole MCCB with Thermal Release Range from 50-163 Amp,(L&T)	2	5,756.07	Each	11,512.14
40	Floor rubber mat 6'x4'x6mm	1	2,884.62	Each	2,884.62
41	S/F Ammeter (0 to 500A) with selector switch including Make-AE all accessories,Make-A.E.	1	1,344.23	Each	1,344.23
42	S/F of Voltmeter (0 to 500A) with selector switch including all accessories,Make-A.E.	1	1,344.23	Each	1,344.23
43	S/F of Indicator Lamp with toggle switch and fuse0	3	232.69	Each	698.07
44	S/F of C.T. Coll upto 400/ 5Amps including all connection	3	826.92	Each	2,480.76
45	S/F of M.V. Danger Board of 250mm x 200mm at least 2mm thick with inscription in single red color.	4	143.00	Each	572.00
			PART-A	=	11,27,253.82

PART-B-PH, Water Supply & Sanitation Work					
SI No	Description of Works.	Qty	Rate	Unit	Amount
46	Supplying all materials labour T&P for Cutting Holes through existing brick work including making good through the damages in cement mortar (1:4) for taking pipes.	60.00	59.20	No	3,552.00
47	Supplying all materials labour T&P for Cutting Holes in RCC floors, roofs etc upto 19cm thick for passing pipes etc complete as per direction of the Engineer in charge.	40.00	170.40	No	6,816.00
48	Supplying all materials labour T&P for Cutting grooves in pucca floors and walls for taking pipes etc complete as per direction of the Engineer in charge.	140.00	227.50	No	31,850.00
49	Supplying all materials labour Providing and fixing Chlorinated Polyvinly Chloride (CPVC) pipes conforming to IS:15778, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings including fixing the pipes with clamps at 1.00 m spacing, This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge.				
a	15mm nominal dia	165.00	211.60	Mtr	34,914.00
b	20mm nominal dia	143.00	279.30	Mtr	39,939.90
c	25mm nominal dia	150.00	380.80	Mtr	57,120.00
d	32mm nominal dia	120.00	554.20	Mtr	66,504.00
50	Supplying all materials , labour, T&P and fitting and fixing brass/CP fittings of following nominal bore with supply of all jointing materials complete as per P.H. Specification and direction of Engineer-in- charge				
a	15mm dia C.P. Bib cock (Long Body)	24.00	858.00	No	20,592.00
b	15mm dia C.P, Angular stop cock	12.00	812.70	No	9,752.40
c	20mm dia Concealed stop stop cocks	6.00	974.80	No	5,848.80
d	32mm Brass/ Gunmetal full way valve	10.00	1,759.50	No	17,595.00
e	25mm Brass/ Gunmetal full way valve	6.00	1,202.30	No	7,213.80
f	600 mm long Towel rail	10.00	902.90	No	9,029.00
g	Bath room mirror 600x600	8.00	1,393.48	No	11,147.84
h	Mirror cabinet 350mmx450mm	2.00	2,499.47	No	4,998.94
51	Supplying all materials , labour, T&P Providing and installing vitreous china European type water closet with P or S trap of(Popular, Starwhite) with 5lit cistern etccomplete as per P.H. specification and direction of Engineer-in-charge	5.00	5,787.50	No	28,937.50
52	Supplying all materials , labour, T&P Providing and installing vitreous china Orissa pattern water closet pan with 100 mm SCI P or S trap with flit cistern etc with Slit cistern etccomplete as per P.H specification and direction of Engineer-in-charge	2.00	5,153.70	No	10,307.40
53	Supplying all materials, labour, T&P Providing and installing vitreous china wash basin with all fittings etccomplete as per P.H. specification and direction of Engineer-in-charge	9.00	3,088.00	No	27,792.00
54	Supplying all materials, labour, T&P Providing and installing vitreous china flat back urinal with automatic flushing cistern complete with all fittings etccomplete as per P.H. specification and direction of Engineer-in-charge	6.00	1,950.00	No	11,700.00
55	Supplying all materials, labour, T&P Providing and installing vitreous china Squanting urinal with automatic flushing cistern complete with all fittings etccomplete as per P.H. specification and direction of Engineer-in-charge	2.00	1,850.00	No	3,700.00

56	Supplying all materials , labour, T&P Providing and fixing Stainless steel A ISI 304 (18/8) kitchen sink as per IS 13983 with C.I. Brackets and stainless steel plug 40mm, including painting of fittings and brackets, cutting and making good the walls wherever required etc. complete. (Stainless steel kitchen sink- with drain board 510x1040mm bowl depth 250mm)	4.00	11,122.10	No	44,488.40
57	SFixing Rotational moulded Polyethynle Cylindrical Vertical Water Storage Tank Conforming to IS: 12701-1996 including cutting holes through the tanks and fixing mild steel tubes and fittings and providing extra sockets and jam nuts, fixing ball valve etc. including hoisting up to a height of 5 metre above ground level and placing the tanks to the required position etc complete as per specification and direction of the Engineer-in-charge.				
	2000 Liter capacity with extra height above 5mtrs	5.00	26,289.50	No	1,31,447.50
58	Supplying all materials, labour, T&P and fitting and fixing U-PVC SWR soil waste ventilating pipes with all fittings etcomplete as per P.H. specification and direction of Engineer-in-charge.				
a	110mm dia PVC/SWR pipe	220.00	487.40	Mtr	1,07,228.00
b	75mm dia PVC/SWR pipe	200.00	325.00	Mtr	65,000.00
c	110mm dia PVC/SWR S/J door	24.00	228.77	No	5,490.48
d	110mm dia PVC/SWR D/J with door	16.00	289.06	No	4,624.96
e	110mm do door bend	16.00	177.48	No	2,839.68
f	110mm dia Plain bend	19.00	112.75	No	2,142.25
g	110mm 9 trap	7.00	299.76	No	2,098.32
h	110mm dia vent cowl	10.00	34.45	No	344.50
i	110mm dia coupler	46.00	91.87	No	4,226.02
j	110MM PVC door tee	20.00	196.66	No	3,933.20
k	75mm dia PVC coupler	62.00	50.37	No	3,122.94
l	75mm dia PVC plain bend	21.00	68.25	No	1,433.25
m	75mm dia vent cowl	12.00	22.71	No	272.52
	RCC Septic Tank				
59	Excavation Foundation in hard soil including dressing and levelling the bed up to required level				
a	1st depth	30.15	206.77	cum	6,234.12
b	2nd depth below 1.5m	20.10	226.48	cum	4,552.25
60	Filling foundation and plinth coarse sand well watered and rammed including cost conveyance royalty taxes of all materials and cost of labour etc.	3.02	1,107.62	cum	3,345.01
61	Cement Concrete(1:3:6) using 4cm size black hard granite crusher broken metal including cost conveyance royalty taxes of all materials and cost of all labour etc. complete below 1.50m depth	3.02	6,690.58	cum	20,205.55
62	RCC M20 grade using 20mm down graded black hard granite crusher broken chips mixing concrete hoisting laying compacting watering including cost conveyance royakty taxes of all materials and cost labour below 1.50m depth				
a	Base Slab	4.02	6,930.43	cum	27,860.33
b	Wall & B' Wall	9.20	13,819.26	cum	1,27,137.19
c	Roof Slab	2.17	13,359.34	cum	28,989.77
d	Beam	0.17	14,661.42	cum	2,492.44
63	Supplying fitting and placing uncoated HYSD bar reinforcement as per drawing and technical specification including cutting bending and tying the grill as required for RCC work etc. complete	14.00	9,861.90	Qtl	1,38,066.60

Sinking of Production well & water supply 200mm dia					
SI No	Description	Qty	Rate	Unit	Amount
64	Labour for drilling a perfectly vertical bore hole in boulder formation areas with down the hole hammer drilling rigs to suit site condition with deployment of rig, necessary and consumables for specified dia for a specified depth below ground level including supply of necessary casing shoe. ODEX tools and plants, jointing materials, extra sockets where required withdrawing of pipes, lowering the M S (ERW) Pipes and fitting and fixing in perfectly vertical position including cutting and welding for jointing the pipes for simultaneous casing lowering in over burden boulder formation till encounter of hard rock and to drill 125mm DTH upto the the desired depth as may be necessary, clearing the site and washing bore etc., all complete providing sanitary sealing upto 5 mtr depth below ground level as per the direction of Engineer- in- charge.				
(A)	Labour for drilling of 200mm dia bore 00 to 90mtr.	90	1,656.88	Mtr	1,49,119.20
65	Supplying all labour T&P for lowering the following size GI/ PVC pipes with or without slowed pipes as per the necessity from G.L. and fitted and fixed up in perfectly vertical position, including cutting and threading pipes and slotted pipe and fixing all jointing materials etc complete and keeping to the top of the casing pipe threaded including plugging tube wells to prevent entry of foreign materials from above excluding cost of fittings and jointing materials	30	110.46	Mtr	3,313.80
66	Cleaning and developing the tube well using their own compressor continuously worked till clear and adequate discharge is obtained from the tube well including supply use of all necessary equipment and labour as per the direction of Engineer-in-Charge.	1	29,008.85	Nos	29,008.85
67	Supplying all labour T&P and materials for packing the bore with washed gravel around the pipes in good quality including cost of gravel & carriage charges of gravel etc. complete	1	2,758.40	Nos	2,758.40
68	Supplying all materials labour T&P and grouting with cement slurry for sanitary sealing around the G.I. / PVC casing pipe up to 3mtr below ground level including cost of all materials labour etc. complete	1	2,104.71	Nos	2,104.71
Materials Cost					
69	Cost of 200mm Casing pipe for over burden soil	90	1,740.90	Mtr	1,56,681.00
70	Labour charges for fitting and fixing Submersible with C-P.V.C Column pipe electrical connection etc. complete	1	3,000.00	Set	3,000.00
71	Cost of 2.0HP submersible pump of approved make[Cromton Grievs, C.R.I. Kilosker etc]	1	22,600.00	No	22,600.00
72	Digital panel board suitable to submersible pump	1	7,500.00	No	7,500.00
73	32mm dia C-PVC Column pipe	20	750.00	No	15,000.00
74	6mm flat copper cable	130	125.00	Mtr	16,250.00
75	Plastic rope	20	75.00	Kg	1,500.00
INSPECTION CHAMBER					
76	Inspection chambers inside 900x800 and 450mm deep with cast iron manhole and frame(light duty) rectangular type 450mmx610mm internal dimension	4	8,812.60	No	35,250.40
77	SOAK PIT of size (1.2m dia x2.59m) deep sock way pit	4	24,845.00	No	99,380.00

PART-B = 16,90,352.22
TOTAL(A+B) = 28,17,606.04
Say = 28,17,606.00

Rupees Twenty Eight Lakh Seventeen thousand Six hundred Six Only

	Fill-up Percentage	✓ Mark
A	My/ Our Quoted Amount is% Less than Tender value	<input style="width: 50px; height: 40px;" type="text"/>
B	My/ Our Quoted Amount is% Excess than Tender value	<input style="width: 50px; height: 40px;" type="text"/>
C	My/ Our Quoted Amount is at par the Tender value	<input style="width: 50px; height: 40px;" type="text"/>

N.B.:- Percentage should be mentioned up to two decimal only both in figure & word in appropriate box & put ✓ mark in the box provided at right side.

Number of Corrections _____

Number of Overwriting _____

Signature & Seal of the Bidder