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HOUSING AND URBAN DEVELOPMENT DEPARTMENT

OFFICE OF THE BARGARH MUNICIPAL COUNCIL : BARGARH

AT/PO/DIST.-BARGARH, PIN-768028

Letter No. 6784 ***Date. 17.11.2018***

Invitation for Bids

BID IDENTIFICATION NO. –BMC- 12 OF 2018-19

The Executive Officer, Bargarh Municipality on behalf of Bargarh Municipality invites bids on percentage rate basis on online mode for works as detailed in the table given below from eligible contractors registered with the State/Central Govt. and contractors of equivalent grade / ULBs contractor for execution of works on production of definite proof from the appropriate authority. Further details can be seen from the Website i.ehttps://tenderorissa.gov.in. andBargarh Municipality Websitei.ehttp://www.bargarhmunicipality.in. Any addendum/ corrigendum/cancellation of tender can also be seen only in the said website.

Procurement Officer	Bid Identification No.	Availability Of Tender On Line For Bidding		Last Date And Time Of Seeking Tender Clarification	Date & Time Of Opening Of Tender
		From 21.11.2018	To 30.11.2018		
Executive Officer, Bargarh Municipality	Online Tender BMC-12 Of 2018-19	From 17.00Hrs	Upto 17.00 Hrs	26.11.2018 17.00 Hrs	01.12.2018 12.00 Hrs

Sl. No	Name Of The Project	Estimated Cost (InRs.)	Emd 1% (In Rs.) (Online)	Cost Of Tender Paper (Online)	Class Of Contractor	Period Of Completion
1	CONSTRUCTION OF CC ROAD AT NIGAMANANDA BIHAR(NEAR PRAFULLA NAIK RES.), W.N.-1	500000	5000	4000	C & D CLASS	3 MONTHS
2	CONSTRUCTION OF CC ROAD FROM HARIJAN PADA ROAD TO MASTER HOUSE, W.N.-1	100000	1000	600	C & D CLASS	3 MONTHS
3	COMPLETION OF JAYDURGA COMMUNITY CENTER, W.N.-3	500000	5000	4000	C & D CLASS	3 MONTHS
4	CONSTRUCTION OF HARIJAN PADA COMMUNITY CENTER GOVIND PALI, W.N.-15	400000	4000	2000	C & D CLASS	3 MONTHS
5	CONSTRUCTION OF SVM KALYAN MANDAP, W.N.-15	400000	4000	2000	C & D CLASS	3 MONTHS
6	CONSTRUCTION OF CC DRAIN FROM KUNA MOHANTY HOUSE TO SUNARI PADA CHOWK, W.N.-18	200000	2000	2000	C & D CLASS	3 MONTHS
7	ELECTRIFICATION WORKS AT SHOPPING COMPLEX PRIVATE BUS STAND, PHASE-I, BARGARH	856230	8562	4000	C & D CLASS	3 MONTHS
8	ELECTRIFICATION WORKS AT SHOPPING COMPLEX PRIVATE BUS STAND, PHASE-II, BARGARH	825252	8253	4000	C & D CLASS	3 MONTHS
9	ELECTRIFICATION WORKS AT SHOPPING COMPLEX PRIVATE BUS STAND, PHASE-III, BARGARH	302339	3023	2000	C & D CLASS	3 MONTHS
10	ELECTRIFICATION WORKS AT SHOPPING COMPLEX PRIVATE BUS STAND, PHASE-IV, BARGARH	1297810	12978	6000	C & D CLASS	3 MONTHS
11	CONST. OF CC ROAD & DRAIN FROM P.K. RATH HOUSE TO PRAMOD JHANKAR HOUSE, W.N.-8	850000	8500	4000	C & D CLASS	3 MONTHS
12	CONSTRUCTION OF AWC BUILDING AT BISI COLONY, W.N.- 9	700000	7000	4000	C & D CLASS	3 MONTHS

13	CONSTRUCTION OF AWC BUILDING AT DASH COLONY, W.N.- 10	700000	7000	4000	C & D CLASS	3 MONTHS
14	CONSTRUCTION OF AWC BUILDING AT CHHABAKHRI, W.N.- 12	700000	7000	4000	C & D CLASS	3 MONTHS
15	CONSTRUCTION OF AWC BUILDING AT HARIJANPADA, W.N.- 17	700000	7000	4000	C & D CLASS	3 MONTHS
16	CONSTRUCTION OF AWC BUILDING AT AMAPALI-II, W.N.- 17	700000	7000	4000	C & D CLASS	3 MONTHS
17	CONSTRUCTION OF AWC BUILDING AT STATION PADA-II, W.N.- 19	700000	7000	4000	C & D CLASS	3 MONTHS
18	CONSTRUCTION OF AWC BUILDING AT TANGARTIKRA-I, W.N.- 1	700000	7000	4000	C & D CLASS	3 MONTHS
19	CONSTRUCTION OF AWC BUILDING AT P.H.D. COLONY, W.N.- 2	700000	7000	4000	C & D CLASS	3 MONTHS
20	CONSTRUCTION OF AWC BUILDING AT MANBANDHA PADA-I, W.N.- 3	700000	7000	4000	C & D CLASS	3 MONTHS
21	CONSTRUCTION OF AWC BUILDING AT BIKRAM NAGAR-II, W.N.- 4	700000	7000	4000	C & D CLASS	3 MONTHS
22	CONSTRUCTION OF AWC BUILDING AT HARIJAN PADA-I, W.N.- 5	700000	7000	4000	C & D CLASS	3 MONTHS
23	CONSTRUCTION OF AWC BUILDING AT BINJHAL PADA-II, W.N.- 5	700000	7000	4000	C & D CLASS	3 MONTHS
24	CONSTRUCTION OF AWC BUILDING AT MAHANTIBANDHA PADA-II, W.N.- 11	700000	7000	4000	C & D CLASS	3 MONTHS
25	CONSTRUCTION OF AWC BUILDING AT KATKIA PADA-II, W.N.- 12	700000	7000	4000	C & D CLASS	3 MONTHS
26	CONSTRUCTION OF AWC BUILDING AT CHAMAR PADA, W.N.- 17	700000	7000	4000	C & D CLASS	3 MONTHS
27	CONSTRUCTION OF AWC BUILDING AT GHULI PALI, W.N.- 18	700000	7000	4000	C & D CLASS	3 MONTHS
28	CONSTRUCTION OF CC ROAD & DRAIN FROM JADUMANI HOUSE TO NALIA, W.N.-18	813643	8136	4000	C & D CLASS	3 MONTHS
29	COMPLETION OF CUMMUNITY CENTER NEAR KIRTAN MANDAP INFRONT OF OLD SADAR THANA , W.NO.01	4,00,000	4000	2000	C & D CLASS	3 MONTHS
30	CONT OF C C ROAD FROM GOURA MISHRA TO MAIN ROAD W NO 1	304131	3041	2000	C & D CLASS	3 MONTHS
31	CONST OF CC ROAD FROM NABIN SABAT TO BISWAMITRA PANDA W NO 1	304131	3041	2000	C & D CLASS	3 MONTHS
32	CONST C C RAOD FROM GANDHI HOUSE TO GOURA MISHRA W NO 1	304131	3041	2000	C & D CLASS	3 MONTHS
33	CONST OF CC ROAD & COVER DRAIN FROM SATRUGHAN SHARMA HOUSE TO ZEERA RIVER, WARD NO.01	381637	3816	2000	C & D CLASS	3 MONTHS
34	CONST. OF C.C. ROAD FROM SAMBHU CHIRGUN TO NILIBANDH PADA, W.NO.1	304131	3041	2000	C & D CLASS	3 MONTHS
35	CONST OF C.C. ROAD FROM BUDHA HOUSE TO SIBA MANDIR, BALITIKRA, W.NO.2	503761	5038	4000	C & D CLASS	3 MONTHS
36	CONST OF CC ROAD NILIBANDH TRANSFERMER TO SHIVA MANDIR, WARD NO 02	304344	3043	2000	C & D CLASS	3 MONTHS
37	CONST OF CC ROAD FROM RABINDRA HOUSE TO SANTANU SAHU HOUSE WARD NO 02	262101	2621	2000	C & D CLASS	3 MONTHS
38	CONST OF C.C. ROAD & DRAIN FROM ASTAMA HOUSE TO PRADIP RAY HOUSE BACK SITE, W.NO.2	347757	3478	2000	C & D CLASS	3 MONTHS
39	CONST. OF BT ROAD MANABANDHA TO DASBAKHRI WARD NO 03	915410	9154	6000	C & D CLASS	3 MONTHS
40	CONST OF CC ROAD & DRAIN AT KULITA PADA WARD NO 03	259825	2598	2000	C & D CLASS	3 MONTHS
41	CONST OF CC ROAD FROM SAW MILL TO KATKIA PADA WARD NO 03	1994301	19943	6000	C & D CLASS	3 MONTHS
42	CONST. OF C.C. ROAD & SLAB AT MANABANDH PADA, W.NO.03	140062	1401	600	C & D CLASS	3 MONTHS
43	CONST. OF C.C. ROAD FROM DR. KALIA DASH HOUSE TO SANTOSH SUBUDHI HOUSE, W.NO.03	303449	3034	2000	C & D CLASS	3 MONTHS
44	CONST OF C.C. ROAD & DRAIN AT KHARRA PADA, W.NO.04	386449	3864	2000	C & D CLASS	3 MONTHS

45	CONST OF C.C. ROAD FROM SUNDAR BEHERA HOUSE TO SANTOSH MEHER HOUSE, W.NO.04	184219	1842	600	C & D CLASS	3 MONTHS
46	CONST OF C.C. ROAD WITH CULVERT FROM MAHAPATRA BABU TO LALINDRA BEHERA HOUSE, W.NO.04	302290	3023	2000	C & D CLASS	3 MONTHS
47	CONST OF C.C. DRAIN WITH SLAB FROM BULU PANIGRAHI HOUSE TO SUBODH HOUSE, W.NO.04	256284	2563	2000	C & D CLASS	3 MONTHS
48	CONST OF C.C. ROAD FROM BIRTIA BABU HOUSE TO HARA MISTRI HOUSE, W.NO.04	125318	1253	600	C & D CLASS	3 MONTHS
49	CONST OF C.C DRAIN AT BACK SIDE OF JYOTI LODGE, W.NO.6	207924	2079	2000	C & D CLASS	3 MONTHS
50	CONST OF C.C. DRAIN FROM HOSPITAL TO DHARAMSALA, W.NO.06	306324	3063	2000	C & D CLASS	3 MONTHS
51	CONST OF BALANCE PORTION OF C.C. ROAD & DRAIN AT GANESH MARG, W.NO.06	329628	3296	2000	C & D CLASS	3 MONTHS
52	CONST OF C.C. ROAD & DRAIN AT NUAPADA , W.NO.07	508970	5090	4000	C & D CLASS	3 MONTHS
53	CONST OF C.C. ROAD FROM SURESH BIBHAR TO BAIRAGI DIP, W.NO.07	125318	1253	600	C & D CLASS	3 MONTHS
54	CONST OF C.C. ROAD & DRAIN FROM MADRASA TO SANJU KIRANA STORE, W.NO.07	402502	4025	4000	C & D CLASS	3 MONTHS
55	CONST OF C.C. ROAD & DRAIN FROM KHAGESWAR TANDI TO SANTOSH TANDI, W.NO.07	669955	6700	4000	C & D CLASS	3 MONTHS
56	CONST OF C.C. DRAIN FROM DURGA BANCHOR HOUSE TO ADIMATA HOUSE, W.NO.08	150653	1507	600	C & D CLASS	3 MONTHS
57	CONST OF C.C. ROAD & DRAIN FROM HAREKRUSHNA HOUSE TO GANESH BEHERA, W.NO.08	259139	2591	2000	C & D CLASS	3 MONTHS
58	RENOVATION OF C.C. ROAD FROM RAMA BAGARTY HOUSE TO LAXMI MAHARANA HOUSE, W.NO.08	214831	2148	2000	C & D CLASS	3 MONTHS
59	RENOVATION OF C.C. ROAD FRON GEORGE HIGH SCHOOL ROAD TO BISHNU PRASAD DASH VIA PRAKASH MAHALA, W.NO.08	268539	2685	2000	C & D CLASS	3 MONTHS
60	CONST OF C.C. DRAIN FROM SUBASH MAHARANA TO ASHOK DUTTA HOUSE, W.NO.08	254769	2548	2000	C & D CLASS	3 MONTHS
61	CONST OF CC DRAIN & SLAB FROM ADIMATA MANDIR TO DEBI PRASAD SA HU HOUSE, W.NO.08	280588	2806	2000	C & D CLASS	3 MONTHS
62	CONST OF CC ROAD & DRAIN FROM SETH HOUSE TO DHANPATI SAHU HOUSE, WARD NO,09	320427	3204	2000	C & D CLASS	3 MONTHS
63	CONST OF CC ROAD FROM RAJESH HOUSE TO GRID, W.NO.9	504372	5044	4000	C & D CLASS	3 MONTHS
64	CONST OF CC DRAIN & CULVERT AT BASU HOUSE TO BHUE HOUSE & PRAKASH HOUSE TO BISWAL HOUSE, W NO.9	502161	5022	4000	C & D CLASS	3 MONTHS
65	CONST OF CC DRAIN AT W.NO.9	218859	2189	2000	C & D CLASS	3 MONTHS
66	CONST OF CC ROAD & DRAIN AT LAXMIDAR BHOI GALI &SANTANU SATPATHI GALI & KALAKANHU HOUSE GALI, W.NO.09	320427	3204	2000	C & D CLASS	3 MONTHS
67	CONST OF C.C ROAD FROM RADHA KRUSHNA MANDIR TO MUNICIPALITY OFFICE FRONT ROAD, W.NO.10	1039320	10393	6000	C & D CLASS	3 MONTHS
68	CONST OF CC. ROAD FROM BANJHI PADA TO BUS STAND, W.NO.11	347843	3478	2000	C & D CLASS	3 MONTHS
69	CONST. OF C.C. ROAD & DRAIN AT BIBHUTI DASH HOUSE, W.NO.11	355660	3557	2000	C & D CLASS	3 MONTHS
70	CONST. OF C.C. DRAIN FROM DHARMENDRA MISHRA HOUSE TO SINDHI BHAWAN, W.NO.11	615978	6160	4000	C & D CLASS	3 MONTHS
71	CONST. OF C.C. ROAD & DRAIN FROM BACK SIDE BUS STAND TO PUNJABI PADA, W.NO.11	589240	5892	4000	C & D CLASS	3 MONTHS
72	PROVISION OF P.H. WORK AT SHOPPING COMPLEX SIDE –A, W.NO.11	320898	3209	2000	C & D CLASS	3 MONTHS
73	PROVISION OF P.H. WORK AT SHOPPING COMPLEX SIDE –B, W.NO.11	320898	3209	2000	C & D CLASS	3 MONTHS
74	CONST. OF C.C. ROAD & DRAIN AT SAROJ MAHAPATRA HOUSE, W.NO.12	347996	3480	2000	C & D CLASS	3 MONTHS

75	CONST. OF C.C. ROAD FROM COLLEGE ROAD TO LAL BIHARI RATH HOUSE, W.NO.12	316121	3161	2000	C & D CLASS	3 MONTHS
76	CONST. OF C.C. ROAD AT BACK SITE OF SAW MILL, W.NO.12	347843	3478	2000	C & D CLASS	3 MONTHS
77	FIXING OF PAVER BLOCK FROM MUKUNDA HOUSE TO RADHAKRUSHNA MANDIR, W.NO.13	934862	9349	4000	C & D CLASS	3 MONTHS
78	FIXING OF PAVER BLOCK FROM PRAKASH PRADHAN HOUSE TO TULU HOUSE, W.NO.13	786223	7862	4000	C & D CLASS	3 MONTHS
79	CONST OF CC DRAIN FROM SANJIB KOHLI HOUSE TO MANOJ DASH HOUSE , WARD NO.13	159269	1593	600	C & D CLASS	3 MONTHS
80	CONST OF CC ROAD & DRAIN FROM STADIUM ROAD TO BHUPATI BEHERA HOUSE WARD NO 13	317245	3172	2000	C & D CLASS	3 MONTHS
81	CONST OF CC ROAD FROM OLD BIKASH SCHOOL TO SUSHIL MAHAPATRA HOUSE WARD NO 13	368438	3684	2000	C & D CLASS	3 MONTHS
82	CONST OF C.C. ROAD & DRAIN FROM COLLEGE ROAD TO MUKUNDA DASH HOUSE, W.NO.13	671024	6710	4000	C & D CLASS	3 MONTHS
83	CONST OF C.C. ROAD FROM RANGA GHAR TO GOBINDPALI ROAD, W.NO.13	606173	6062	4000	C & D CLASS	3 MONTHS
84	FILLING OF BALANCE EARTH AT PANCHAYAT COLLEGE PAHAD PARK, W.NO.13	310635	3106	2000	C & D CLASS	3 MONTHS
85	CONST OF SIDE WALL AT PANCHAYAT COLLEGE PAHAD PARK, W.NO.13	300000	3000	2000	C & D CLASS	3 MONTHS
86	CONST OF C.C. ROAD FROM RAJKUMAR PATI HOUSE TO NANDIGHOS SAHU HOUSE, W.NO.15	507851	5079	4000	C & D CLASS	3 MONTHS
87	CONST. OF C.C. ROAD & DRAIN FROM BALA MALLIK TO NALIA, W.NO.15	232364	2324	2000	C & D CLASS	3 MONTHS
88	CONST. OF C.C. ROAD & DRAIN FROM AWC BUILDING TO NAGBACHA MANDIR AND BALANCE PORTION OF HANUMAN MANDIR ROAD, W.NO.15	567892	5679	4000	C & D CLASS	3 MONTHS
89	CONST OF C.C. ROAD & DRAIN FROM SAHU PADA MANDALI TO HARI BARIK HOUSE, W.NO.15	504895	5049	4000	C & D CLASS	3 MONTHS
90	CONST OF BOUNDARY WALL AT DUMPING YARD, W.NO.15	1206555	12066	6000	C & D CLASS	3 MONTHS
91	CONT. OF C.C. ROAD FROM JHA HOUE TO TUKUNA BISWAL HOUSE, PADHANPALI, W.NO.16	165797	1658	630	C & D CLASS	3 MONTHS
92	CONST OF C.C. ROAD FROM CHHATAR HOUSE TO JAKAB TANDI HOUSE, W.NO.16	128953	1290	630	C & D CLASS	3 MONTHS
93	CONST OF C.C. ROA FROM NEHERU HOUSE TO SAMUEL HOUSE, W.NO.16	128953	1290	630	C & D CLASS	3 MONTHS
94	CONST. OF C.C ROAD FROM BAG HOUSE TO DHIRAJ HOUSE, W.NO.16	308942	3089	2000	C & D CLASS	3 MONTHS
95	CONST. OF C.C. ROAD FROM MILU HOUSE TO SUNL HOUSE, W.NO.16	208706	2087	2000	C & D CLASS	3 MONTHS
96	CONST OF C.C. ROAD INFRONT OF PANCH BIHARI HOUSE, W.NO.16	208706	2087	2000	C & D CLASS	3 MONTHS
97	CONST OF C.C. ROAD FROM CANAL TO PANDA BABU HOUSE, W.NO.16	233055	2331	2000	C & D CLASS	3 MONTHS
98	CONST. OF C.C. DRAIN FROM MILU MOHANTY TO CANAL, W.NO.16	654602	6546	4000	C & D CLASS	3 MONTHS
99	CONST OF C.C. ROAD FROM KRUPA BHOI HOUSE TO ISWARA BAG HOUSE, W.NO.17	286441	2864	2000	C & D CLASS	3 MONTHS
100	CONST OF C.C. ROAD FROM CHAMARPAA HANUMAN MANDIR TO ISWARA CHAMAR HOUSE, W.NO.17	223782	2238	2000	C & D CLASS	3 MONTHS
101	CONT. OF C.C. ROAD FROM BACK ITE OF ANBEDKAR CHOOL TO SURAVI HOUSE, W.NO.17	223782	2238	2000	C & D CLASS	3 MONTHS
102	CONST. OF C.C. ROAD FROM LAXMINARAYAN HOUSE TO UMAKANTA BHOI HOUSE, W.NO.17	528721	5287	4000	C & D CLASS	3 MONTHS
103	CONST. OF C.C. ROAD FROM AMRIT HOUSE TO RAMESH PRADHAN HOUSE, W.NO.17	185516	1855	630	C & D CLASS	3 MONTHS
104	CONT. OF C.C. ROAD FROM HANUMAN MANDIR TO JUBRAJ HOUSE, W.NO.18	104353	1044	630	C & D CLASS	3 MONTHS
105	CONT. OF C.C. ROAD AT BACK SITE OF ROTARY SCHOOL, (BHARATI NAGAR), W.NO.18	347843	3478	2000	C & D CLASS	3 MONTHS
106	CONST OF C.C. ROAD & RAIN FROM NALU MALLICK HOUSE TO NALIA, W.NO.18	797065	7971	4000	C & D CLASS	3 MONTHS

107	CONST OF CC ROAD FROM BARIK BABU HOUSE TO RANJIT HOUSE VIA PHALBALA HOUSE, W.NO.18	226098	2261	2000	C & D CLASS	3 MONTHS
108	CONST OF C.C. ROAD FROM SARALA MANDIR TO DASH BABU HOUSE, W.NO.18	156529	1565	2000	C & D CLASS	3 MONTHS
109	CONST. OF C.C. ROAD FROM GUNARU HOUSE TO SANTOSHI MANDIR BHEDEN CANAL, W.NO.19	478969	4790	2000	C & D CLASS	3 MONTHS
110	CONST. OF C.C. ROAD FROM MIHIRA LENKA HOUSE TO SABAT POLICE HOUSE, W.NO.19	368438	3684	2000	C & D CLASS	3 MONTHS
111	CONST OF CC DRAIN FROM RABI SWAIN HOUSE TO TRILOK SAHU HOUSE, W.NO.19	308566	3086	2000	C & D CLASS	3 MONTHS
112	CONST. OF C.C. ROAD & DRAIN FROM SIBA MANDIR TO TITLAGARH JHUPUDI PADA, W.NO.19	252442	2524	2000	C & D CLASS	3 MONTHS
113	CONST. OF C.C. ROAD FROM MANGI GUPTA TO SANYASI DRIVER VIA RAJA HOUSE, W.NO.19	405281	4053	2000	C & D CLASS	3 MONTHS
114	CONST. OF C.C. ROAD FROM SANTOSH ACHARYA HOUSE TO BHEDEN CANAL, W.NO.19	442125	4421	2000	C & D CLASS	3 MONTHS

1) Bid documents will be available in the website **www.tendersorissa.gov.in**from **21.11.2018 17.00**Hrs to **30.11.2018 by 17.00 Hrs** for online bidding.
2) The bidders must possess compatible Digital Signature Certificate of class II or Class III.
3) Bids must be submitted on **"online"** on or before **30.11.2018 by 17.00 Hrs.**
4) Bids received on "online" shall be opened at. **12.00 Hrs** on **01.12.2018** in the office of the undersigned in the presence of the bidders or their authorized agents who wish to attend. If the office happens to be closed on the date of opening of the bids as specified, the bids will be opened on the next working days at the same time and venue.
5) The Bid document shall contain scan copy of (i) Registration Certificate, (ii) PAN, (iii) Cess Certificate from Dist. Labour office (v) Litigation Certificate (Appendix-A) (vi) Affidavit (Appendix-B), (vii) Experience certificate, as regards similar nature of work Rs.1,000,000.00 in a year (Appendix-C), (viii) List of T & P (Appendix-D), (ix) No Relation Certificate

(Appendix-E) (Appendix and check list are available in DTCN) , Other document required as per DTCN and special condition if any in cover-I

6) Price bid shall be submitted in cover -I of online bidding.
7) Any bidders desirous to avail any facility as per certain circular/ordersof Govt. have to apply for the same in affidavit along with copy of the circular/order.
10) The sealed Bid document shall contain scan copy of (a) Registration certificate (b) PAN, (c) **Experience certificate as regards similar nature of work Rs.10,00,000.00 in a year** (e) Cess certificate from District Labour office and other document required as per DTCN and special condition if any.
11) The authority reserves the right to cancel any or all bids without assigning any reason thereof.

Sd/-

Executive Officer
Bargarh Municipality

BARGARH MUNICIPALITY

BARGARH

DETAILED TENDER CALL NOTICE

I N D E X

1. Bid documents consisting of Specifications, Schedule of Quantities and a set of Terms & Conditions of contract and other necessary Documents can be seen in the website www.tendersorissa.gov.in.

2. Bids must be accompanied with copies of Valid License, Experience Certificate, Clearance Certificate on VAT-612, PAN,

3. The Bidder must possess Compatible Digital Signature Certificate (DSC) of Appropriate Class.

4. Bids received on "on-line" shall be opened in the office of the Executive Officer Bargarh Municipality, Bargarh in the presence of bidders who wish to attend. Bidders who participated in the bid can witness the opening of bids after logging on to the site through their DSC. If the office happens to be closed on the stipulated date of opening of Bids as specified, the Bids will be opened on the next working day.

5.The packet superscribing **"Tender for the work "** containing EMD & Cost of Bid Document in online mode, Self attested Photo copies of Valid Contract License, Experience Certificate, Clearance Certificate on VAT-612, PAN, Valid EPF Registration Certificate alongwith the copy of the latest Challan of E.P.F , Solvency Certificate, Annual Turn Over and other relevant documents as specified in the Bid document through Registered post / Speed post only as specified above. The undersigned will not be held any way responsible for any kind of postal delay. Non- receipt of EMD, cost of Bid Document & self attested of other relevant documents as specified above within the stipulated date will lead to rejection of the Bid.

6. The bidder should have executed at least one **similar nature of building work** of value as specified above in a Single Agreement during Last Three Financial Years and also have to produce necessary certificate from the concerned client. Experience Certificate furnished below the rank of Executive Engineer of Government Department / Public Sector Undertaking will not be accepted. The original **documents** in support of the Experience Certificate submitted by the bidder will be verified before opening of the Financial Bid.

7. Experience Certificate from any Private Organisation will not be entertained.

8. Application from joint venture is not acceptable.

9. Other details can be seen in the Bidding Documents.

10. The authority reserves right to cancel any or all Bids without assigning any reason thereof.

11. Bidders are to submit only original BoQ uploaded by publisher after entering the relevant fields without any alteration/deletion/modification. Multiple BoQ submission shall lead to cancellation of Bid.

12. In case of item rate tender, bidders shall fill in their rates other than zero value in the specified cells.

Sd/-
Executive Officer
Bargarh Municipality

Instruction to Bidders
For
e-procurement

(Relevant clauses in the DTCN / Bid document shall be superseded)

A.GENERAL

1. NOTICE INVITING BID AND OBTAINING BID DOCUMENTS:

1.1. The Executive Officer Bargarh Municipality is competent to invite tender of composite bids. He will also nominate his representative who will deal with all matters relating to the bids in the invitation of bids.

1.2. For composite tender, estimated cost of each component should be clearly indicated in addition to combined estimated cost put to tender. The eligibility of bidders will correspond to the combined estimated cost of different components put to tender.

1.3. The contractor shall comply with the provisions of the Apprentices Act 1961, and the rules / amendments issued there under from time to time. If he fails to do so, it will be considered a breach of the contract and the Competent Authority may at his discretion without prejudice to any other right or remedy available under law, cancel the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation of the provisions of the said Act by him.

1.4. The contractor shall be deemed to have satisfied himself as to the correctness and sufficiency of the Tender and of the rates and prices quoted in the Bill of Quantities, all of which shall, except in so far as it is otherwise provided in the Contract, cover all his obligations under the Contract (including those in respect of the supply of goods, materials, plant & services or of contingencies for which there is a Provisional Sum) and all matters and things necessary for the proper execution and completion of the work and the remedying of any defects therein.

1.5. The successful bidder shall complete the works by the intended completion date specified in the Contract data.

1.6. Throughout these bidding documents, the terms '' bid and tender'' EMD and Bid Security and their derivatives (bidder / tenderer, bidding / tendering, etc.) are synonymous.

1.7. In case the tender for composite work includes in addition to main work / building work all other ancillary works such as sanitary and water supply installations, drainage installation, electrical work, horticulture work, roads and paths and gate works in dams and canals etc. , the bidder apart from being a registered civil Contractor of appropriate class must associate himself with agencies of appropriate class those who is eligible to tender for sanitary and water supply drainage, electrical and horticulture works in the composite tender. Intending purchasers are required to produce any documents viz. copy of Registration, Valid VAT clearance certificate etc, at the time of purchase of tender documents. Furnishing copy of such documents is mandatory along with the tender documents otherwise his / her bid shall be declared as non-responsive and thus liable for rejection. The Bidder is required to attend the officer inviting the bid for verification of original documents within three days of opening the bid.

1.8. PARTICIPATING IN THE BID IN THE E-PROCUREMENT PORTAL:

The Contractor/Bidder intending to participate in the bid is required to register in the Portal with some information about the firm/Contractor. This is a onetime activity for registering in Portal. During registration, the contractor has to attach a Digital Signature Certificate (DSC) to his / her unique user ID. The DSC used must be of appropriate class (Class II or Class III) issued from a registered Certifying Authority such as n-Code, Sify, TCS, MTNL etc.

1.8.1. To log on to the portal the Contractor/Bidder is required to type his/her *username* and password. *The* system *will again ask to* select the DSC and confirm it with the password of DSC. For each login, a user's DSC will be validated against its date of validity and also against the Certificate Revocation List (CRL) of respective CAs stored in system database. The system checks the unique ID, password and DSC combination and authenticates the login process for use of portal.

1.8.2. The tender documents uploaded by the Tender Inviting Officer in the website ww w .tenders o rissa .g ov.in will appear in the section of "Upcoming Tender" before the due date of tender sale. Once the due date has arrived, the tender will move to "Active Tender" Section of the *homepage*. Only a small notification will be published in the newspaper specifying the work details along with mention of the specific website for details. The publication of the tender will be for specific period of time till the last date of submission of bids as mentioned in the 'Invitation for Bid' after which the same will be removed from the list of Active tenders. Any bidder can view or down load the bid documents from the web site.

1.8.3. ***DELETED.***

1.8.4. If the software application has the provision of payment of cost of tender document through payment gateways of *authorized* bankers by directly debiting the account of the bidders, bidders will be required to avail on-line payment.

1.9. The bidder intending to participate in the bid on-line shall prepare the demand draft towards cost of bid as per IFB and up load the scanned copy of the draft to the portal against the bid where he is participating and the original shall be deposited to the tender inviting officer with in the **period** specified in the "Invitation For Bid". If the Bidder fails to deposit the original demand draft towards cost of bid with in the stipulated time his bid shall be rejected and action as per prevailing rule shall be taken.

1.10. ***DELETED.***

1.11. In the case of any failure, malfunction, or breakdown of the electronic system used during the e-procurement process, the tender inviting officer shall not accept any responsibility for failures or breakdowns other than in those systems strictly within their own control.

1.12. Any third party/company/person under a service contract for operation of e-procurement system in the State or his/their subsidiaries or their parent companies shall be ineligible to participate in the procurement processes that are undertaken through the e-procurement system irrespective of who operates the system.

2. ELIGIBLE BIDDERS:

2.1. This Bid is open to **all** Contractors of the class mentioned in the *Invitation for Bids* registered with BARGARH MUNICIPALITY / State Governments and Contractors of Equivalent Grade / Class Registered with Central Government / MES / Railways for execution of civil works. The Bidders are required to enclose the proof of registration from the registering authority along with the Bid subject only to the registration in the portal using his/her DSC for on-line bids.

2.2. All bidders *shall* provide a statement that the bidder is neither associated, nor has been associated, directly or indirectly, with the Consultant or any other entity that has prepared the design, specifications, and other documents for the Project or being proposed as Project Manager for the Contract. A firm that has been engaged by the Engineer-in-Charge to provide consulting services for the preparation or supervision of the works, and any of its affiliates shall not be eligible to bid.

3. QUALIFICATION CRITERIA:

3.1. ***For submission of Bids through the E-Procurement Portal, the bidder shall up-load the scanned copy/copies of document listed under clause 3.2 in prescribed format wherever warranted in support of qualification information. The on line bidder shall have to produce the original documents in support of the scanned copies and statements uploaded in the portal on demand by the Employer prior to award of contract, failing which action as per Cl. 4.8 shall be initiated.***

3.2. The bid shall include following information and documents.

a. Copy of valid contractor's registration certificate, PAN card, VAT clearance certificate, EPF Registration certificate and should accompany the technical bid.

b. Copies of original documents defining the constitution or legal status, place of registration, and principal place of business.

c. Major construction equipment to be deployed to carry out the Contract. The contractors are required to furnish evidence of ownership of principal machineries / equipments for only those machineries / equipments asked for in the tender documents

d. The contractor shall furnish ownership documents for those machineries which he is planning to deploy for the tendered work.

e. The contractor intending to use/lease equipments/machineries are required to furnish proof of ownership from the company/persons providing equipment/lease deed and duration of such contract.

f. The contractor should furnish required valid license for executing the water supply/sanitary engineering works/electrical installation works/mechanical works/ building electrification works and should have executed similar water supply/sanitary engineering works for a minimum amount as indicated in Contract data in any one year.

g. Details of work under progress

h. Details of work for which has been successfully completed in last three years.

i. The contractor should furnish Bank Solvency certificate for appropriate amount as mentioned in the detailed tender call notice from a Nationalized Bank & Certified copy of Balance Sheet for appropriate years having minimum turn over of appropriate amount as mentioned in the detailed tender call notice.

j. The contractor should furnish the Experience Certificate of appropriate work of appropriate amount as mentioned in the detailed tender call notice.

3.4 ***The Bidders are subject to be disqualified if they have:***

a. Made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/or

b. Record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc.; and/or

c. Participated in the previous bidding for the same work and had quoted unreasonable prices and could not furnish rational justification to the Engineer-in-Charge.

d. Indulged in unlawful & corrupt means in obtaining bids.

e. Being black listed/their registrations by the competent authority.

f. Bidders are to submit only original BOQ uploaded by publisher after entering the relevant fields without any alteration/deletion/modification. Multiple BOQ submission shall lead to cancellation of Bid.

g. In case of item rate tender bidders shall fill in their rates other than zero value in the specified cells. In the percentage rate tender the bidder quoting zero value is valid and will be taken as schedule of rates.

4. **ONE BID PER BIDDER:**

4.1. Each bidder shall submit only one bid for one package. A bid is said to be responsive if accompanied by cost of bid document and appropriate bid security. The system shall consider only the last bid submitted through the E-Procurement portal.

5. COST OF BIDDING:

5.1 The bidder shall bear all costs associated with the preparation and submission of his bid, and the Engineer-in-Charge will in no case be responsible and liable for those costs.

5.2 All the rates and prices in the bid shall cover all taxes, viz. Central or State Sales Tax, Octroi, Value Added Tax, Cess or any other local taxes, ferry, tollage charges and royalties and any other charges.

5.3 The rate of royalties and taxes prevailing on the date of measurement shall be considered while making deductions in the bills.

5.4 The successful bidder shall make his own arrangement for all materials unless otherwise specified in the conditions of contract.

6. SITE VISIT:

6.1. Bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders as to the nature of the ground and sub-soil (so far as practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. A Bidder shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charges consequent on any misunderstanding or otherwise shall be allowed. The Bidder shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a bid by a bidder implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which tools and plant, etc. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of work.

6.2. The bidder, in preparing the bid, shall rely on site Investigation Reports referred to in the Contract Data, supplemented by any information available to the bidder.

6.3. The Officer inviting the bid / Engineer-in-Charge will clarify queries on the Contract Data on requisition by the intending Bidder. The bidder may ask question in the e-procurement portal using his DSC; provided the questions are raised before the date mentioned in the home page under critical dates.

B. BIDDING DOCUMENTS

7. GENERAL INSTRUCTIONS:

7.1 The description of the work is as mentioned under Invitation for Bid.

7.2 The bids uploaded by the Tender Inviting Officer shall consist of general arrangements drawings or typical sections of the project. Bidder may down load these drawings and take out the print for detail study. Any other drawings and documents pertaining to the works available with the officer inviting the Bid will be open for inspection by the bidders. The bidder is required to down-load all the documents including the drawings for preparation of his bid. It is not necessary on the part of the Bidder to up- load the drawings other Bid documents (after signing) while up-loading his bid. He is required to up load documents related to his qualification information and Bill of Quantities duly filled in. It is assumed that while participating in the bid, the bidder has referred to all the drawings and documents uploaded by the Officer Inviting the Bids. Seeking any revision of rates or backing out of the bid claiming for not having referred to any or all documents provided in the Bid document by the Officer Inviting the Bids will be construed as plea to disrupt the bidding process and in such cases the bid security shall be forfeited.

7.3 The bidder is expected to examine carefully all instructions, conditions of contract, contract data, forms, terms, and technical specifications, bill of quantities, forms, Annexes and drawings in the Bid Document. Failure to comply with the requirements of Bid Documents shall be at the bidder's own risk.

8. CLARIFICATION OF BIDDING DOCUMENTS:

8.1. Bid documents consisting of drawings, plans, specifications, the schedule of quantities of the various items of work to be done and the set of terms & conditions of contract to be complied with by the contractor who intends to bid and other necessary Documents can be seen in the office of the officer inviting the Bid during office hours everyday except on Sundays & Public Holidays till last date of sale of tender paper.

8.2. No paper copy **of** the **bid shall be sold.**

8.3. The Contract Data to bid shall be filled and completed in the office of Officer inviting bid before issue of bid **documents**. If the documents are issued to the intending bidder without having been so filled in & completed, he shall request the officer inviting the bid to have this done before he completes and delivers his bid.

8.4. The bidder can seek **clarification on the bids** which he received earlier than 15 days prior to the deadline for submission of bids. The Employer's response will be forwarded through the e-mail ID of the enquirer.

8.5. ***PRE-BID MEETING: DELETED***

9. AMENDMENT OF BIDDING DOCUMENTS:

9.1. Before **the** deadline for submission of bids, the officer inviting the Bid may modify the bidding documents by issuing addenda.

9.2. Any **addendum** thus issued shall be part of the bidding documents and shall be notified in the website ww w . tend ersoriss a .gov_ in / notice board and through paper publication.

9.3. To give **prospective** bidders reasonable time in which to take an addendum into account in preparing their bids, the Executive Officer Bargarh Municipality may, at his discretion, extend as necessary the dead line for submission of bids.

C. PREPARATION OF BIDS

10. LANGUAGE OF THE BID:

10.1. All documents relating to the Bid shall be in the English language. Bids submitted in any other language shall be summarily rejected.

11. DOCUMENTS COMPRISING THE BID:

11.1. Following documents will be deemed to be part of the bid even if not submitted with the bid. (i) Tender Call Notice / Invitation for Bid (IFB)

(ii) Instructions to bidders (ITB)
(iii) Conditions of Contract
(iv) Contract Data
(v) Specifications
(vi) Drawings

11.1.1. All the volumes/documents shall be provided in the portal by the Officer inviting the bid. The bidder shall carefully go through the document and prepare the required documents and up load the scanned documents in Portable Document Format to the portal in the designated locations of Technical Bid. He will fill up the rates of items or percentage in the BOQ down loaded for the work in designated Cell and up-load the same in designated locations of Financial Bid. Submission of document shall be effected by using DSC of appropriate class.

A. **Cost** of **"Bid document"** & **"Bid Security"** shall comprise
(i) Cost of Bid Document
(ii) EMD/Bid Security in prescribed shape.

B. **"Technical Bid"** shall comprise.
(i) Declaration as per Bid document.
(ii) Qualification Information and supporting documents, (iii) Certificates, undertakings, affidavits,

C. **"Financial Bid "**shall comprise.
(i) Priced Bill of Quantities

12. PROPOSAL BY THE BIDDER:

12.1. In the E-Procurement Portal, an intelligent Bill of Quantity in Microsoft Excel format shall be made available to the bidder.

12.2. For **Item** rate tenders, the bidder shall fill in rates in figures and should not leave any cell blank. The line item total in words and the total amount shall be calculated by the system and shall be visible to the bidder.

12.3. In case of **percentage rate** tender, the bidder will only fill in the designated cell maximum up to one decimal point and activate "less" or "excess" to indicate how much his price offer is excess or less than the estimated amount.

12.4. The **bidder** shall bid for the whole works as described in the Bill of Quantities.

12.5. Bidders **shall** submit offers that fully comply with the requirements of the bidding documents, including the Conditions **of** Contract basic technical design as indicated in the drawing and specification. **Conditional offer or alternative offers will not be considered** in the process of bid evaluation.

12.6. All duties, taxes, including VAT and other levies payable by the contractor under the contract, or for any other **cause** shall be included in the rates, prices submitted by the bidder. Sales-tax,

purchase tax, turnover tax or any other tax on material in respect of this contract shall be payable by the Contractor and Government will not entertain any claim whatsoever in respect of the same.

12.7. In the case of any bid where unit rate of any item/items appear unrealistic, such bid will be **considered** as unbalanced and in case the bidder is unable to provide satisfactory explanation such a tender is liable to be disqualified and rejected.

12.8. DELETED

12.9. DELETED

12.10. DELETED

12.11. DELETED

12.12. DELETED

12.13. The contractor shall be deemed to have satisfied himself as to the correctness and sufficiency of the Tender and of the rates and prices stated in the Bill of Quantities, all of which shall, except in so far as it is otherwise provided in the Contract, cover all his obligations under the Contract (including those in respect of the supply of goods, materials, plant & services or of contingencies for which there is a **Provisional** Sum) and all matters and things necessary for the proper execution and completion of the work and the remedying of any defects therein.

12.14. The **contractor shall** conform in all respects, by giving all notices and paying all fees, with the provisions of:

(i) Any national or State Statue, Ordinance, or other Law, or any regulation, or bye-law of any local or other duly constituted authority in relation to the execution and completion of the works and remedying of any defects therein, and

(ii) The rules and regulations of all public bodies and companies whose property rights are affected or may be affected in any way by the works.

12.15. *FOR **COMPOSITE** BIDS*: **DELETED.**

13. CURRENCIES OF BID AND PAYMENT:

13.1 The unit rates and the prices shall be quoted by the bidder entirely in Indian Rupees. All payments shall be made in Indian Rupees.

14. VALIDITY:

14.1. Bids shall remain valid for a period not less than **120 days** or the period mentioned in the Contract Data, after the deadline date for submission of bid as specified in the notice inviting the Bids. A Bid valid for a shorter period shall be rejected by the Engineer-in-charge as non-responsive.

14.2. In exceptional circumstances, prior to expiry of the original time limit, the Officer inviting the Bid may request the bidders to extend the period of validity for a specified additional period. The request and the bidders' responses shall be made in writing or by cable or by e-mail. A bidder may refuse the request without any risk of forfeiture of his bid security.

14.3. A bidder agreeing to the request will not be required or permitted to modify his bid but will be required to extend the validity of his bid security for the period of the extension.

15. EMD/BID SECURITY:

15.1 The Bidder shall furnish, as part of his Bid, the EMD/ Bid security for the amount mentioned under Contract Data. The bidder shall scan all the written pages of the bid security and up load the same to the system in designated place. The on line bidder shall deposit the original copy of the 'bid security' within the specified period mentioned in the contract data (after receipt date of bid but before opening date & time of bid) with the "Officer inviting the Bids". The Officer inviting the bids shall not be responsible for any postal delay and / or non- receipt of the original copy of the bid security. Non-submission of bid security with in the designated period shall debar the bidder from participating in the on-line bidding system and his portal registration shall be cancelled. His name shall also be

informed to the registering authority for cancellation of his registration. The bid security shall be in the favour of officer as named in Contract Data and may be in one of the following forms:

15.2 The Bid shall be declared non-responsive and shall be rejected if submitted without an acceptable EMD/Bid Security.

15.3 Combined bid security for more than one work is not acceptable.

15.4 **DELETED**

15.5 The bid Security of unsuccessful bidders will be returned within 15 days of the end of the validity period specified in Sub-Clause 14.1.

15.6 The E M D / Bid Security of the successful bidder will be the part of 2% initial security deposit at the time of signing the agreement.

15.7 The Bid Security may be forfeited

a. If the bidder withdraws the bid after opening of the bid but within the period of validity.

b. If the Bidder seeks any revision of rates or backs out of the bid claiming for not having referred to any or all documents provided in the Bid by the Officer Inviting the Bids.

c. If the Bidder fails to submit the original documents with in the stipulated date pursuant to clause 3.1,

d. In the case of a successful bidder, if the bidder fails within the specified time limit to

(i) Sign the Agreement; or

(ii) Furnish the required Performance Security including additional performance security if any.

16. FORMAT AND SIGNING OF BID:

16.1. The bidder can download the tender of his choice and save it in his system and undertake the necessary preparatory work off-line and upload the completed tender at his convenience within the final date and time of submission. The bidder shall only submit single copy of the required documents and Price Bid in the portal. In the Financial bid, the bidder can not leave any figure blank. He has to only write the figures, the words will be self-generated. The Bidders are advised to up-load the completed Bid document well ahead of the last date & time of receipt to avoid any last moment problem of power failures etc.

16.2. The Bidder shall go through the Bid carefully and list the documents those are asked for submission. He shall prepare all documents including cost of Bid Document, Bid Security, Declaration form, price bid etc and store in the system.

16.3. The bidder shall log on to the portal with his DSC and move to the desired tender for up-loading the documents in appropriate place one by one simultaneously checking the documents. Once the Bidder makes sure that all the documents have been up-loaded in appropriate place, he clicks the submit button to submit the bid to the portal.

16.3.1. The bids once submitted can not be retrieved or corrected. Tender cannot be pre-opened and cannot be submitted after due date and time. Therefore, only after satisfying that all the documents have been uploaded, the Bidder should activate submit button.

16.3.2. In the e-procurement process, each process is time stamped. The system can identify each individual who has entered into the portal for any bid and the time of entering into the portal.

16.3.3. The Bidder should ensure clarity of the document up-loaded by him to the portal, especially the scanned documents by taking out sample printing. Non-submission of legible documents may render the bid non-responsive. However, the Officer inviting the Bids if so desires , can ask for legible copies or original copies for verification within a stipulated period provided such document in no way alters the Bidder's price bid. If the Bidder fails to submit the original documents with in the stipulated date, his bid security shall be forfeited.

D. SUBMISSION OF BIDS

17. SECURITY OF BID SUBMISSION:

17.1. All bid data uploaded by the Bidder to the portal will be encrypted by the DSC of the opener(s). The system shall require all the mandatory forms and fields filled up by the contractor during the process of submission of the bid/tender.

17.2. The Bid shall be received in encrypted format by the system which can only be decrypted / opened by the authorized openers only on or after the due date and time.

18. DEADLINE FOR SUBMISSION OF THE BIDS :

18.1. The online bidding will remain active till the last date and time of the bid submission. Once the date and time (Server date and time) is over, the bidder will not be able to submit the bid. The date & time of bid submission shall remain unaltered even if the specified date for the submission of bids declared a holiday for the Officer inviting the Bid.

18.2. The officer inviting the bid may extend the deadline for submission of bids by issuing an amendment in accordance with Sub-Clause 9.3, in which case all rights and obligations of the officer inviting the bid & Engineer-in-Charge and the bidders previously subject to the original deadline will then be subject to the new deadline.

19. LATE BIDS :

19.1. The system shall reject submission of any bid through portal after closure of the receipt time. For all purpose the server time displayed in the e-procurement portal shall be the time to be followed by the bidder and concerned officers.

20. MODIFICATION AND WITHDRAWAL OF BIDS :

20.1. In the E-Procurement Portal, it is allowed to modify the bid any number of times before the final date and time of submission. The bidder shall have to log on to the system and resubmit the documents as asked for by the system including the price bid. In doing so, the bids already submitted by the bidder will be removed automatically from the system and the latest bid only will be admitted. But the bidder should avoid modification of bid at the last moment to avoid system failure or malfunction of internet or traffic jam or power failure. If the bidder fails to submit his modified bids with in the designated time of receipt, the bid already in the system shall be taken for evaluation.

20.2. In the E-Procurement Portal, with-drawl of bid is allowed. But in such case he has to write a letter with appropriate reasons for his withdrawal addressed to the Officer inviting the bid and up load the scanned document to portal in the respective bid before the closure of receipt of the bid. The System shall not allow any with drawal after expiry of the closure time of the bid.

20.3 The protected bill of quantities (BOQ) uploaded by the procurement officer/publisher for the bid is the authentic BOQ. Any alteration or deletion or manipulation in BOQ shall lead to cancellation of bid.

E. OPENING AND EVALUATION

21. OPENING OF THE BID:

21.1. Bid opening dates are specified during tender creation or can be extended vide corrigendum. These dates are available in TCN/ IFB, tender document as well as the home page of portal. Bid opening can be done by the authorized users which are defined during the tender publication / approval stage. The bids are encrypted using there public keys and can be decrypted only on or after the Bid Opening due date. The bid openers private key will be required to open the bids and all the openers have to log on to the portal during that time.

21.1.1. The bidders who participated in the on line bidding can witness opening of the bid from any system logging on to the portal with the DSC away from opening place. Contractors are not required to be present during the bid opening at the opening location if they so desire.

21.1.2. Each activity is date and time stamped with **user** details. For time stamping, server time is taken as the reference.

21.2. In the event of the specified date of bid opening being declared a holiday for the Officer inviting the Bid/Engineer-in-Charge, the bids will be opened at the appointed time on the next working day.

21.3. In case bids are invited for more than one package, the order for opening of the “Bid” shall be that in which they appear in the “Invitation for Bid”.

21.4. During bid opening, the covers containing original demand draft towards Cost of bid in the form specified in the Invitation for Bid, received after last date of receipt of bid and before opening of the bids shall be opened and declared. The original copy of the Bid Security in the form, amount and period of validity in conformity with clause 15 shall be checked and announced. The list of bidders who have submitted the original copy of the cost of Bid and Bid Security shall be prepared and announced.

21.4.1. Combined bid security for more than one work is not acceptable. If the bid security furnished does not conform to the amount and validity period as specified in clause 15 and has not been furnished in the form specified in Clause 15, the bid will be declared non-responsive and rejected.

21.5. The Bid openers; who have been pre-defined shall log on to the portal with their respective DSC. Unless all the Officers who have been declared as Opening officers, log on the portal with their DSC the Tender can not be opened.

21.5.1. The Opening Officers will systematically check the scanned demand draft towards cost of the bid document and the scanned document of Bid security with that of the original submitted. If found in order, they will continue opening of all other documents in the system provided under Technical Bid.

21.5.2. Subject to confirmation of the bid security by the issuing institutions, the bids accompanied with appropriate bid cost and valid bid security will be taken up for evaluation with respect to the qualification Information and other information furnished in Part - I pursuant to Clause 3.

21.5.3. After receipt of confirmation of the bid security, the bidder will be asked in writing (usually

within 10 days of opening of the Technical Bid) to clarify or modify his technical bid, if necessary, with respect to any rectifiable defects. But on account of such modification, there should not be any change in “Financial Bid”.

1.5.4. The bidders will respond in not more than 7 days of issue of the clarification letter, which will also indicate the date, time and venue of opening of the Financial Bid .

21.5.5. Immediately (usually within 3 or 4 days), on receipt of these clarifications, the Evaluating Officers; predefined in the system for the bid, will finalize the list of responsive bidders. They will log on to the site with their DSC and record their comments on the Technical evaluation page in the system. The Officer Inviting the Bid if also the accepting authority, shall log on to the system with his digital signature and check the technical evaluation. He can either accept or pass on to the evaluating officers for re-evaluation. Upon acceptance of technical evaluation by the Accepting authority in the system, the system shall automatically generate letter to all the responsive bidders and the system shall forward the letter to all the responsive bidder that their technical bid has been evaluated responsive with respect to the data/information furnished by him and the letter shall also intimate him the date & time of opening of financial bid. The system shall also inform the non-responsive bidders in their e-mail ID that their bid has been found non-responsive.

21.6. The Technical evaluation of all the bids will be taken up as per the information furnished by the Bidders. But evaluation of the bid does not exonerate the bidders from checking their original documents and if at a later date the bidder is found to have misled the evaluation through wrong information, action as per clause no 30 shall be taken against the bidder/contractor.

21.7. After **technical** evaluation of the bidders and selection of the qualified bidders, the financial bids of the technically qualified bidders shall be opened on the due date of opening. Members of the bid opening committee log on to the system in sequence and open the financial bids for the technically qualified bidders. The opening of financial bid by the opening officer using their DSC shall decrypt the financial bids.

21.7.1. Opening of price bid and evaluation of lowest bidder is subject to satisfaction of other qualification information asked for in the bid pursuant to Clause-3.

21.7.2. The Officer inviting Bid shall ensure that all the Bidders are individually intimated about the date, time & venue of opening of the financial bid along with the responsiveness of the Technical Bid.

21.7.3. The Financial Bid will be opened on the notified date & time in the presence of bidders or their authorized representative who wish to be present.

21.7.4. At the time of opening of “Financial Bid”, the names of the bidders whose bids were found responsive in accordance with Sub-Clause 24.1 will be announced. The bids of only those bidders will be opened. The remaining bids will be rejected.

21.7.5. The responsive bidders’ names, the bid prices, the item wise rates the total amount of each item, any discounts and withdrawals, and such other details as the officer inviting the tender may consider appropriate, will be announced by him or his authorized representatives at the opening.

21.7.6. Special conditions and/or rebate/discount offer if any uploaded to the system shall be declared and recorded first.

21.7.7. The Financial bid of the bidders shall be opened one by one by the designated officers. The system shall auto-generate the Comparative statement.

21.7.8. The Bidder can witness the principal activities and view the documents/summary reports for that particular work by logging on to the portal with his DSC from any where.

22. PROCESS TO BE CONFIDENTIAL:

22.1. Information relating to the examination, clarification, evaluation, and comparison of bids and recommendations for the award of a contract shall not be disclosed to bidders or any other persons not officially concerned with such process until the award to the successful bidder has been announced. Any effort by a bidder to influence the officer inviting the bid, processing of bids or award decisions may result in the rejection of his bid.

23. CLARIFICATION OF BIDS:

23.1 To assist in the examination, evaluation, and comparison of bids, the officer inviting the bid may, at his discretion, ask any bidder for clarification of his rates including breakdowns of unit rates. The request for clarification and the response shall be in writing or by cable or by e-mail, but no change in the bid price or substance of the bid shall be sought, offered.

23.2 Subject to sub-clause 23.1, no bidder shall contact the officer inviting the bid on any matter relating to his bid from the time of the opening to the time the contract is awarded. If the bidder wishes to bring additional information to the notice of the officer inviting the bid, it should do so in writing.

24. EXAMINATION OF BIDS AND DETERMINATION OF RESPONSIVENESS:

24.1. D u r i n g the detailed evaluation of "Technical Bids", the officer inviting the bid will determine whether each bid:-

a.Whether the Bid security is confirmed by issuing institution/bank. b. Has submitted legible documents for evaluation

c. Meets the eligibility criteria defined in *Clause 3* and;

d. Is substantially responsive to the requirements of the bidding documents.

24.2. During the detailed evaluation of the "Financial Bid", the responsiveness of the bids will be further **determined** with respect to the remaining bid conditions, i.e., priced bill of quantities, technical specifications and drawings.

24.3. A **substantially** responsive "Financial Bids" is one, which conforms to all the terms, conditions, and specifications of the bidding documents, without material deviation or reservation. A material deviation or reservation is one

(a) Which affects in any substantial way the scope, quality, or performance of the works.

(b) Which limits in any substantial way, inconsistent with the bidding documents, the right of the officer inviting the bid or the bidder's obligations under the contract or

(c) Whose rectification would affect unfairly the competitive position of other bidders presenting substantially responsive bids.

24.4. If a "**Financial** Bid" is not substantially responsive, it will be rejected by the officer inviting the bid, and may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation or reservation.

24.5. On opening of the price bid the system shall arrange the financial bids in order of their value (L1 first, followed by L2, L3 ….) for subsequent evaluation. The evaluation status (Sheet) will be visible to all the participating bidders after opening on their respective logins. Each activity is recorded in the system with date and time stamping.

25. EVALUATION OF BIDS: DELETED

F. AWARD OF CONTRACT

26. AWARD CRITERIA:

26.1. The officer inviting the bid will award the contract to the bidder whose bid has been determined to be substantially responsive to the bidding documents and who has offered the lowest evaluated price.

26.2. On acceptance of the tender, the Contractor shall name in writing his accredited representative(s) who would be responsible for taking instructions from the Engineer-in-Charge.

26.3. Competent Authority of Bargarh Municipality reserves the right of accepting the whole or any part of the bid and the bidder shall be bound to perform the same at the rate quoted.

26.4. DELETED.

27. OPTIONS IF THE BIDDER BACKS OUT FROM BIDDING PROCESS :

27.1 In case the 1st lowest Bidder or even the next lowest Bidder withdraw in series one by one, thereby facilitating a particular Bidder for award, then they shall be penalized with adequate disincentives with forfeiture of EMD/Bid Security unless adequate justification for such back out is furnished. Appropriate action for blacklisting the bidder shall also be taken apart from dis-incentivizing the bidder.

27.2 The bidding process shall be deemed to be complete till the date of issue of letter of acceptance. If the bidder fails to sign the agreement with in the stipulated period mentioned under clause 29.2, his bid security shall stand forfeited.

28. RIGHT TO ACCEPT OR REJECT ANY OR ALL BIDS:

28.1 The competent authority does not bind him to accept the lowest or any other tender and reserves to him the authority to reject any or all the tenders received without assigning any reason.

28.2 All bids in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the bidder shall be summarily rejected.

29. NOTIFICATION OF AWARD AND SIGNING OF AGREEMENT:

29.1. In the E-Procurement Portal, the system shall generate the template of award letter and the Officer Inviting the Bid shall mention the amount of Performance Security and additional security required to be furnished in the letter and intimate the bidders in his e-mail ID. The issue of the letter of acceptance shall be treated as closure of the Bid process and commencement of the contract.

29.2. The bidder shall with in 15 days of issue of letter of acceptance, furnish the Performance security & additional Performance security (if any) in the prescribed form & the work programme & shall sign the agreement in prescribed format, failing which the Executive Officer Bargarh Municipality shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the Bid Security absolutely**.** The agreement will incorporate all agreements between the officer inviting the bid and the successful bidder.

29.2.1. Following documents shall form part of the agreement.

a. The notice inviting bid, all the documents including additional conditions, specifications and drawings, if any, forming the bid as issued at the time of invitation of bid and acceptance thereof together with any correspondence & documents leading thereto & required amount of performance security including additional performance security as per sub clause 29.2 hereof.

b. Standard Bid Document of Bargarh Municipality.

29.3. The letter to proceed with the work shall be issued by the Municipal Engineer only after signing of the agreement. The notification of award will constitute the formation of the contract subject only to the furnishing of performance security and additional performance security in accordance with the provisions of the agreement.

29.4. On acceptance of the composite bids by the competent authority the letter of award will be issued by the Executive Officer Bargarh Municipality of the major component **of the work** making it clear in the letter of award that the contractor will have to execute separate agreements for different components of work with the concerned officers.

29.5. Upon signing of the agreement by the successful bidder, the Executive Oficer Bargarh Municipality will promptly notify the other bidders that their bids have been unsuccessful.

30. CORRUPT OR FRAUDULENT PRACTICES:

30.1. The Executive Oficer Bargarh Municipality will reject a proposal for award if he determines that the bidder recommended for award has been engaged in corrupt or fraudulent practices in competing for the contract in question. He will report to the Officer Inviting Bid / next higher authority.

Canvassing whether directly or indirectly, in connection with tenders is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable for rejection.

GENERAL CONDITION

1.	Validity of Offer	:	The tender submitted by the tenderer shall remain valid for acceptance for a period of 120 days (One hundred twenty) days from the date of opening of tender.
2.	Scope of Supply	:	Supply of Cement and Steel of ISI brand adhering to IS specification shall be the responsibility of the contractor and the same will be used in the construction is the supervision of the Municipal Engineer.
3.	Measurement of reinforcement steel	:	Measurement of reinforcement steel will be done as per ISI standard weight. Nothing extra will be paid for rolling margin.
4.	Testing		All cost of mandatory testing of bricks, chips, sand, concrete cubes, metals compaction, Moorum compaction WMM compaction, BM & SDBC testing and other construction materials etc. will be borne by the Contractor.
5.	Agreement		On acceptance of tender, the successful tenderer will have to execute agreement with latest addition and alternation made till the date of opening of the tender paper in non-judicial stamp paper of `100.00 (Rupees one hundred) only and six cartridge papers, which is to be given by the tenderer to the Municipal Engineer of Bargarh Municipality..
6.	Arrangement of Water And power		The Contractor shall have to arrange water and power himself so as to execute the work as per time schedule. Nothing extra will be paid on this account.
7.	Approach to site		The Contractor has to make his own arrangement for approach road to the work site.
8.	consumption of cement		The consumption of cement will be calculated as per Government of Orissa Analysis of Rate.
9.	Site store		The Contractor has to make his own arrangement for keeping cement in his store. Watch and ward is to be maintained by the Contractor.
10	Daily material consumption record (Total ten numbers)		The Engineer-in-charge or his representative reserves the right to check the store at any time. The Contractor has to maintain a proper stock book showing daily consumption and balance etc.

SPECIAL CONDITION

1. Notwithstanding any other condition in DTCN, No water will normally be supplied by Municipality. The Contractor is to arrange water for the work at his own cost. The Contractor will lay the pipeline network required for the construction purpose at his own cost. No delay in construction is permissible on the ground of paucity of water. If the water is availed from the Municiaplity source by the Contractor, water charges will be levied as per prevailing rate and the amount will be recovered from the his bill. Service roads are to be constructed by Contractor at his own cost.

2. No time extension will be granted on the ground of scarcity of water, communication, material and machinery etc.

3. The responsibility to locate Govt. approved quarry and burrow area lies with the Contractor.

4. Wherever levels are to be taken it will be the responsibility of Contractor to get the same done through concerned Junior Engineer/Assistant Manager and checked by the Assistant Engineer/Deputy Manager.

5. The Contractor will submit a detailed programme of completion of work with methodology for execution of each item of work at the time of execution of agreement.

6. All machineries will be arranged by the Contractor at his own cost in proper time.

7. The Contractor shall abide by the relevant Act like Minimum wages, Employees Provident Fund, ESI etc. and Rules and Regulations in force of the state of Orissa from time to time for the labour employed in construction work. The contractor shall be fully and solely responsible for any compensation/ fine that may be imposed for violation of the said Rules/Regulations/Act.

8. For any bad quality of work the amount of award given by any consumer court/ judicial court will be recovered from the executing Contractor.

9. No extra quantity beyond the agreement quantity should be executed without the prior written approval of competent authority of Bargarh Municipality.

10. Additional performance security shall be deposited by the successful bidder when the bid amount is seriously unbalanced i.e. less than the estimated cost by more than 10%. In such an event the successful bidder will deposit the additional performance security to the amount of the differential cost of the bid amount and 90% of the estimated cost in shape of Bank draft or Bank Guarantee of any nationalized Bank.

11. For any additional quantities up to 25% on any item, the Contractor will be paid at the approved tender rate.

TECHNICAL SPECIFICATION OF CIVIL PORTION OF WORK

Materials of following specification are to be used in the work. The tenderer are expected to posses and be well conversant with the following I.S. Standard and Code Practice.

1)	Cement	:	IS: 269/1989 & 455/1989
	(However the grade of cement to be selected by the Engineer-in-charge of work and sample cube test before commencement of work in each batch.)		
2)	Steel	:	I.S: 432/1982 (Part-1&2) and 1786/1985
3)	Vibrator	:	I.S: 7246/1974
4)	Aggregate	:	I.S: 383/1970 - IS: 515/1959
5)	Water for mixing & curing	:	Shall be clean, free from injurious amount of oil, salt, acid, vegetable materials and other substances harmful to concrete conforming to IS: 456/2000 and IS: 3023/1965
6)	Sand/ fine aggregate	:	IS : 2116/1980
7)	Binding Wire	:	IS: 280/1978 (galvanized minimum 1mm.)
8)	Rain Water Pipe	:	IS: 2527/1984
9)	Construction Joint	:	IS: 3414/1968
10)	Steel Window Frame	:	IS: 1038/1983
11)	Steel Door Frame	:	IS: 4351/ 1976
12)	Fitting and fixtures for joinery works	:	Conforming to IS: 7452/82 strictly conform to IS specification and as per direction of Engineer -in-charge.

NOTE :

For road work (approach road) specification as per road & bridges (latest edition) published by I.R.C. and MOS&T shall be followed. In case of any doubt and absence of provision regarding specification I.S. shall be referred. (Indian Standard). The latest version of the BIS code shall be followed.

BIS CODE REFERENCE

1) Concrete shall be with conformity to IS: 456/2000.

2) Foundation shall be with conformity to IS: 1080/1995.

3) Stone masonry (R.R.) shall be with conformity to IS: 1597/1992 (Part-I)

4) Brick masonry shall be with conformity to IS: 2212/1991.

5) Cement plastering shall be with conformity to IS: 1661/1972

6) Mortar shall be with conformity to IS:2250/1981.

7) White washing and color washing shall be with conformity to IS: 6278/1971.

8) Cement Concrete Flooring shall be with conformity to IS: 2571/1970.

9) Antitermite treatment shall be with conformity to IS: 6313/1981 (Part - I & II).

10) Painting to all surface shall be with conformity to IS: 2395/1994 (Part - I & II).

11) D.P.C. shall be with conformity to IS:3067/1988.

12) Tarfelt treatment shall be with conformity to IS: 1346/1991.

13) Mosaic flooring shall be with conformity to IS:2114/1984.

14) Steel painting shall be with conformity to IS:1477/1971 (Part - I & II).

Note: The latest version of the above BIS codes shall be followed.

GENERAL SPECIFICATION & TECHNICAL SPECIFICATION OF CIVIL

WORKS SCOPE OF WORK

(a) The contractor shall provide at his own risk and cost all labour, materials, tool, plant and everything else necessary for the construction of work as described above and on drawings in accordance with the terms of the contract documents comprising the conditions of contract, the form of tender, acceptance of tender, the specifications, the schedule of items, drawings as per attached list and other explanatory specifications and drawings which may be issued by the Engineer form time to time, or drawings supplied by the contractor and approved by the Engineer.

(b) The contractor shall allow for any of the provisions of the contract documents incurring additional cost in his rates in the appropriate bills, no claim for extra in this connection will be entertained.

MATERIALS AND WORKMANSHIP

(a) All materials and workmanship used in this contract shall be new and shall conform to the requirements of the relevant current Indian and/or British standard where applicable.

The contractor shall appoint assistants at the site who will be technically qualified personnel, possessing sufficient knowledge to conduct the work satisfactorily and carry out Engineer's instructions. If any representative is found to be unqualified or fails to carry out work properly or is insubordinate, the contractor will replace him at the instruction of the Engineer.

(b) The contractor shall at his own cost dismantle, remove and reconstruct part of the work and remove and replace any materials or plants which fail to comply with the provisions of this contract and terms of this specification whether explicitly stated or implied.

MECHANICAL PLANT

The type and size of all mechanical plant shall be subject to the approval of the Engineer. If in the opinion of the engineer any plant is suitable for use on the works the use of such plant shall be suspended and the plant shall be forthwith removed from the site all at the contractor's cost.

SAMPLES OF MATERIALS

(a) Within seven (7) days of receipt of work order for each location the contractor shall deliver the following samples to the engineer for his approval after necessary tests in a reputed material testing laboratory of the state, approved by the engineer. All costs involved in testing of materials including transportation to and from place of testing is to be borne by the contractor.

(1) 50 Kg. Coarse aggregate

(2) 25 Kg. Of fine aggregate

(b) The samples submitted to the engineer for his approval shall be representative of the quality and type of material which the contractor proposes to use in this work samples approved by the Engineer will be retained by him and shall be used as standard for comparison of the materials and articles delivered to the site and used in the contract.

SITE AND LAND FOR USE BY CONTRACTOR

a) The contractor shall be deemed to have visited the site of the works before tendering and to have acquainted himself therewith as to the position the nature of the soils and ground water conditions existing ground levels, access, storage and work areas and any other contingency liable to effect this tender. No claim for extra payment in this connection will be entertained.

b) The contractor shall ensure that all his plant, materials, temporary storage, office etc. are within the area allocated to him by the Engineer.

c) If it should be necessary to utilize land outside this area the contractor shall be responsible for any rent, hire or compensation incurred thereby and shall indemnify the owner against all such claims.

PUBLIC AND PRIVATE ROADS

(a) The contractor shall provide at his own expense for any temporary access he may require from the existing road to the work and for the adjacent storage and working areas.

(b) The contractor shall make his own arrangement for the use of private roads or for way leave across private land and shall indemnify the owner against any claims arising from his use of these access roads.

(c) The contractor shall ensure that no unnecessary inconvenience is caused to the public or the users of any roads during the progress of the works.

(d) The contractor shall arrange for the conveyance of material plant etc. so as to cause a minimum of damage to existing roads. The contractor shall be responsible for any damage caused by his lorries or workmen to any existing roads culverts etc. from whatsoever original conditions to the satisfaction of the Engineer or alternatively shall bear the cost such maintenance and restoration as a deduction from money due or to become due to the contractor under this contract.

WATCHING AND LIGHTING

The contractor shall provide and maintain all notices, fencing by C.I. sheet or other approved means watching and lighting necessary to ensure security of the works the materials and tools stored on site and to protect from injury all persons who have access to the site.

BOUNDARY STONES AND EXISTING UNDERGROUND SERVICES.

(a) The contractor's attention is specially drawn to the following responsibilities.

(b) Before commencing any excavations for the purpose of carrying out work under this contract the contractor or his representative shall accompany the engineer on a site inspection in order to consider any circumstances which may indicate the presence of boundary stones survey works underground cables water or other services pipes at or ion the vicinity of such excavations in such manner and sequence as the Engineer directs.

(c) If during excavations the contractor workmen uncover any cable water or other service pipes he report the matter to the engineer and all excavation which might endanger the service concerned shall be stopped until the engineer's instructions are received as to the manner in which the work shall be continued.

(d) The cost of deviating or realigning these services shall not be borne by the contractor but he shall provide and maintain at his own cost any temporary works necessary to support or protect the services affected by his excavations to the satisfaction of the authorities concerned.

(e) The contractor shall attend upon the authorities concerned and afford them all facilities necessary to enable them to undertake any work required to deviate these services or to prevent interruption of such services during the progress of the contract.

TEMPORARY BUILDING

(a) The contractor shall construct and maintain temporary building to the satisfaction of the engineer and shall comply with the requirements of the Local Authorities. Moreover the building shall be protected against weather dust insects' noise and other nuisance to the satisfaction of the Engineer.

(b) The building should be 10" brickwork C.I. sheet roofing and protective ceiling made of hardboard and timber as per approval of the engineer. The floor finish will be a layer brick patent stone and neat cement finish.

Foundation of the building shall be to the approval of the Engineer.

(c) The contractor shall keep the site clean and free from rubbish at all times.

WATER SUPPLY

The contractor shall provide at his own cost pumps storage tanks and or everything necessary for an adequate supply of water from an approved source on the site for concreting and general use.

PERMISSION FROM LOCAL AUTHORITIES

The contractor shall be responsible for obtaining all the necessary permits from the local authorities for any of the work to be carried out under this contract. The contractor shall also be responsible for observing the current immigration regulations and for obtaining work permits for his staff where required. All costs incurred in this connection shall be included in the tendered rate.

ELECTRICITY SUPPLY FOR PLANT AND LIGHTING

(a) The contractor shall assume that no electricity will be available at the site of the work for operation of plant or for lighting and he shall make all necessary arrangements for the provision of the power and light requirements at his own cost.

(b) The contractor shall store diesel oil, petrol and other inflammable fuel on site only with approval of the engineer and shall take additional precautions against fire.

DRAINAGE

(a) The contractor shall make proper provision for the drainage of surface water from the whole of the site including rainfall run off from surrounding areas, which drain on to his site.

(b) He shall at his own cost all temporary drains and other works necessary to prevent erosion of earth works and the discharge of site or debris from the site and he shall control the drainage from the site so that no flooding or other drainage or disturbance is caused in areas surrounding the work.

WORKMEN

The contractor shall be responsible for restricting his workmen to the site of the works and shall take all necessary precautions to prevent damage arising from nuisances of any kind.

ATTANDANCE OF ENGINEER

(a) The contractor shall allow for attendance of the Engineer during visits or inspections of the works shall afford every assistance and facility necessary thereto.

(b) He shall supply all labour and materials required by the engineer and his staff to carry out their duties of inspection and supervision.

(c) The contractor shall provide all equipment's and instruments necessary to carry out the work of field test.

(d) The contractor shall provide all necessary technicians to carry out the works in testing the materials and samples.

INSPECTION AND APPROVAL BY ENGINEER

The Engineer shall have the right to inspect all materials before being built or placed in the works and no materials shall be built in and placed without his prior approval. Such approval will not however relieve the contractor of any of his responsibilities for the sufficiency of the materials or equipment.

COMPLETION

On completion of the works required under this contract the contractor shall dismantle and remove all the temporary structures fill and make good all holes and temporary excavations drains and roads clear away all rubbish and leave the whole of the works in clean and tidy conditions to the satisfaction of the engineer.

SITE WORK AND EXCAVATIONS

1.1 SITE CLEARANCE

(a) The contractor shall clear the site from grass, bushes, trees and organic soil where required over the area of the works and deposit as directed. All top soil excavated shall be stockpiled and then spread as directed on areas to be turned.

(b) All stumps and roots of the trees on the site shall be grubbed and disposed off by removal from the site or as otherwise directed by the engineer. The holes made by grubbing shall be filled in with approved materials and compacted by ramming.

1.1.1 **EXCAVATION**

(a) For the tendering purposes the contractor shall assume the site profile as shown on the drawing. When he takes possession of the site the actual reduced levels of the ground as he finds it, shall be recorded on the drawing, which shall be signed by the engineer and the contractor. All excavations shall be carried out in regular stages to the levels shown on the drawings, subject only to such modifications as may be ordered by the engineer as extras or omissions under the terms and conditions of the contract. In all excavations the last 15 cm, of the depth shall be carried out and trimmed by manual labour in case the contractor fails to verify the tender drawing before starting excavation this drawing will be the basis for unit calculations.

(b) The length width and depths of all excavations shall be sufficient to provide for the necessary working space shuttering and any other temporary structures required during construction of all excavations shall be measured net and neither allowance shall made for the extra space for working etc. nor for the increase in bulk after excavation.

(c) Any excavation including excavation in rock made in error below the level shown on the drawings or below the levels ordered by the engineer will not be paid for and shall be brought back to the specified levels with mass concrete at the contractor's own expense.

(d) Where indicated the excavation shall be out to slopes the cost of which be included in the rates.

(e) No concrete or screed shall be placed in any excavation without the prior approval of the Engineer.

(f) Mechanical excavation shall not be carried down to within less than 15 cm. above the required formation level the last 15cm will be removed by hand. If required by the engineer this 15 cm. shall not be removed until immediately before concreting takes place.

1.2 REMOVAL OF UNSUITABLE MATERIALS

Where unsuitable materials in encountered at the exposed formation level in excavations or immediately there under it shall be excavated to such levels as the engineer shall direct. The resultant excavations shall be back filled with selected materials deposited and compacted in layers of 15 cm as directed by the engineer. Such excavations shall be measured in accordance with the relevant item in the bill.

1.3 TEMPORARY DRAINAGE AND TIMBERING

(a) During the whole time that the excavations are open they shall be kept dry. The contractor shall construct temporary drains and bunds to prevent the entry of surface water excavate and maintain all drains bunds and provide and operated all pumps necessary to collect and remove all water, which enters into the excavations.

(b) The contractors shall be solely responsible for the safety and stability of the excavations. He shall at his own cost slope the sides of the excavations or provide timber supports built and secured to the satisfaction of the engineer in order to prevent the occurrence of subsidence or slips.

(c) The contractor shall at his own cost promptly provide and maintain any temporary drainage or other protective measures required by the engineer. Compliance with the engineer's instructions in this respect shall not however relieve him of his sole responsibility for the stability of the excavations on site.

1.3.1 DISPOSAL OF SOIL

(a) Spoils from the site shall be disposed off within the areas as directed by the engineer.

(b) Under no circumstances shall the spoils from the site be sold or given away to any unauthorized party for any consideration.

1.4 EARTH FILLING IN PLINTH

Fill material should be well-graded natural inorganic soil approved by the engineer and meeting the following requirements

(a) It shall be free of organic or other weak or compressible materials and be of such nature and character that it can be compacted to the specified density on a reasonable length of time.

(b) It shall be free of highly plastic clay or all materials subject to decay, decomposition or dissolution and corrosion etc.

(c) It shall have a maximum dry density of not less than 1590 Kg. Per cubic meters

(d) It should have liquid limit of 35 to 40% and P.I. value of 5 to 7

(e) Earth available from trench cutting any also be utilized for filling plinth if it meets the above requirements.

(f) The work under plinth or any places to make up level with sand having FM not less than 0.8

(g) Earth shall be filled in plinth in 15cm. Layers and in each shall be compacted to the entire satisfaction of the engineer by vibration roller/power hammer at optimum moisture contents. The contractor shall be very careful regarding foundation walls/columns so that no harm is done during ramming.

(h) All the cut earth shall be stacked at the sides of the building for approval of the engineer and the filling must be done in presence of the engineer or the authorized representative

(i) Power hammer/vibration roller must be used for compacting the filling materials.

Blasting Operations

The blasting shall be carried out during fixed hours of the day preferably during the mid day lunch hour or at the close of the work as ordered in writing by the engineer. The hours shall be made known to the people in the vicinity. All the charges shall be prepared by the man in charge only.

Red danger flags shall be displayed prominently in all directions during the blasting operations. The flags shall be planted 200 meters away from the blasting site in all directions. People except those who actually light the fuse, shall be prohibited from entering this area, and the persons including the workman shall be excluded from the flagged area at least 10 minutes before firing, a warning whistle being sounded for the purpose.

The charge holes shall be drilled to required depths and in suitable places. Blasting should be as light as possible consistent with through breakage of the material necessary for economic loading and hauling. Any method of blasting which leads to overshooting shall be discontinued.

When blasting is done with powder, the fuse cut to the required length shall be inserted into the hole and the powder dropped in. The power shall be gently tamped with copper rods with rounded ends. The explosive power shall then be covered with tamping material which shall be tamped lightly but firmly.

When blasting is done with dynamite and other high explosives, dynamite cartridges shall be prepared by inserting the square cut end of a fuse into the detonator and finishing it with nippers at the open end, the detonator gently pushed into the primer leaving 1/3rd of the copper tube exposed outside. The paper of the cartridge shall then be closed up and securely bound with wire or twine. The primer shall be housed into the explosive. Bore holes shall be of such size that the cartridge can easily go down. The holes shall be cleared of all debris and explosive inserted. The space of about 200 mm above the charge shall then be gently filled with dry clay, pressed home and the rest of the tamping formed of any convenient material gently packed with a wooden rammer.

At a time not more than 10 such charges will be prepared and fired. The man in charge shall blow a whistle in a recognized manner for cautioning the people. All the people shall then be required to move to safe distances. The charges shall be lighted by the man in charge only. The man in charge shall count the number of explosions. He shall satisfy himself that all the charges have been exploded before allowing the workmen to go back to the work site.

PLAIN AND REINFORCED CONCRETE

1.1 CEMENT

(a) Cement used in any concrete work shall be Portland slag cement conforming to IS 455 but having crushing strength of 43 Mpa in cement mortal 1:3 on 28 days strength and may be measured by weight or in a standard bag to weight 50 Kg. having a volume of 0.04 cum. It shall have the adhesive and cohesive properties necessary strength and durability. Reference to cement in the following paragraph shall mean Portland slag cement. In case the engineer or his representative directed use of cement like rapid hardening Portland cement as per IS 8041-1990 or any other grade of Portland cement the same shall be used at any stage of the work as directed. Cement of approved (by engineer-in-charge) manufacturer is only to be used in the work.

(b) The cement shall be stored in such a manner as to permit easy access for proper inspection handling and identification of each shipment and in a suitable water tight and well-ventilated building that will protect the cement from dampness. It should be kept on wooden platform of at least 300mm high.

(c) Only one brand of cement may be used in the contract except by written permission of the Engineer. Different types of cement shall be stored separately and shall not be mixed. Only such cement, manufacturers of which approved by the Engineer shall be used in the work. Works executed by the cement of unapproved manufacturers shall not be accepted.

(d) The cement shall be protected from moisture and damage in transit and shall be stored on the site in a store provided with a wooden floor raised not less than 300mm above the ground.

(e) Batches of cement shall be used for the work in the order in which they are delivered to the site.

(f) Notwithstanding any previous acceptance any bag of cement containing materials, which has hardened or otherwise deteriorated shall be rejected for any cause shall be removed from the site immediately.

(g) Cement, which has been stored at site for more than two months from the date of manufacture, (as printed over the container by manufacturer) shall not be used for the work and removed from the site immediately.

(h) The contractor shall deliver the samples of cement collected for the work to the engineer in charge for his approval after necessary tests in a reputed material testing laboratory of the state. After getting the approval from the engineer in charge, the contractor shall use the cement in construction works. In the event of any s sample being found to be not in accordance with relevant Indian Standard, he whole consignment from which the samples come shall be rejected and removed from the site immediately notwithstanding any previous acceptance on the strength of the manufacturer's certificate.

(i) Use of re-bagged cement will not be allowed.

1.2 FINE AGGREGATE

(a) The fine aggregate shall be sand or any other inert materials having similar characteristics and shall consist of hard, strong uncoated particles free from injurious amounts of organic or other deleterious substances. To obtain such an aggregates, screening or washing or both as may be directed by the Engineer shall be employed shall be employed. It shall be uniformly graded from fine to coarse with the following limits as least or specification by the Engineer.

(b)

Sieve no. ISI	Percentage Passing by Wt.
10mm	100
4.75mm	90-100
2.36mm	85-100
1.18mm	75-100
600 micron	60-79
300 micron	12-40
150 micron	10

(c) Fine aggregate from different sources of supply shall not mixed or stored in the same pit and not used alternately in the same class of construction without permission from the Engineer.

(d) Fine aggregate shall not contain silt or other fine materials exceeding 5% by volume when tested according to the standard method shall neither contain organic material in sufficient quantity to show a darker colour than the standard depth of colour no.3 when tested according to the method in British standard 812, clause 28: "Organic Impurities". The grading of the fine aggregate shall be at least within the limits of grading zones II to III as defined in IS 383 table IV. The sand shall be completely free from chloride acidic or any other deleterious constituent.

(e) A sample of the sand to be used in the work shall be submitted to the engineer for the prior approval in accordance with clause stated above.

(f) Fine aggregate shall be stored at the site in such a manner that it is not contaminated by coarse aggregate, earth or other foreign materials.

(g) The moisture content of the fine aggregate on the site shall be determined daily before concrete mixing is commenced. The amount of water to be added to each batch shall be adjusted on the direction of the engineer to allow for the moisture content of the fine aggregate. This test shall be repeated whenever there is reason to believe that the moisture content of the fine aggregate has changed since the previous test was made.

1.3 COARSE AGGREGATE

(a) Coarse aggregate may consist of 20mm down grade-crushed stone chips carefully and properly graded shown in the table below. All coarse aggregate shall be screened and washed and shall consist of clear well shaped cubical practices free from splintered or flaky particles soil organic matter or any detritus materials. A representative shall be produced for approval and the materials used in the works shall not be inferior to the approved.

(b) The grading of coarse aggregate shall be within the following limits and also within the limits of the relative grading in IS 383, table II

Normal size aggregate of	Percentage Passing British standard sieves

Abrasion loss should not exceed 25% for chips

(c) Coarse aggregate shall be stored at site in such a manner that is not contaminated by fine aggregate, earth or other foreign materials. Adequate precautions shall be taken to prevent segregation of the coarse aggregate while it is being transported and stacked.

1.4 WATER

All water used in the concrete shall be subject to the engineer's approval shall be reasonably clear free of soil. acid, salts and organic substances and of required by the engineer shall be tested by comparison with distilled water comparison shall be made by means of standard cement tests for soundness time or setting and mortar strength. Any indication of soundness change in time of setting of plus or minus 30 minutes or more or decrease of more than 10% in strength from results obtained with mixtures containing distilled water shall be sufficient cause for rejection of the water that is being tested.

1.5 MEASURING AGGREGATE

The fine and coarse aggregate shall be measured loose in measuring box generally made of timber / steel. The measuring box shall be such size as to contain the exact amount of sand by weight required for mixing with one bag of cement (50 KG). Under filled cement bags should not be used in work.

1.5.1 PROPORTION OF CONCRETE MIXING

(a) Controlled concrete shall only be used in work the proportions in which the various ingredients shall be used in the concrete mix for different parts of the work shall be designed in accordance with the strength specified subject to variations ordered by the engineer which shall be adopted without extra cost should tests show such variation to be necessary to produce a dense concrete of the specified strength and workability. The mix proportions shall be determined on the basis of producing concrete having suitable workability, improve ability, durability and required strength without the use of an excess amount of cement.

(b) A preliminary laboratory test shall be made from trial mix of every class of concrete to be used in the works and the 3, 7 and 28 days permanent works.

(c) The concrete shall make trial mixes in the presence of the engineer or his representative using the proportion as calculated in accordance with the procedures laid down in DSIR Road note.4 (second Edison) published by HMSO, York House, Kings way, London WC or other standard procedures as in accordance with ISS and approved by the Engineer.

(d) Samples of each of these trial mixed will be taken by the Engineer to determine the compacting factor and the test cube strength at 3. 7 and 28 days after casting.

(e) If the trial mix shall fail to attain the strength and workability required the engineer may other further trial mixes to be made until an acceptance mix is obtained.

(f) The minimum cement dosage and mix proportion for different grades of concrete irrespective of strength explicated shall be as follows:

Grade of concrete	Mix	Minimum Qty. of cement in kg per cum of concrete
M-7.5	1:4:8 Mix/As per design mix	As per Government of Orissa Analysis of rate
M-15	1:2:4 Mix/As per design mix	As per Government of Orissa Analysis of rate
M-20	1:1.5:3 Mix/As per design mix	As per Government of Orissa Analysis of rate

1.5.2 **CONCRETE QUALITY AND TESTING**

(a) All concrete shall be uniformly dense and sound and shall be free faults, creaks, voids, honeycombs and other imperfections. All materials used in consecution with the concrete mix all equipment and methods used in manufacturing transporting testing placing finishing an curing the concrete and mortar shall be subject to approval by the Engineer.

(b) The minimum 28 days and 7 days cube strength shall not be less than that specified below for different graders of concrete.

Concrete grade	7days strength in MPA	28 days strength in MPA
M-10	7	10
M-15	10	15
M-20	13.5	20

1.5.3 CONCRETE CONSISTENCY

(A) The consistency or slumps shall be determined by the method laid down in ISS or in British standard 1981, " Method of Testing concrete" Part-2

(B) The slump of the concrete after it has been deposited but before it is consolidated shall not exceed 75mm. The engineer reserves the right to require a lesser slump, which can be properly consolidated.

(C) During the course of the work the test set out below will be made by the contractor under the direction of the engineer to whom the contractor shall render all the necessary assistance for carrying out these tests.

(D) The amount of water to be added to the concrete mix shall be determined by means of standard slumps tests which shall be carried out

(i) Daily while concrete is being placed

(ii) Whenever samples for test specimen are taken (part of sample obtained for making test specimens shall be used last test was made.

(iii) Wherever in the opinion of the engineer the grading the grading or condition of any of the aggregate has changed since the last test was made.

(iv) The water cement ratio shall be about 0.45 if need be suitable plasticizer shall be used to improve workability of the concrete but water cement ratio shall not be increased to more than 0.45 in order to have improved workability. Use of plasticizer is mandatory in pile foundation.

1.5.4 AGGREGATE GRADING AND PURITY

(a) The grading and purity of the fine and coarse aggregate shall be tested in accordance with IS 383 Table III and IS 383 Table II respectively on the instruction of the engineer whenever these materials are delivered to the site or in the opinion of the engineer the grading or conditions of these materials differ from the originally accepted for use in the work.

(b) Samples do concrete discharged from the mixer shall be taken for the preparation of concrete test specimens as described in clause 3.112 of this specification at least twice a week while concretions in progress and in addition when ever the proportions of the mix are changed or the engineer desires to check the quality of the concrete.

(c) The Strength of the concrete sample shall be the average crushing strength at failure of the three specimens test provided that when difference between the strongest and the weakest of any set of three specimens exceeds 20% of the average crushing strength the crushing strength of the sample shall be crushing strength at failure of the weakest test specimen in the set.

(d) The cost of supplying moulds all materials and labour for making and crushing the test cylinders shall be borne by ht contractor.

1.6 UNSATISFACTORY CONCRETE

(A) If any of the test specimens shows a compressive strength less than that specified the engineer/owner shall at his discretion

(i) Order all concerning work to stop.

(ii) Order any change in the proportions of the concrete mixes for which the contractor cannot claims extra rate pending receipt of the 28 days test results.

(B) If any of the specimens tested at 28 days show a compressive strength less than that specified the engineer might at his discretion

(j) Order the breaking etc, removal and replacement of all concrete mixed and placed on the day when the sample at his discretion

(ii) Order such remedial works as he may consider necessary to ensure that the strength is not less than it would have been had the concrete complied with the specification.

1.7 BATCHING

(a) The contractor shall provide and maintain such means and equipment as are required to determine and control accurately the relative amount of the various materials including water cement sand such individual sizes of coarse aggregate entrain the concrete and such means and the equipment and their operation shall be at all time to be approved by the Engineer.

(b) All batches of concrete shall be proportioned on the basis of whole bags of cement unless the cement is batches by weight.

(c) The amount of sand and coarse aggregate entering each batch of concrete shall be determined by volume.

(d) The amount of water added to each batch of concrete shall be measured by weight and shall be poured in the concrete mixer machine in method approved by the engineer.

(e) No change in the specified mix will be permitted except with the authority of the Engineer.

1.7.1.1 MIXING

(a) All concrete used in the works shall be mixed in mechanical batch mixer /weigh batcher of approved pattern fitted with power driven loading skip.

(b) Each batch of concrete shall be thoroughly mixed for period of not less than 2 minutes to produce well-mixed concrete of uniform consistency and appearance. The minimum mixing period specified is predicated on proper control of the speed of rotation of the mixer and the introduction of the materials including water into the mixer. The engineer reserves the right for the required uniformity of composition and consistency within the batch and from batch to batch.

(c) The leading skip the mixer drum its blades and the discharge chute shall be kept clean and free from hardened mortar or concrete.

1.8 CONVEYING AND PLACING

Before placing concrete the sub grade should be properly prepared and the forms and reinforcement should be erected. A moist sub grade is especially important to prevent too rapid extraction of water from the concrete when pavement, floors and similar work are be cast in hot whether. Where the foundation is rock, all those materials should be removed before the concrete is placed. When it is necessary to cut rock in foundation, the surfaces in general should be vertical or horizontal and not sloping.

Where formworks are used they shall be clean, tight, adequately braced and constructed with materials that will import the desired texture to the finished concrete. Care should be taken to see that sawdust nails and other debris are removed form the space to the concerted. Forms should be moistened or oiled previous to placing to facilitate free removal. Where they have been exposed to the sun it may be necessary to saturate the wood thoroughly before concreting.

Reinforcing steel used for concreting should be cleaned and free of loose rust or mill scales. The concrete shall be placed before the initial set so that it remains workable and can be compacted satisfactorily. Additional water shall not be added to improve workability as it disturbs the water cement ratio.

Placing of concrete shall be done in a continued operation till the predetermined position of construction joint is reached.

The maximum thickness of layer shall not be more than 300mm even for wet

consistencies. Horizontal flow concrete shall be avoided as far as possible

Each subsequent layer shall be deposited while the previous layer is soft

In sloping member small quantities of concrete shall be deposited starting from the lower end of the slope.

In case of reinforced concrete work using shutter or formworks, the shutter and forms must be rendered watertight and concrete shall not be deposited until the engineer in charge has inspected reinforcement, forms and their support.

Before depositing fresh concrete over or against hardened concrete of construction joints the hardened surface shamble roughened and cleared by wire brush or water jet with a pressure of 0.07kg/cm2 or by sand blasting after the concrete has hardened sufficiently. The surface shall not be allowed to any between jetting and placing on concrete. A thin layer of motor of the same perpetration as in the concrete shall be applied just before placing fresh concrete.

1.9 VIBRATION

(a) The concrete after placing shall be thoroughly compacted as it is placed to secure a dense structure close bond with reinforcement and smooth surface by robbing, hand tamping or mechanical vibration as required and directed by the engineer. Concreting between two walls shall be compacted by power driven vibrators of the immersion type and concrete in slabs with no form work or upper surface shall be compacted by power driven vibrators of the pan type or by vibrating screeds. The vibrators shall be of ample power operating at not less than 6000 RPM and of kind approved by the engineer. They shall be operated by workmen skilled in their use he shall be additional to the laborers employed for placing and tamping the concrete.

(b) No concerting shall begin until the required number of vibrators are available, all being tested and found to be in good working condition at the work site.

In general the number of vibrators available for use shall be as follows

On vibrator for each four cubic meter of concrete placed per hour and one stand by vibrator for each three vibrators in service but in any case at least two vibrators in good working order shall be present at the forms.

(c) Immersion vibrators shall be inserted and withdrawn slowly at a uniform rate of approximately 10mm per second. Compaction shall be deemed to be completed when cement mortar appears in a circle round the vibrator. The immersion vibrators shall be inserted at intervals determined by area of mortar shown after the previous vibrator with a certain allowance made for over lapping. The immersion vibrators shall not be allowed to come into contract with the formwork and the reinforcement.

(d) Pan vibrators shall be placed on the surface of the concrete, which shall have previously been tamped and leveled but left slightly high to allow for settlement during compacting until cement mortar appears under the pan. The vibrators shall then be lifted and placed on the adjoined area and the operation shall be repeated until the whole surface has been compacted. Alternatively a vibrating screed spanning the full width of the panel shall be used.

(e) In all case the placing of concrete shall be sufficiently ahead of the vibrators so that the mass of concrete beyond the vibrators is sufficient to a stand flooring while vibration is in progress. On the other hand the concrete shall be fully compacted before initial set is attained.

1.10 CURING

(a) As soon the freshly placed concrete has hardened sufficiently to withstand such treatment without damage the exposed surfaces shall be completely covered with wet gunny bags or any other means approved by the engineer and shall be kept thoroughly wet continuously by generous applications of water every two hours for period of 14 days. Water shall be allowed to run down between the forms and the formed concrete surfaces. Floor slabs shall have water impounded on them for period of at least 14 days after placing. Any excess water or cream that may have come to the surface shall first be removed dry cement or dry mixture of cement and sand shall not be sprinkled on the surface to absorb such access moisture.

1.11 FORMWORK

(a) All form work shall be erected true to line and level as shall be adequately secured and braced to prevent deflection or movement during the placing tamping or vibration of the concrete and shall be sufficiently tight to prevent loss of liquid from the concrete.

If for any reason the form work moved after the concrete has been placed thus disturbing the freshly placed concrete or if the concrete is found to be defective in alignment, the contractor may be ordered to take out and replace such concrete without extra payment. All the faces of form work in contract with concrete shall be smooth and free form surface imperfections.

(b) The formwork shall be constructed with any of the following materials depending of suitability.

- Steel shuttering of 14 gauges for RCC works especially in roof/ floor slab and columns.
- As described in Instruction to Bidder.
- Waterproof plywood of approved manufacture 18mm thick securely fixed to timber may be used after approval by the engineer in charge.

(c) The height of formwork will be as follows

(I) Timber formwork should not exceed the height of 1200mm

(ii) Steel formwork should not exceed the height of 2150mm

(d) The use of wire passing through the concrete for the purpose of securing form will not be permitted. Bolts may be used but their number shall be kept to the minimum required to secure the formwork rigidly. The bolts shall not be less than 13mm dia. The hole left by bolts shall be cleaned and filled with cement mortar containing waterproofing materials of approached quality.

(e) Before concreting all forms shall be cleaned and treated with approved mould oil to prevent adhesion of the concrete care being exercised to ensure that no oil falls on the set concrete or reinforcement provision shall be made to allow the form work to be removed without shock or damage to the concrete its contains or to adjacent work.

(f) Opening sufficient in size and number to permit convenient access to clean properly and inspect the inside of the forms shall provide. All dirt, chips sawdust and other foreign matter shall be removed from within the form before any concrete is deposited therein. Forms shall be kept wet for at least 10 minutes before concrete is placed.

(g) With in one week of the acceptance of his tender the contractor shall submit for the approval of the engineer drawing and descriptions should in the methods he proposes to use for the creation and support of the form work.

1.12 STRIKING OF FORM WORK

No form work shall be struck without the prior approval of the engineer form work shall be removed in accordance with a programme agreeably the engineer without such shock or vibration as would damage the concrete and without interruption to the curing of the concrete.

(a) Concrete exposed by the removal of formwork shall be left untouched till the Engineer inspects it.

1.13 PREPARATION OF SURFACES TO RECEIVE CONCRETE

Before new concrete is deposited against the surface of set concrete at construction Joints the surface of the set concrete shall be thoroughly scrubbed or roughened and cleaned by means of compressed air and sand or other approved means to such an extent that on smooth skin of concrete that may be left from the previous concrete is placed. These scrubbed surfaces shall be thoroughly cleaned, brushed and watered and if so instructed by the engineer be coated with neat cement grout well brushed into the surface.

1.14 STEEL OF REINFORCEMENT

(a) The steel for normal reinforced concrete shall be high yield strength deformed round bars conforming to IS 1786 and IS 1139. Corrosion resistance rod shall be exclusively used in piles provided in the foundation. Mild steel rod conforming to IS 432 shall be used wherever required by the engineer. The engineer shall perform tests to be made on samples of steel reinforcement stored at the site before use. In the event of any sample not meeting the requirement of Bureau of Indian standard, the whole consignment of bars from which the samples were taken will be rejected by the engineer not withstanding any previous acceptance on the strength of the manufacturers certificate. Any reinforcement rejected by the engineer shall be removed from the site.

(b) The steel shall be kept clean and shall be free from mill scales, loose dust oil earth or other harmful materials before being placed in the forms. The steel at site shall be stored under roof with non-porous enclosure around.

(c) The steel shall only be procured from the authorized outlets of the manufacturer approved by the engineer.

1.15 BENDING OF REINFORCEMENT

All reinforcement shall be bent cold using bar bending machines and appliance approved by the engineer. Unless otherwise specified in the drawings, the bending dimension tolerances and the dimensions of anchors, hooks binders stirrups and the like shall comply with the IS standards. Only experienced steel benders and fixer shall be employed. Bending shall be accurately carried out and no

steel blocks or wooden wedges will be permitted for keeping reinforcement in place.

1.16 PLACING OF REINFORCEMENT

(a) The number size from and position of all steel bars shall be in accordance with the drawings and in the placing and fixing of them the function of each bar is to be kept in mind. The reinforcement shall be accurately assembled and firmly secured by wire ties made form no. 16 soft annealed wire so that the whole assembly is rigid and will not be misplaced while concrete is being compacted around it. The ends of the wire ties shall be turned inward away from and shall not be left projecting beyond the reinforcing bar. The engineer due to valid reasons may order change in shape size and spacing of bars at contractor's cost.

(b) The cover of concrete to steel shall be maintained by spacing blocks securely wired to the bars or by other means approved by the engineer. Spacing blocks for the various cover dimensions shall be cast from cement mortar made from I part of cement and II parts of sand. The blocks shall be well compacted and shall be fully cured before being used. Temporary bracing shall be provided to prevent movement of all steel projecting from the concrete in the course of construction.

(c) Where it is necessary to maintain two layers reinforcement at the correct distance apart Steel riders bent from 12mm diameter mild steel bars shall be used.

1.16.1 SPLICING AND WELDING OG REINFORCEMENT

Welding of reinforcement will be permitted only where shown on the drawings. The welding shall be by electric and shall be performed by a skilled operator approved by engineer. The surface of the bars shall be thoroughly cleaned and scrubbed with brush immediately before welding and weld must be deposited evenly and all along shall be of even contour without cavities as per drawing or instruction of the Engineer.

1.16.2 COVERING OF REINFORCEMENT

(a) The reinforcement of footing and other principal structural members in which the concrete is deposited against the ground shall have not less than 75mm of concrete between it and the ground contract surface. If concrete surface after removal of the forms are to be exposed to the weather or to be in contract with the ground the reinforcement shall be protected with not less than 50mm concrete.

(b) The concrete protective covering for any reinforcement at surface not exposed directly to the ground or weather shall be not less than 25mm for slabs and walls and not less than 50mm for beams and girders.

(c) Column spirals or ties shall be protected everywhere by a covering of concrete cast monolithically with the core for which the thickness shall be not less than 50mm.

(d) Greater thickness of concrete covering if specified shall be kept as per drawings and direction of the engineer.

(e) Exposed reinforcing bars intended for binding with future extensions shall be protected from corrosion by concrete or other adequate covering.

1.16.3 CONSTRUCTION JOINTS

Concrete should be deposited continuously and as rapidly as practicable until the unit of operation approved by the engineer in charge in completed where construction joints are from the beams or slabs and not ever the support.

(a) As per drawing or as per engineer approval joints not indicated on the plans shall be so made and located as not to impair significantly the strength of the structure. Where a joint is to be made the surface of the concrete shall be thoroughly cleaned and all Latinate removed. In addition to the forgoing virtual joints shall be thoroughly seated and slashed with a coat of neat cement grout immediately before placing of new concrete.

(b) A delay must occur at least until the concrete in columns or walls is no longer plastic before casting of concrete in beams girders brackets columns capitals and haunches shall considered as part of the floor system and shall be placed monolithically therewith.

1.16.4 DAY'S WORK JOINTS

(a) No fresh concrete shall be placed against any concrete which has attained its initial set. Concrete is deemed to have attained its initial set 30 minutes after water has been added to the mix. Provided that the set concrete has been properly placed and compacted and is acceptable to the engineer it

shall not be disturbed. It shall be allowed to attain its final set and to harden sufficiently to enable a day's work joint surface on it to be prepared by through hacking without damage. Concrete may be deemed to have hardened sufficiently for this purpose 72 hrs after placing.

(b) Any concrete, which has been disturbed after it has attained initial set, shall be rejected and subsequently removed by the contractor at his own expenses.

(c) When concreting must be suspended at any paint because of weather or for any other cause a day's work joint shall be made.

(d) The concrete at day's work shall be allowed to harden for 72 hrs. Before fresh concrete is placed against the day's work joint all those and imperfect materials, cement scum or Latinate shall be removed from the joint surface which shall be thoroughly hacked until a completely hacked, roughened, fresh surface is obtained. The fresh surface shall then be brushed clean and immediately before fresh concrete is placed against it shall be thoroughly whetted and covered with a layer of 1:1.5 cement and sand mortar not less than 38mm thick. The mortar shall have the consistency of condensed milk.

BRICK WORK

4.01 BRICK:

(a) First class K.B. bricks shall be made from good brick, free from saline deposits and shall be hand molded. They shall be thoroughly burnt without being vitrified of good colour shall be regular and uniform in size an shape with sharp square edges and parallel faces. They must be homogenous in texture and emit a clear ringing sound when struck. They shall be free from flaws, cracks, chips, stones, nodules of lime or canker and other blemishes. A first class brick shall not absorb more than 1/6th of its weight in water after being soaked for four hours and its crushing strength shall not be less than 75kg/sqcm.

(b) Bricks not meeting the above requirements shall not be used under any circumstances.

(c) Jhama bricks are those which are so over burnt as to become vitrified or distorted so as to the useless for exact work they may be broken and used for aggregate provided the vitrified mass has not become porous or spongy as result of over burning.

4.02 CEMENT

As specified in section 3.01 Cement

4.03 FINE AGGREGATE

As specified in section 3.02 the fineness modulus of the sand shall not be less than 2.50

4.04 WATER:

As specified in section 3.04 – water

4.05 MORTAR

(a) Cement mortar shall consist of a mixture by volume of the part cement to the specified parts of sand as is mentioned on the schedule of items.

(b) The cement and sand shall be mixed dry in the specified proportions until the colour of the mixture is uniform water shall then be added sparingly only on minimum necessary being used to produce a workable mixture of normal consistency. The water ration in no case shall exceed 0.50 by weight or as directed by the engineer.

(c) The Mixing shall be done on a clean board or platform with ties to avoid leakage. At the close of each day's work the trough and pans shall be thoroughly cleaned.

4.6 WORKMANSHIP

(a) Brick work shall be built to proper plumb, curved or battered as shown in the drawings. Bricks shall be cleaned and if necessary shall be scrubbed. Brick shall be soaked in water for at least three hours before use.

(b) Where new joints are to be made with previous works, the later shall be cleaned and thoroughly watered. All facing brick works unless otherwise specified shall be laid in English Bond with fronts upward. All horizontal joints shall be parallel and level. The masonry shall be cured for at least seven days fixtures in masonry such as iron for railings, clamps for doorframe, shelf brackets, GI pipes etc

shall be provided in the brick work during execution. These works are also included within the rates of brickwork.

(c) Walls having 125mm thickness shall be brick built with cement mortar in proportion as specified the schedule of items preparation method of construction and other specifications shall be the same as those for walls stated before.

PLASTERING ANED POINTING

a. MORTAR

As specified inn section 4.05 " Mortar"

b. WORKMANSHIP

(a) Plastering shall be done in a neat true and workman like manner. No corner shall be rounded or leveled unless directed by the engineer. All intersections edges and corners shall have sharp edges unless otherwise directed and be at right angles. The lines must be straight and true.

(b) Unless specified otherwise cement plaster shall be used in the following proportion. On brick walls one part Portland cement to six parts sand & on concrete surface one part Portland cement to four part sand by weight.

(c) Before starting plastering brick joints shall be racked out to a depth of 12mm and concrete surfaces shall be roughened. Both brick and concrete surface shall be scrubbed and cleaned to remove loose materials and thoroughly soaked with water.

(d) Cement plaster shall be applied to clean rough surfaces in a single coat of specified thickness and thoroughly smoothed.

(e) All plaster shall be kept moist throughout the progress of the work and for at least 10 days thereafter. If cracks appear through negligence or due to other reasons, the contractor at his own expense must make the defects good.

(f) The surfaces along the joints to be improve for any kind of defective work. Mesh should be properly aligned with the surface. No deflection will be accepted. No construction joint is accepted in plasterwork.

FLOORING

6.01 **SAND/EARTH FILLING**

Sand/non cohesive earth filling in plinth or floors shall be watered to have specified moisture and well consolidated by vibration roller or hammer or any other mechanical men's in loose layer of maximum 150mm. In deck floors a slope of in 40 or as directed by the engineer shall be provided, compaction of sand/earth fill manually is strictly prohibited. The Bill shall be measured for the finished compact section basing on predetermination of the ground contour of the filled area.

6.2 BRICK SOLING

One layer of first class bricks shall be laid flat or as specified on consolidated surface and the joints shall be regular and uniform. In foundation first class brick shall be laid on earth, which are compacted to the desired degree. Bricks shall not be laid on the floor or foundation bed until the floor or foundation bed is inspected and approved by the engineer. Brick soiling in foundation or under pile foundation shall only be taken up on written instruction from the engineer inspective of inclusion of the same on BOQ depending on soil characteristics the engineer may chose to dispense with the item.

6.3 CEMENT CONCRETE IN FOUNDATION

(a) Cement concrete shall be made of 40mm down graded stone ships well graded clean sand of fineness modulus not less than 2.5 and fresh cement in proportion (1:4:8) unless otherwise specified below foundations. All mixing shall be done in mixer machine.

6.4 ARTIFICIAL STONE

(a) Flooring shall be of such thickness as specified in the " Schedule of Items" concrete shall be made of 20mm downgraded stone chips as specified passing through 20mm sieve and retained on 6mm sieve. Cement and sand will be of the same specifications as in section 3.01 and 3.02.

(b) Glass beading of the same height as specified for the specified for the thickness of the floor should be laid on the under floor to form squares of convenient size or as mentioned in the

schedule of items. Generally the squares may be from 1.25m to 1.85m according to the dimension of the rooms or as per engineer's instructions.

(c) The mixture shall be spread evenly between the glass beadings. It shall be brought to an even grade by means of a strike board then beaten and thoroughly consolidated until the mortar comes to the surface and then smoothened off with a wooden float soak to give a surface free from depressions or irregularities. If any depressions have to be filled a small quantity of the finer material in the proportions specified may be used but this should be avoided as far as possible. The surface shall be finished smooth by trowel.

(d) The operation of mixing carrying placing, consolidating and leveling shall be completes in 30 minutes after which the surface shall not be disturbed. The top surface shall be skinned with neat cement finish and finally rubbed with coconut oil or as directed by the engineer.

WHITE WASHING AND CEMENT WASHING

7.01 WHITE WASH

(a) Before white wash is applied the walls shall be thoroughly cleaned and free from all foreign materials.

(b) The liquid is prepared by mixing and stirring slaked lime and water in such proportion as to produce a mixture with the consistency of this cream. When sufficiently mixed, the wash is strained through coarse cloth. Gum in the proportion of 120 gms to 28 kg of time be added to the screened liquid.

(c) White wash shall be laid on the walls in three coats applied both vertically and horizontally and shall be perfectly dry before the succeeding coat is laid over it. Three coats shall be given unless otherwise directed.

(d) The final wash shall be laid on with hairbrush and not with brush made from jute.

(e) Floor surfaces and anything likely to be splashed shall be covered before applying white wash and when any white wash splashed on to the wood work, windows, door frames etc. it must be removed at once and not be allowed to dry on the wood. The cost of such cleaning or repairing damage shall be included in the tendered rate for white wash or colour wash.

7.2 CEMENT WASHING

The process is the same as for white washing only being added against lime. In order to ensure will be uniform throughout a sufficient quantity of the wash should be prepared at one time to complete each room.

STANDARD SPECIFICATION FOR
PUBLIC HEALTH ENGINEERING WORKS

WATER SUPPLY PORTION

1. **FIXING OF G.I. TUBES AND FITTINGS TO WALLS COLUMNS, PILLARS, SLABS AND CEILINGS**.

(a) Holder bats or clamps holdings and running of G.I. pipes should be so fixed that pipes should have clearance of 15 mm clear to the wall.

For concealing minimum damage to the walls must be ensured

Clamps or holder bats should have the maximum interval as shown in Table

No.1 Concealed pipes must be painted externally with anti-corrosive paint.

(b) Cutting of groves in masonry walls

While groves are made to conceal G.I. pipes, the size of groves should be 7.5 cm x 7.5 cm to the maximum. Pipes should be laid immediately and damages made good with 1:3:6 concrete (with 20mm size stone chips). It should be plastered in cement mortar of 1:4 proportions. In old works the groves area must match the adjoining old surface.

2. **FIXING OF G.I. TUBES AND FITTINGS TO WALLS, COLLUMNS, PILLARS SLABS AND CEILING**

In case of tubes and fittings to the wall or ceiling, these shall run on the surface of the wall or ceilings (not in groves) unless otherwise specified. The fixing shall be done by means of standard batten holder, bat, clamps, keeping the pipe above and 15mm clear of the wall. When it is found necessary to conceal the pipe and when specified so, grooving may be adopted or the pipe fixed in ducts or processes etc. provided there is sufficient space to work on the pipes with the usual tools. The pipes shall not ordinarily be buried in wall or solid floors. Where unavoidable, pipes may be carried for short distances provided adequate protection is given against damage and where so required joints are not carried. Where required, an M.S tube sleeve shall be fixed at a place a pipe is passing through a wall or floor for reception of the pipe and to allow freedom for expansion and contraction and other movement. In case the pipe is embedded in walls or floors. It should be painted with the anticorrosive bitumastic paint of approved quality. The pipe should not come in contact with lime mortar or lime concrete as the pipe is affected by lime. Under floors, the pipes shall be laid in layer of sand filling.

All pipes and fittings shall be fixed truly vertical and horizontal unless unavoidable. The pipes shall be fixed to the walls with the standard batten holder, bat clamps of required shape and size one end of which shall be properly plugged or cemented into walls with cement mortar 1:3 and the other tightened round the pipes to hold it securely. These shall be spaced at a regular interval in straight lengths as shown in the table given below.

Table No.1

Table showing vertical & horizontal spacing of pipes

Sl.No.	Size of pipe in mm	Interval horizontal runs in meters	Vertical runs in meters
01	20	2.50	3.00
02	25	2.50	3.00
03	40	3.00	3.50
04	50	3.00	3.50

The clamps shall be fixed at shorter intervals near the fittings

For pipes of 15mm to 25mm diameter, the holes in the walls and floors shall be made by drilling with chisel or jumper and not by dismantling the brickwork or concrete. However, for the bigger diameter

pipes, the hole shall be carefully made of the minimum possible size . After fixing the pipes the hole shall be made good with the cement mortar 1:3 and properly finished to match the adjacent surface.

Jointing:

The jointing of G.I. tubes and fittings etc. will be done as per the provision stipulated in the B.I.S. specification.

Painting :

The pipes and fittings shall be painted with two coats of approved paints of matching colour to the outer inner surface over a coat of primer as desired by the Engineer-in-charge. The specification for painting as described in the relevant sub-heads of Orissa State P.W.D. specification shall prevail.

3. **BRASS OR GUN METAL WATER FITTINGS :**

General :

The brass or gunmetal fittings shall be of heavy quality and of approved manufacturer and pattern with screwed or flanged ends as specified. The fittings shall, in all respects, comply to the Indian standard specification No.778-1957 and I.S.No. 781-1959. The standard size of brass or gun metal fittings shall be designated by the nominal bore of the pipe outlet to which the fittings are attached. A sample of each kind of fittings shall be got approved from the Engineer-in-charge and all supplies are made according to the approved samples.

All cast fittings shall be sound and free from laps & blowholes. Both internal and external surface shall be clean, smooth and free from sand etc. Burning plugging, stopping or patching of the casting shall not be permissible. The bodies, bonnets, spindles and other parts shall be truly machined so that when assembled, the parts shall be axial, parallel and cylindrical with surface smoothly finished. The area of the waterway of the fittings shall not be less than the area of the nominal bore.
The fittings shall be fully examined and cleared of all foreign matter before being fixed. The joints between fittings and pipes shall be made leak proof. The joints and fittings shall be leak proof when tested to a pressure of 7 Kg. per sqcm as described, and the defective fittings and joints shall be replaced or re-done..

(A) **Brass Bibcock & stop-cock**.

A bib cock (bib tap) is a draw off tap with a horizontal inlet and free outlet and a stop cock (stop tap) is a valve with a suitable means of connection for insertion in a pipeline for controlling or stopping the flow. They shall be of specified size and shall be of screw down type. The closing device should work by means of a disc carrying a renewable non-metallic washer, which shuts against water pressure on a seating at a right angle to the axis of the threaded spindle , which operates it. The handle shall be either crutch or butterfly type securely fixed to the spindle. The valve shall be of the loose leather seated pattern. The cock (tap) shall open in anti-clock wise direction.

The bib cock and stop sock shall be polished bright. The minimum finished weights of bib tap (cock) and stop tap (cock) as given in the I.S. specification are reproduced below:

Table No-2

Table showing the size and weight of Bid Cocks and Stop Cocks.

Sl No	Size of Cocks in mm	Minimum finished weight of Cocks in Kg.	
		Bib Cocks	Stop Cocks
01	8mm	0.25	0.25
02	10mm	0.30	0.30
03	15mm	0.40	0.40
04	20mm	0.75	0.75

When the bib cocks or stop cocks are required to be chromium plated, the chromium plating shall be of grade B type confirming to IS 1068-1958. The Chromium shall never be deposited on brass unless a heavy coating of nickel is interposed. In case these are required to be nickel plated , the plating

shall be of the first quality with a good thick deposit of silvery whiteness capable of taking high polish , which will not easily tarnish , or scale.

In finish and appearance, the plated articles, when inspected, shall be free from plating defects such as blisters, pits, roughness and un-plated areas and shall not be stained or discoloured. Before a plate is plated, the washer plate shall be removed from the fittings. The gland packing shall be protected from the plating solution.

4. CUTTING HOLES UP TO 30 CM X 30 CM ON WALLS INCLUDING MAKING GOOD THE SAME.

General :- Square holes of size as specified or as directed by the Engineer –in-charge shall be cut in the masonry for taking pipes . Any damage to the adjoining portion or to any other items shall be made good as directed by the Engineer-in-charge . All dismantled materials shall be removed from the site.

Masonry Works : Brick work etc., shall be made good by using the same class of brick, tile or stone masonry as was cut during the execution of the work. The mortar to be used shall be cement mortar (1:4) as directed by the Engineer-in-charge.

Finishing : Cement mortar in 1:4 shall be used for plastering or pointing as may be required. The surface shall be finished with two or more coats of white wash/colour wash/distemper/painting as required but where the surfaced is not to be white washed, colour washed, distempered or painted, it shall be finished smooth with a floating coat of neat cement or as required to match with the surrounding surface.

The specifications for brickwork, stonework and finishing etc. shall be the same as detailed under relevant sub-heads of State PWD specification.

5. **CUTTING HOLES UPTO 15CM X 15CM IN RCC FLOORS INCLUDING MAKING GOOD THE SAME.**

General : Square holes of size as specified shall be cut in R.C.C. floor and roofs chajjas for passing pipes etc. Any damage to the adjoining portion or to any other item shall be made good as directed by the Engineer-in-charge. All dismantled materials shall be removed from the site.

Cement Concrete : After insertion of pipes etc. the holes shall be repaired with cement concrete 1:2:4 and the surface finished to match the existing surface. The top and bottom shall be finished properly to make the joint leak-proof. The specifications for cement concrete work and finishing etc. shall be the same as detailed under relevant sub-heads of State PWD specification.

6. **CUTTING GROOVES IN MASONRY WALLS INCLUDING MAKING GOOD TO THEM .**

Making Grooves : Grooves are made in the walls for housing G.I.pipes etc. These shall be up to 7.5 cm x 7.5 cm as directed by the Engineer- in-charge. These shall be provided in correct position as shown in the drawings or as directed by the Engineer-in-charge. No grooves be made if the stability of the building is in danger.

Chiseling out the masonry to proper line and depth shall make grooves. Any damage to the adjoining portion or to any other item shall be made good as directed by the Engineer-in-charge. All dismantled materials shall be removed from the site.

Filling Grooves :
After G.I.pipes are fixed in grooves, the grooves shall be filled with cement concrete 1:3 :6 or cement mortar 1:4 as may be specified or otherwise directed by the Engineer-in -charge and made flush with the masonry surface. The concrete surface shall be roughened with wire brushes to provide a key for plastering.

7. **EMBEDDING PIPES UPTO 150MM DIA IN MASONRY :**

General : Pipe shall be embedded in masonry during construction of the building. A Hole of the size up to 20cm x 20cm or as directed shall be kept in the masonry. The pipes which shall be centrally placed in the hole shall be fixed by filing the stacks with cement concrete all-round. The holes shall be provided at correct positions as shown in the drawings or as directed by the Engineer-in-charge.

Embedding pipes : Pipes shall be embedded in masonry with cement concrete 1:3:6 where the wall thickness is 20 cm. The cement concrete shall be made flush with masonry surface on both sides and the surface roughened with wire brushes to receive plaster . Where the thickness of wall is more than 20cm the other side shall be covered with the same class of brick, tile or stone masonry etc. as provided in adjoining portion of the main building. The masonry shall be paid separately , under the relevant item.

8. **MODE OF MEASUREMENT AND RATES FOR G.I. PIPES FITTINGS AND VALVES USED FOR WATER SUPPLY INSTALLATION IN BUILDINGS**.

The pipes shall be measured over all length including all fittings used along its length correct to the centimeter. No allowance shall be made for the portion of pipe lengths entering the socket of the adjacent pipes or fittings.

The length shall be measured in running meters for the finished length of pipes. The length shall be taken along the center line of the pipes and fittings. Pipes laid in trenches or floors (or without support) and pipes fixed to the walls ceilings, columns, pillars and shafts etc. (with support) shall be measured separately as well as for individual floors separately in case of multi-stories buildings.

The above shall apply to both cases i.e whether the pipes are fixed on wall face or embedded in masonry.

No deduction will be made in the former case from the masonry measurement for the volume of concrete blocks embedded therein.

In no case the fittings along the length of pipe lines shall be measured extra over the pipes except G.M/Brass fittings for the purpose of building.

The water cocks, valves, polythene/lead connection pipes and similar type of fittings shall be counted in numbers for each item separately and for each floor separately. The rate shall include the cost of materials. Labour and tools and plants involved in all the operations described above in workmanship including testing and shall be paid for under respective items unless otherwise stated. Extra rates shall be paid to 1_{st} floor and subsequent higher floors to the respective rates for items in the next lower floor in case of multi storied buildings. Water storage tanks shall be counted in numbers for the completed job. The rate shall include the cost of materials and labour involved in all the operations described including testing except the cost of external painting providing and fixing stop cocks and pipe lines, hoisting and supports for storage tank for which separate payment shall be made under respective items of work. The support for the tanks shall be provided as ordered and shall be measured and paid for separately.

The rate for pipe lines fixed to walls, ceilings, columns, pillars, shafts (or with support) etc. shall include the cost of all materials, labour tools and plants involved in all the operations described under workmanship including testing unless otherwise stated. Extra rates shall be paid for the item of 1_{st} floor and subsequent higher floors to the respective rates for the items in the lower floor in case of multi storied buildings.

In case of pipes laid in trenches or floors (or without support) the rates shall include the cost of all materials, labour, tools and plats involved in all operations described in workmanship including cost of earthwork in excavation of trenches and filling in or back filling. The measurement cutting of holes in walls, floors, roofs, and chajjas shall be counted in numbers for the purpose of billing and the rates shall be for finished items of work. In case of multi-storied building , extra shall be paid to the rates of 1_{st} floor and subsequent higher floors to the respective rates for items in the next lower floor.

Cutting of chases and embedding of pipes shall be measured in running meters correct to the nearest centimeters. The rate shall include the cost of all materials and labour involved in all the operations excluding cost of pipes which shall paid for items of 1_{st} floor and subsequent higher floors to the respective rates for the items in next lower floor. For further details, the mode of measurement and rates as described in public W/S section of the specification may be referred to. The for the items of

works under this section also include the cost of provision, erection and removal of scaffolding benching, ladders, templates and tools required for the proper execution and erection of the work.

The measurement for masonry chambers required for full way valves, stop cocks, water meters and the like should be enumerated. The excavation shall be measured separately under relevant items of earth work. The rates shall include the cost of all materials. Labour, tools and plants involved in all the operations described excluding cost of excavation and refilling.

Painting to the outer surface and refilling under this section shall be measured in running meters separately for each size of pipes and fittings. The rate shall include the cost of materials, labour, tools and plant involved in all the operations of painting unless otherwise stated for the purpose of building. The extra rates for the items of painting in the 1st floor and subsequent higher floors shall be paid to the respective rates for the items of painting in the next lower floor.

9. **CLEANING AND DISINFECTION OF THE SUPPLY SYSTEM** .

All water main communication pipes, service and distribution pipes used for water for domestic purpose shall be thoroughly and efficiently disinfected before being taken into use and also after every major repair. The method of disinfection shall be subject to the approval of the authority. They shall also be periodically cleaned at intervals, depending upon the quality of water and communication pipes and the storage cisterns shall be thoroughly cleaned at least once every year in order to remove any suspended impurities that may have settled in the pipes or the tanks.

Disinfections of storage tanks and down take distribution pipe, Storage tanks and down take pipes shall be disinfected as below.

The storage tanks and pipes shall first be filled with water and thoroughly flushed out. The storage tank shall be filled with water again and disinfecting chemicals containing chlorine added gradually while the tanks are being filled, to ensure thorough mixing. Sufficient chemicals shall be used to give the water a dose of 50 parts of chlorine to one million parts of water. If ordinary bleaching powder is used, the proportion will be 150 kg of powder to 1000 liters of water. The powder shall be mixed with water to a creamy consistency before being added to the water in the storage tank. If a proprietor brand of chemical is used, the proportion shall be as specified by the makers. When the storage tank is full the supply shall be stopped and all the taps on the distributing pipes opened successively, working progressively away from the storage tank . Each tap shall be closed when the water discharged begins to smell chlorine. The storage tank shall then be stopped up with water from the supply pipe and with more disinfections chemical in the recommended proportions, the storage tank and pipe shall then remain charged at least for three hours. Finally the tank and pipes shall be thoroughly flushed out before any water is used for domestic purpose.

10. **INSPECTION AND TESTING** :

(a) **Testing of mains before commencing work** : All pipes, fittings and appliances shall be inspected before delivery at the site to see whether they conform to accepted standards. All pipes and fittings shall be inspected and tested by the manufacturer at their factory and shall comply with the requirements of this section. They shall be tested hydraulically under a pressure equal to twice the maximum permissible working pressure or under such greater pressure as may be specified. The pipes and fittings shall be inspected on site before laying and shall be sounded to disclose cracks. Any defective items shall be clearly marked as rejected and forthwith removed from the site.

(b) Testing of main after laying: After laying and jointing the mains shall be slowly and carefully charged with water, so that all air is expelled from the main by providing a 25mm inlet with a stop cock, allowed to stand full of water for a few days if time permits, and then tested under pressure. The test pressure shall be 5 kg. sqcm or double the maximum working pressure whichever is greater. The pressure shall be applied by means of a manually operated test pump, or in the case of long mains of a large diameter by power-driven test pump provided that the pump is not left unattended. In either case due precaution shall be taken to ensure that the required test pressure is not exceeded. Pressure gauges shall be accurate and shall preferably have been re-calibrated before the test. The pump having been stopped, the test pressure shall maintain itself without measurable loss for at least five minutes. The mains shall be tested in sections as the work of laying proceeds. It is an

advantage to have the joints exposed for inspection during the testing. The open end of the main may be temporarily closed for testing under moderate pressure by fitting a water tight expanding plug of which several types are available. The end of the main and the plug shall be secured by struts or otherwise to resist the end thrust of the water pressure in the mains. (c)

If the section of the main tested terminates with a sluice valve, the wedge of the valve shall not be used to retain the water instead the valve shall be temporarily fitted with a blank flange or in the case of a socketed valve with a plug and the wedge placed in the open position while testing. End support shall be given as above.

(d) Testing of service pipes and fittings: When the service pipe is complete it shall be slowly and carefully charged with water, allowing all air to escape avoiding all shock of water hammer. The service pipe shall then be inspected under working conditions of pressure and flow. When all draw of taps are closed, the service pipe shall be absolutely watertight. All piping fittings and appliances shall be checked for satisfactory support and protection from damage, corrosion and frost. Because of the possibility of damage in transit, cisterns shall be re-tested for water tightness on arrival on the site before fixing.

1. DRAINAGE AND SANITATION REQUIREMENTS:

General : There should be at least one water tap and arrangement for drainage in the vicinity of each water closet or group of water closets in all buildings.

Each family dwelling unit on premises abutting on a sewer or with a private sewage disposal system shall have at disposal that a bath or shower should be installed to meet the basic requirement of sanitation and personal hygiene.

All other structures for human occupancy or use on premises abutting on a sewer or with a private sewage disposal system shall have adequate sanitary facilities but in no case less than one water closet and one other fixture for cleaning purpose.

Buildings other than residence: The requirements for fitments for drainage and sanitation in the case of building other than residence shall be in accordance with tables.

2. DRAINAGE IN TO A PUBLIC SEWER :

Where public sewerage is available the following information is particularly necessary and may be obtained from the authority.

(i) The position of the public sewer or sewer relation to the proposed buildings

(ii) The invert level of the public sewer

(iii) The system on which the public sewers are designated (combined ,separate or partially separate) the lowest at which connection may be made to it and authority in which it is vested.

(iv) The materials of construction and condition of the sewer if connection is not to be made by the authority.

(v) The extent to which surcharge in the sewer may influence the drainage scheme.

(vi) Whether the connection to the public sewer is made or any part of the drain laid by the authority or whether the owner is responsible for this work. If the latter whether the authority impose any special conditions.

(vii) Whether any intercepting trap is required by the authority on the drain near the boundary of the cartilage and

(viii) Where manholes are constructed under roads, the approval of the highway authority to the type of cover to be fitted shall be obtained.

SANITARY FIXTURES :

Different sanitary fixtures must conform to the relevant Bureau of Indian Standard specification.

1. **Indian Water Closet Squatting Pans (I.W.C)**

   A. Distance of the rear edge of the pan and the wall surface where the cistern is to be installed should normally be 350mm to 400mm from the wall surface.

   B. The bottom of the cistern (i.e the height of the brackets) from the top face of the squatting pan should be 1250mm.

   C. Foot rest- 175 mm from the inner edge of the back side of the pan. Distance between two foot rests 330 mm at back and 370mm in the front.

   D. Ablution tap 200 to 300 mm from floor level, projection 1150 mm from the wall surface.

2. **Water closet, pedestal type or European Water Closet (EWC**)

   A. The water closet should be so fixed that its tip should be at a distance of 710 mm from the rear wall. 'P' trap or 'S' trap may be used as per suitability.

   B. The top of the EWC should be at 400 mm from the floor

   C. The top of the low level cistern should remain at 775 mm from the floor

   D. Toilet paper holder should be fixed at a height of 400 mm from the floor

3. **Wash Hand Basin :**

   A. Placement of bracket Height from floor - 790 mm, Center to center distance 580 mm for 630 mm x 460 mm size wash hand basin and 500 mm for 560 mm x 400mm size wash hand basin.

   B. Placement of glass shelf- Height 1150 mm from floor level

   C. Mirror- 1200 mm from floor level

   D. Towel rail – 750 mm from floor level

   E. Distance between basins in row minimum 100 mm or 700 mm center to center and 400 mm away from the wall.

4. **Sink**

   Sink is to be placed on CI or M.S Angle brackets. The angle brackets should be made out of 40mm x 40mm x 6 mm M.S. Angle.

   A. Height of the sink - 800 to 900mm from floor level
   B. Tap of the sink is to be placed at the center of the sink and at 150mm above the top edge of sink.

General : IS 2064-1973 gives the code of practices for the selection, installation and maintenance of sanitary appliance.
Installation of sanitary appliances in any public or private building is usually governed by the local body bye-laws and rules framed under the Act relating to the local body. These are intended to regulate proper layout of the appliance and their connections so that wastes are suitable disposed off the drains without causing in sanitary conditions and nuisance to public. Noting the variations in the bye laws and rules framed by different authorities in the country IS: 2064-1973 was issued to ensure fulfillment of minimum requirement.

SANITARY FIXTURES:

Soil waste and ventilating branch connection with support brackets shall be fitted before the fitting of the appliances is begun. Appliances except those permanently built in shall not be fixed until floor and wall surface are finished ready for decoration. All appliances shall conform to the relevant Indian Standards where they exist, otherwise they shall be of the best quality and workmanship, which shall be approved by a

competent authority. All appliances and sanitary accommodation shall be arranged to facilitate access for cleaning and repairing.

1. **SAND CAST IRON PIPES (HCI PIPES) AND FITTINGS** :

A. These should confirm to IS: 1729-1964 or its latest revision.

B. The pipes and fittings should be true to shape smooth, cylindrical inner and outer surfaces being concentric, free from cracks and pinholes and neatly dressed. The ends of the pipes and fittings shall be square to their axes.

C. Pipes are available with or without ear single socketed or double socketed. These should be procured as per requirement Usual length of the pipes is 1800 mm but available in specific lengths, if so ordered.

D. Laying- The laying is done by spigot- socket joints. The exact lengths are measured at the site, pipes are cut to sizes, if exact lengths of cut pieces are not readily available. In the stack lines, pipes with ears are used. The stack line is fixed to the wall with the help of 100 mm stout nails driven in to wooden blocks fixed in the walls properly secured.

E. Jointing- Jointing is made with the help of spun yarn and cement mortar (1:2). In certain places molten lead used instead of cement mortar. Where molten lead is used, caulking is done after lead gets cooled.

F. Ventilation pipes- It should be raised up above the roof (at least 1 m above the parapet) and guarded with provision of a cowl. The stack lines must be secured to the walls by means of MS stay and clamps.

G. Provision of doors in the fittings is a must so as to clean the line wherever required. The doors must be fitted along with rubber insertion and brass bolts .

H. The lavatory waste stack shall be connected directly to the inspection chamber & man holes where as the wastes from kitchens, Basins, sinks baths are to discharge through gully traps, the gully traps being connected ultimately to inspection chamber/manhole.

I. Pipes and fittings must be internally painted with a coat of coat tar and externally with enamel paint of approved colour over a coat of primer.

All soil waste vent and anti-siphonage pipes and fittings shall confirm to IS: 1720. 1964 or as revised from time to time. The pipes shall have spigot and socket ends with bend on spigot end. The pipes and fittings shall be true to shape, smooth and cylindrical, their inner and outer surface being as nearly as practicable concentric. They shall be sound and nicely cast and shall be free from cracks, laps pinholes or other imperfection and shall be neatly dressed and carefully fettled.

The ends of pipes and fittings shall be reasonably square to their axes.

The sand cast iron pipes shall be of the dia as specified in the description of the item and shall be in length of 1.5 m. 1.8m and 2.00m including sockets end of the pipes unless shorter lengths are either specified or required at junctions etc. The pipes and fittings shall be supplied without ears unless specified or directed otherwise.

All pipes and fittings shall ring clearly when struck over with a light hand hammer and shall be capable of being easily worked with drill or bib.

Tolerances- The standard weights and thickness of pipes shall be as shown in the following table. A tolerance up to minus 10% may however be allowed against these standard weights.

Table No.7

Sl. No.	Nominal dia of bore in mm	Thickness In mm.	Overall weight of pipe excluding Ears (in Kg.)		
			1.5m	1.8m	2.0m
01	02	03	04	05	06
01	50	5.00	9.56	11.41	12.65
02	75	5.00	13.83	16.52	18.37
03	100	5.00	18.14	21.67	-
04	150	8.00	26.70	31.82	-

A tolerance up to minus 15% in thickness and 20mm in length will be allowed. Fittings tolerance in length shall be plus 25mm minus 10mm.

The thickness of fittings and their socket and spigot dimensions shall conform to the thickness and dimensions specified for the corresponding sizes of straight pipes. The tolerance in weights and thickness shall be the same as per straight.

The access door fittings shall be designed so as to avoid dead spaces to avoid accumulation of filth. Doors shall be provided with 3mm rubbers insertion packing and when closed and bolted these shall be watertight.

Sand cast iron pipes floor trap- sand cast iron floor trap shall be 'P' or 'S' trap with minimum 50mm seal and shall be self cleansing design.

Fixing and jointing:- The pipes and fittings shall be fixed in vertical alignment unless otherwise specified and shall be secured to the walls at all joints with M.S holder butt clamps. The clamps shall be made from 1.6mm thick M.S sheet of 30 mm width bent to the required shape and size so as to fit tightly on the socket of the pipe when tightened with screw bolts. It shall be formed out of two semi circular pieces hinged with 6mm dia M.S pin on one side and provided with flanged ends on the other side with holes to fit in the screw bolt and nut 40mm long. The clamps shall be provided with a hook made out of 275mm long 10mm diameter M.S bar riveted to the ring at the center of one semi circularly piece. The clamp shall be fixed to the walls by embedding their hooks in cement concrete blocks 100mm x 100mm x 100mm 1:2:4 mix for which necessary holes be made in the walls at proper places. The clamps shall be kept about 25mm clear of finished face of walls, so as to facilitate cleaning and painting the pipes.

The pipes shall be fixed vertically. The spigot of the upper pipe shall be properly fitted in the socket of the lower pipes such that there is uniform annular space for filling with the jointing materials. The annular space between the spigot and socket shall be filled with a few steins of spun yarn soaked in cement slurry or blown bitumen grade 85/25 or lead caulked. Caulking tools shall press these home. More steins of yarn shall be wrapped, if necessary and be rammed home. The joint shall then be filled with stiff cement mortar (1:2) well pressed with caulking tools and finished smooth at top at an angle of 45_{o} sloping up. The joint shall be kept wet at least for 7 days by laying four folds of gunny bag to the pipe and keeping it most constantly.

Where pipes are embedded in masonry, these shall be fixed in the masonry work as it proceeds. The pipe shall be kept vertical or to the line as directed by the Engineer-in-charge . The pipe shall have a minimum surrounding of 12mm thick cement mortar at every portion of external surface. The mortar shall be of the mix as used in masonry work. The length shall be caulked in with lead as soon as the next length of pipe placed in position. The open end (socket end) of the pipe shall be kept closed till the next length of pipe is fitted and jointed to prevent any brickbat or concrete or pieces or wood failing in and chocking the pipe.

The spigot end shall batt the shoulder of the socket and leaves no gap in between. The annular space between the socket and spigot will be first well packed in with spun-yarn leaving 25mm from the lip of the socket for the lead. The joints shall then be lead caulked as described in detail under jointing of CI S/S pipes with lead joint in public W/S section of this specification . Pipes with ears shall be secured with 40mm bore steel or iron barrel distance pieces or bobbins and stout CI/MS nails 10cm long driven into hard wood plugs fixed in walls. Access doors to fittings shall be provided with 3mm thick rubber insertion packing and received with screws to made them air/water tight.

All soil pipes shall be carried up above the roof and shall have a wire baboon guard or a cowl as specified.

Height of ventilation pipes. All soil pipes shall be carried up above the roof and shall have sand cast iron terminal guard. The ventilating pipe or shaft shall be carried to a height of at least 1 meter above the outer covering of the roof of the building or in the case of a window in a gable wall or a dormer window , it shall be carried up to the ridge of the roof or at lease 2 meters above the top of the window. In the case of a flat roof to which access for use is provided it shall be carried up to a height of at least 1 mtr. above the parapet or 2 mtrs above the roof which ever is greater and shall not terminate within 2 mtr measured vertically from the top of any window or opening which may exist up to horizontal distance of 5 mtr from the vent pipe in to such building and in no case shall be carried to a height less than 3 mtr above plinth level.

Where ventilating pipes are carried in pipe shafts, the shaft shall be of a minimum size of 1 mtr x 1 mtr. If shafts are also used to give light and air to rooms, the ventilating pipe must be carried to a horizontal distance at roof level of not less than 5 mtr from the side of the shaft. The payment for the shaft is made separately.

The pipes above the parapet shall be secured to the wall be means of M.S stay and clamps as explained below.

M.S. Stay and Clamps : Sand cast iron pipes above parapet shall be fixed with MS clamps & stays. The Clamps shall be made be made from 1.5mm M.S flat of 32mm width, bend to the required shape and size to fit tightly on the socket when tightened with screw bolts. It shall be formed of two semi circular pieces with flanged ends on both sides with holes to fit in the screw bolts and nuts, 40mm long. The stay shall be minimum 1 mtr long of 10 mm Dia MS bar. One end of the stay shall be bent to form a hook to be fixed with the clamps by means of bolt and nut and the other end shall be bent to be fixed with the clamps by means of bolt and nut and the other end shall be bent for embedding in the wall in the cement concrete block of size 20 cm x 10cm x 10 cm in 1:2:4 mix. The concrete shall be finished to match with the surrounding surface.

Other details : - The connection between the main pipe and branch pipe shall be made by using branches and bends with access door for cleaning.
Floor traps shall be provided with 25mm dia puff pipe where length of the wastes is more than 180cm or the floor trap is connected to a waste stack through bends.
The waste from lavatories, kitchens, basins, sinks, baths and other floor traps shall be separately connected to respective waste stack of inspection chamber/upper floors. The waste stack of lavatories will be connected directly to manhole while the waste stack of others shall separately discharge over gully trap.

Every starting manhole shall have a 100mm sand cast iron vent, terminating at 1m above the parapet of the building.

The main anti- siphonage pipe shall be of 50mm internal diameter. When more than one branch from water closet/sink are connected with the soil pipe and discharge into it anti-siphonage from the lowest one should pass through the wall and be carried up outside the building parallel to the soil pipe to a point 1.5 mtrs. minimum above the highest branch. It can then be connected to the soil pipe or it can be carried independently. The anti-siphonage pipes of all the intermediate floors, water closets should be joined with the main anti-siphon age pipe. The ventilating pipe shall have internal diameter of not less than 50 mm in all parts and shall be connected with arm of soil pipe on trap through a 45_{o} branch at a point not less than 7.5 cm and not more than 30 cm from the highest part of the trap and on the side of the water seal which is nearest to the soil pipe. The joining shall be done according to the specification for piping materials used in soil, vent or waste pipes.

Joints shall be filled and caulked as described under sub-head water supply. The depth of lead from the lip of the pipe socket shall be 25mm.

Testing : All sand cast iron pipes and fittings including joints shall be tested by a smoke test to the satisfaction of the Engineer-in-charge and left in working order after completion. The smoke test shall be carried out as stated under.

Smoke shall be pumped into the pipe at the lowest end from a smoke machine which consists of a bellow and burner. The materials usually burnt is greasy cotton waste which gives out a clear pungent smoke which is easily detectable by sight as well as by smell if there is leakage at any point of the drain.

Painting- All the sand cast iron pipes and fittings shall be painted with colours, with two coats of paint over a coat of primer on exposed surfaces and as directed by the Engineer-in-charge, Besides, the sand cast iron pipes and fittings shall be painted with a coat of coal tar to the inside surfaces before laying and jointing of pipes and fittings. The specification for painting as described in the relevant sub-heads of Orissa P.W.D specification and revised time to time shall apply in this case also.

2. **SOAK PIT/SEEPAGE PIT :**

The work shall conform to clause 5.2.1 of IS: 2470 (Part-2) 1985. The general feature of the work is as under.

The soak pit/seepage pipe may be of any suitable shape. Preferably circular with minimum diameter 0 & 0.90 m and not less than 1.0 m depth below the invert level of the inlet pipe. The pit may be lined with stone, well burnt brick or concrete blocks with dry open joints which should be backed with at least 75mm of clear course aggregate. The lining above the inlet level should be finished with mortar. In the case of large dimensions the top lining portion may be narrowed to reduce the size of the RCC cover slab. The pit must be raised above ground level to cut off the surface run off.

3. **SAND CAST IRON GULLY TRAP WITH MASONRY CHAMBER**

Gully traps shall conform to IS: 1729-1964 or as revised from time to time. These shall be round, free from visible defects such as cracks, laps, pin holes or other imperfection and shall be neatly dressed and carefully fitted. They shall give a sharp clear note when struck with a light hammer. There shall be no broken blisters.

Each gully of trap shall have one C.I. grating of square size corresponding to the dimension of inlet of gully trap. It will also have a water tight C.I. cover with frame inside dimensions 300 x 300 mm, the cover weighing not less than 4.53 Kg. And the frame not less than 2.72 Kg . The grating cover and frames shall be of round and good casting and shall have truly square machined seating faces.

Excavation- The excavation of gully trap chamber shall be done true to dimensions and levels as indicated on plans or as directed by the engineer-in-charge . This work shall be done generally as per specification given under sub-head earth work.

Fixing- The gully trap shall be fixed on cement concrete foundation 70mm square and not less than 15 cm thick. The mix for the concrete will be 1:2:4. The jointing of gully trap outlet to the branch drain shall be done similar to jointing of S.C.I. pipes as directed in relevant paragraph.

Brick masonry chamber:- After fixing and testing gully trap and branch drain a brick masonry chamber of 300 x 300 mm inside size using K.B. bricks having adequate crushing strength in cement mortar 1:3 shall be built with a 1250 cm brick work round the gully trap from the top of the bed concrete up to ground level. The space between the chamber wall and the trap shall be filledin with cement concrete 1:2:4 mix. The upper position of the chamber i.e. above the top level of the trap shall be plastered inside with cement mortar 1:3 finished with a floating coat of neat cement. The corners and bottom of the chamber shall be rounded off so as to slope towards the grating C.I. cover with frame 300x300mm inside shall then be fixed on the top of the brick masonry with cement concrete 1:2:4 and rendered smooth. The finished top of cover shall be left about 4 cm above the adjoining ground level so as to exclude the surface water from entering the gully trap chamber.

4. **MODE OF MEASUREMENT AND RATE FOR CAST IRION SOIL WASTE VENTILATION BUILDING PIPES AND FITTINS.**

The pipes shall be measured overall length including all fittings along its center line correct to centimeter and when collars or loose sockets are used, these shall be measured along with pipes. No allowance shall be made for the portion of pipe lengths entering the socket or the adjacent pipes of fittings.

Pipes laid in trenches or floor (or without support) and pipes fixed to the walls, columns, pillars shafts and ceilings etc. (with support) shall be measured separately as well as for individual floors separately. The above shall apply both cases i.e. whether the pipes are fixed on wall face or embedded in masonry.

No deduction will be made in the former case from the masonry measurement for the volume of concrete blocks embedded therein. In no case the fittings along the length of pipe lines shall be measured extra over the pipes for filling.

The rate shall include the cost of all materials and labour, tools and plants involved in all the operations described under workmanship including testing but excluding cost of joints and jointing materials in case of pipes fixed to wall ceilings columns, pillars, shafts etc.

In case of pipes laid in trenches or floors the rates shall include the cost of all materials , labour, tools and plants involved in all operations described in workmanship excluding cost of excavation of trenches, filling in joints and jointing materials.

The joint either of lead caulked or cement joints shall be paid separately including cost of all jointing materials, labour, tools and plants and testing unless otherwise specified.

The joints shall be counted in numbers for different size of pipes for the purpose of billing.

The lead caulked joininting includes for lead, spun yarn, fuel etc. preparing the joints. leading , caulking and testing etc.

In case of AC/SCI soil waste fixed to columns, pillars , shaft , ventilation pipes and fittings walls and ceiling and the joint thereof either lead or cement joints the measurement shall be taken separately for each floor of multistoried buildings for the purpose of billing and extra rates shall be paid for the items of 1st floor and subsequent higher floors to the respective rates for items in the next lower floor unless otherwise stated.

Wiped solder joints shall also be enumerated separately. The mode of measurement for hole cutting in walls, floors, chajjas including making good the same shall be counted for billing and the rate shall be for completed items of works with supply of all materials, labour and T&P . In case of multistoried building extra rates shall be paid to the items of 1st floor and subsequent higher floors to the respective rates of cutting holes in walls, floors roofs, chajjas etc. in the next lower floor.

Cutting of chases and embedding of pipes shall be measured in running meters correct to centimeters. The rate shall include the cost of all materials and labour involved in all the operations excluding cost of pipes which shall be paid separate. Extra rates, shall be paid for the item of 1 st floor and subsequent higher floors to the respective rates of or items in the lower floor in case of multistoried buildings.

The drains shall be measured in running meters. The dimensions shall be measured correct to a centimeter. The rate shall include the cost of all materials and labour involved in all the operations described above. Suitable deductions for a extra payment per cm basis shall be made in case there is a variation in average depth from those provided in relevant paragraph above.

The measurement for inspection chambers, manhole chambers, gully trap chambers grease trap chambers, soak pits and the like shall be enumerated. The excavation shall be measured separately under relevant items of earth work. The rates shall include the cost of all materials. Labour , tools and plants involved in all the operations described excluding cost of excavation, refilling.

Painting to the outer surface of sand cast iron pies and fittings and A.C pipes and fittings shall be measured in running meters separately for each size of pipes and fittings . The rate shall including the cost of materials, labour, tools and plants involved in all the operations of painting excluding inside painting. The extra rates for the items of painting in the 1st floor and subsequent higher floors shall be paid to the respective rates for the items of painting in the next lower floor unless otherwise stated.

In no case, inside painting of above pipes and fittings with a coat of tar shall be measured and paid as the same include in the measurement of laying of above pipes and fittings.

5. **INSTALLATION AND APPLIANCES :**

1.Water closet squatting Pans ((India Type W.C. Pans):

Squatting pans shall be either of white glazed earthen-ware, white vitreous china or white glazed fire clay as specified. These shall be of following two patterns.

i. Lony Pan pattern (size 580 mm)
ii. Orissa Pattern (size 580 mm)

Each pan shall have an integral flushing rim of suitable type. It shall also have an inlet or supply horn for connecting the flush pipe. The flushing rim and inlet shall be of the self-draining type. It shall have weep hole at the front unless otherwise specified or ordered by the Engineer-in-charge. The inside of the bottom of the pan shall have sufficient slope from the front towards the outlet and the surface shall be uniform and smooth to enable easy and quick disposal with flushing. The exterior surface of the outlet below the flange shall be an unglazed surface which shall have grooves at right angles to the axis of the outlet.

The pans intended to be fixed in bungalows or superior class of buildings shall be of vitreous china or of white glazed fire clay with or without integral foot rest as specified. In all cases a pan shall be provided with a (1000 S.C.I. trap ‘P’ or ‘S’ type with approximately 50 mm water seal and 50 mm dia vent horn, where required by the Engineer-in-charge.

Materials for water closet squatting pans suite Installation : The suite shall consist of a water closet, squatting pan, and 12.5 liters or 15 liters high level cistern with C.I. or M.S brackets, 32mm dia G.I. polythene telescopic flush pipe with brass unions and foot rest as per requirements described in the flowing paragraphs.

The flush pipe shall be of galvanized steel tube. Lead pipe or copper or copper alloy (or copper alloy) or polythene pipe having a nominal internal diameter of 32mm . The steel flush pipe shall be of seamless or welded tube not less than 1 mm thick sheet and shall be completely protected inside and out side by hot galvanizing or other equal efficient method of protection. The flushing pipe will be of suitable length with bends etc. as required for fixing it with front or the back inlet waster closet pan.

Galvanized iron over flow pipe shall be of 20mm nominal bore and shall have a non-corrodible mosquito proof brass cover having 1.25 mm dia.

Fixing of Pan : The pan shall be sunk in to the floor and embedded in a cushion of average 15 cm cement concrete 1:4:8) . This concrete shall be left 15 mm below the top level of they pan so as to allow for flooring and its bed concrete. The pan shall be provided with a 100mm H.C.I. trap 'P' or 'S' type with an approximately 50mm seal and 50mm dia vent horn where required by the Engineer-in-charge . The joint between the pan and trap shall be made leak proof with cement mortar (1:1).

Foot Rests : After laying the floor, as specified a pair of foot rest of size not less 25 cm x 13 cm x 3 cm of white glazed earthen ware shall be set in cement mortar (1:3). The flooring shall be laid separately . Foot rest shall be fixed at a distance of 330 mm at back and 370 mm at front and 175 mm from the inner edge of the back side of the pan.

Water Closet (Pedestal type) suite :

Plastic seat cover : The dimension of plastic seat and cover shall conform to IS: 2548-1963 they shall be made of molded synthetic materials, which shall be tough and hard with high resistance to solvents and shall be free from blisters and other surface defects and shall have C.P. brass hinges and rubber buffers. They shall be free from twist and the underside shall be flat and the underside edge shall be raised. Each seat shall have at least four rubber buffs of suitable size. All seats and covers shall be finished smooth.

6. LIPPED URINALS.

Urinals basing shall be of flat back or corner wall type lipped in front. They shall be of white glazed earthenware with vitreous china or white glazed fire clay and of size specified. The urinals shall be of one piece construction. Each urinal shall be provided with not less than two fixing holes of a minimum dia of 8.5mm on each side . Each urinal shall have an integral flushing rim of suitable type and inlet or supply horn for connecting the flush pipe. The flushing rim and inlet shall be of the self drainage type. It shall have a weep hole of the flushing inlet of the urinal. At the bottom of the urinal an outlet horn for connecting to an outlet pipe shall be provided with grooves at right angles to the axis of the outlet to facilitate fixing to the outlet pipe. The inside surface of the urinal shall be uniform and smooth throughout to ensure efficient flushing. The bottom of pan shall have sufficient slope from the front towards the outlet such that there efficient drainage of the urinal.

Materials for lipped urinal installation (single or range): Lapped urinal installation shall consist of a lipped urinal (single or range) on high level automatic flushing cistern, C.I. polythene flush and waste pipe as per requirement described in the following paragraphs.

Fixing of lipped urinals:- Lipped urinals shall be fixed in position by using wooden plugs and screws. It shall be at a height of 65 cm from the floor level to the top of the hip of the urinal unless otherwise directed by the Engineer-in-charge. The wooden plugs shall be of the size shown in the drawing and shall be fixed in wall in cement mortar (1:3). The height of front edge of the lipped urinal from the standing level shall be 65 cm.

Each urinal shall be connected to 32 mm dia waste pipe, which shall discharge in both channel and a floor trap. The connection between the urinal and flush or waste pipe shall be made by means of putty or white lead mixed with chopped lamp.

Waste pipe shall be of 32mm nominal bore P.V.C. pipe and shall be paid for separately.

7. **WASH BASINS :**

Wash basins shall be of white glazed earthenware white china or white glazed fire clay as specified. They shall be of the following two types and of sizes indicated against each type.

Type –1 Flat back 630mm x 450mm and 550 mm x 400mm
Type- 2 Angle back 600mm x 480mm and 400mm x 400mm

Wash basins shall be of one piece construction including a combined over flow. All internal angles shall be designed so as to facilitate cleaning. Each basin shall have a rim on all sides in contact with the stalls and shall have a skirting at the back. Basins shall be provided with single or double tap holes as specified. The tap holes shall be square. A suitable tap hole batten shall be supplied if join top hole is nor required in installation. Each basin shall have a circular waste hole to which the interior of basin shall drain. The waste hole shall be either rebated or beveled internally with dia of 65 mm at top and depth of 10 mm to suit a waste plug having a diameter of 64 mm each basin shall be provide with a non ferrous 32 mm waste fitting stud slots to receive the brackets on the under side of the wash basins shall be suitable for a bracket with stud not exceeding 13 mm dia, 5 mm high and 305 mm from the back of the basin to the center of the stud. The stud slots shall be of depth sufficient to take 5 mm stud. Every basin shall have an integral soap holder recess or recesses which shall fully drain in to the bowl. The position of the chain stay holes shall not be lower than the over flow slot. A slot type of over flow having an area not less than 5 sqcm shall be provided and shall be so designed as to facilitate clearing of the over flow. The specification for waste plug chain and stay shall be the same as given an para of sinks.

White glazed pedestal for wash basin shall be provided where specified. The quality of the glaze and colour of the pedestal shall be exactly the same as that of the basin with which it is to be installed . It shall be completely rests at the back for the reception of supply and waste pipes and fittings. It shall be capable of supporting the basin rigidly and adequately and shall be so designed as to made the height from the floor to the rim of basin 75 cm to 80cm.

All the waste fittings shall be chromium plated . The chromium plating shall be of grade ‘B’ type conforming to IS 1056-1958 or as revised time to time.

8. **SINK :**

The sinks shall be of white glazed earthen ware white vireos shina of white glazed fire clay or marble ships as specified and shall be of the following size.

600mm x 450mm x 150mm, 660mm x 450mm x 250mm, 750mm x 450mm x 250mm

They shall be of one piece construction, including a combined over flow. The floor of the sink shall gently shope towards the outlet. The outlet shall in all cases be suitable for waste fittings having flanges of 88 mm dia and the waste hole shall have a minimum diameter of 65 mm at the bottom to suit the waste fittings. The waste hole shall either riveted or beveled having a depth of 10 mm. Each sink shall be provide with a non-ferrous 50 mm dia waste fittings. The sink shall be 30 mm below top edge.

Each sink shall be provided with a waste plug of suitable dia, chain and stay. The plug shall be of rubber or equal suitable materials and shall be water tight when fitted plug chins shall be of brass wire of 1.8 mm with braced over links approximately 13 mm in both and shall be chromium plate. It shall have an over all length from the collar to the stay of not less than 300 mm. There shall be a triangular or D-cackle at each end. One of which shall be braced to the plug and the other securely fixed to the stay. The 50 mm long shank of the waste shall be threaded to the full length to the underside of flange in each case. The waste fittings and plug fittings shall chromium plate. The chromium plating be of grade ‘B’ type conforming to IS- 10661958 or as revised.

Marble chips sinks are not recommended for use where washing of any grease covered materials is done. They are also not recommended for domestic use.

Where the sinks do not have chain stay holes, suitable arrangement should be made for fixing of one end of chain. Nothing extra will be payable if this requires a chain larger than 300mm.

Sink Installation: The installation shall consist of an assembly of sink M.S or brackets, C.P. brass trap union and G.I/PVCwaste pipe.

Fixing of Sink : The sink shall be supported on M.S or C.I. cantilever brackets embedded in cement mortar (1:3) or fixed in to position by means of wooden plugs and screws. The M.S or C.I. brackets shall conform to IS: 775-1962 or revised from time to time. Where specified, 40 mm x 40mm x 6mm angle or 'T' iron brackets shall be provided in place of conventional type brackets. The wall plaster on the rear shall be cut to rest over the top edge of the sink. After fixing the sink, the plaster shall be made good and surface finished to match with existing one.

The C.P. brass trap and union shall be connection 40mm nominal bore G.I/PVC waste pipe which shall be suitably bent towards the wall and which shall either discharge in to an open drain, leading to a gully trap or direct in to a gully trap, on the ground floor and shall be connected to as waste pipe stack through a floor trap on upper floors C.P. brass trap and union may not be provided where surface drain or a floor trap is placed directly under the sink and waste is discharged in to vertically. The brass trap and union and waste pipe shall be separately paid.

Where so specified a 20 mm G.I. puff pipe terminating with a perforated brass cap screwed on it on the out side of the wall or connected to the anti- siphon stack will be provided. The height of front edge of the basin from the floor level shall be 80 to 90 cm.

The sink shall be provided with 40 mm C.P. brass trap and union. Chromium plating shall be of grade 'B' type conforming to IS: 1068-1958 or as revised from time to time.

Painting: Brackets shall be painted where so specified with two or more coats of approved quality of paint to match the shade of surrounding walls.

9. **MIRROR** :

Materials : The mirror shall be of superior glass with edges rounded off or bevelled as specified. It shall be free from flaws, specks or bubbles. The size of the mirror shall be 600mm x 450mm unless specified otherwise and its thickness shall not be less than 5.5mm to 6mm.

The glass for the mirror shall be uniformly silver plated at the back and shall be free from silvering defects. Silvering shall have a protective uniform covering of red lead paint.

Fixing- The mirror shall be mounted on 6 mm thick plain asbestos sheet ground and shall be fixed on the position by means of C.P. brass screw and C.P. brass washers over rubber washers and wooden plugs firmly embedded in the wall. C.P. brass clamps with C.P. brass screws may be alternative methods of fixing where so directed. Chromium plating shall be grade 'B' type conforming to IS: 1069-1958 or as revised from time to time. Unless specified otherwise , the long side shall be fixed horizontally. The height of the bottom edge of the mirror shall generally be 120 cm above the floor level unless otherwise specified.

Glass Shelf Unit :- The unit shall consist of an assembly pf glass shelf guard rail and supporting brackets.

The shelf shall be of glass best quality with edges rounded off and shall be free from flows, speaks or bubbles. The size of the shelf shall be 60 cm x 120 cm unless otherwise specified and thickness not less than 6 mm the half shall have C.P. brass guard rail resting on reselling on rubber washers on the glass plate and C.P. brass brackets which shall be fixed with C.P. brass screws to wooden plug firmly embedded in the walls, chromium plating shall be grade 'B' type conforming to IS: 1068-1958 or as revised from time to time. Unless specified otherwise the longer side shall be fixed horizontally. The height of the glass shelf shall be 115 cm unless otherwise specified.

TOWEL RAIL :The towel rail shall be C.P. brass with two C.P. brackets. The size of the rail shall be 750 mm x 20mm dia or 600mm x 20mm dia 1.25 mm thick as specified. Chromium plating revised from time to time. The brackets shall be fixed by means of C.P. brass screws to wooden plugs firmly embedded in the wall. The height of the towel rail above the floor level shall be 75 cm unless otherwise specified.

TOILET PAPER HOLDER : The toilet paper holder shall be of wooden or C.P. brass as specified and of size and design as approved by the Engineer-in-charge. The wooden toilet paper holder shall be

made of second class teak wood finished with approved quality of paint. It shall be fixed in position by means of screws and wooden plugs embedded in the wall.

In case of C.P. brass toilet paper holder, C.P. brass screws shall be used for fixing. Chromium plating shall be or grade B type conforming to I.S. 1068-1958 or as revised from time to time.

Table showing the Position on and Height of Different Fixture Unit

01	Wash Hand Basin	The top of the rim of the basin shall be 75 cm to 80 cm above the floor level.
(a)	For age groups 5 to 7 years 7 to 9 years 9 to 11 years	Height from floor level to rim of the basin 58 cm 63 cm 68 cm
(b)	Wash Hand basins fixed in ranges	There shall be a space of at least 10 cm between the basins and 70 cm center to center of basins the center line of the last basin shall be kept at least 40 cm away from the adjacent wall.
02	Sink	The height from the floor level to the top of the front edge of the sink with the integral diameter shall be preferably 80 cm to 90 cm and where separate drains are used the height shall be reduced to 80 cm and the tap for the sink shall be fixed 15 cm above the top of the sink centrally.
03	Urinals	Urinals shall be designed to allow a minimum clear width of 60 cm between partitions and may be stall bowl or any other suitable type. Top of lip or bowl shall be about 65 cm from the floor level.
04	Indian water closet (Pan)	For fixing IWC the tap shall be fixed at a distance of 350 mm to 400 mm from the backside wall (in center of the top)
05	Low level cistern	The height shall be fixed at 30 cm from top of the pan to the bottom of the cistern according to length of flush bend meant for the cistern.
06	Fixing of Mirror	The mirror shall be mounted on 6 mm thick plan asbestos sheet and shall be fixed in position by means of 4 C.P. brass screws and C.P. brass washers over rubber washers and wooden plugs firmly embedded in the wall unless specified otherwise , the longer side shall be fixed horizontally. The bottom level of the mirror shall be fixed at a height of 120 cm from the floor level.
07	Fixing of Glass Shelf	The glass shelf shall be fixed with C.P. brass screws to wooden plugs firmly embedded in the wall between basin and mirror The height of the glass shelf above the floor level shall be 115 cm unless otherwise specified.
08	Fixing of Towel Rail	The rail shall be of C.P. brass with two C.P. brass brackets. The brackets shall be fixed by means of C.P. brass screws to wooden plug firming embedded with wall. The height of towel rail above the floor level shall be 75 cm unless otherwise specified.

Wooden plugs- The plugs shall be of hard wood and of size 50 mm x 50 mm at base tapering to 38 mm x 38 mm at top and length 50mm. These shall be fixed in wall in cement mortar 1:3 . After the plugs are fixed in the walls, the mortar shall be cured till it is set.

SPECIFICATION FOR EXECUTION IN THE FIELD.

1. **Laying of Galvanized mild steel tubes** :

a. Depth of the trench- The depth of the trench should be 60 cms for 15 mm to 50mm diameter pipes and 75 cms for pipes 65 mm to 150mm diameters.
b. Width of the trench - The width of trench should be 30 cms for 15 mm to 50 mm diameter pipes and 45 cms for 65 mm to 150 mm diameter pipes.

2. **Laying of Glazed Stoneware pipes**

(Sewer) Width of trench:

i. For all diameters up to an average depth of 120 cm width of the trench in cm dia of the pipe + 30 cm.
ii. For all diameters for depth above 120 cm width of the trench in CM= dia of the pipe + Cm.
iii. Not withstanding (a) and (b) above, the width of trench should not be less than 75 cm for depth exceeding 90 cm.

3. **Laying of Un-elasticized Pipes:**

i. Width of the trench- The width of the trench should be minimum required for working.
ii. Depth of the trench- The depth of the trench should be minimum 1.0 mtr from the ground level.

SPECIFICATION FOR LAYING OF STONEWARE SEWERS :

1. **Excavation in trench** :

a. Depth of trench- It should be sufficient to provide a minimum cover of 90 cms of more according to the required gradient and alignment.

b. Width of trench- (i) For all diameters up to an average depth of 120 cms outside diameter of pipe + 30 cms and (ii) for all diameters for depth above 120 cms outside diameter of pipe + 40 cms.

However the total trench width should not be less than 75 cms for depth exceeding 90 cms.

2. **Bed concrete** :

Cement concrete (1:4:8) is used as bed concrete for S.W. pipes. The width of concrete is same as the width of trench as stated above and the depth below the pipes is 10 cms . For pipes under 150 cms nominal diameter and 1/4$_{th}$ internal diameter subject to minimum 15 cms. And maximum 30 cms for pipes of more than 150 mm diameters.

Following 3 types of bed concrete are done.

a. Bedding- Where the pipes are laid on soft soil with maximum water table level, laying at the invert level of the pipe.

b. Hunching- Where the pipes have to be laid on a soft soil with the maximum water table level rising above the invert level of pipe but below the top of the barrel.

c. Surround or Encasing- The pipes shall be completely encased or surrounded with concrete in the following cases.

i. Where the maximum water table level is likely to rise above the top of the barrel.
ii. Where the sewers are to be laid adjacent to growing trees.
iii. Where the depth of the pipe is less than 1.2 mtrs under the road surface.

iv. When the superimposed load exceeds 1600 kg per mtr length of pipes.

3. **Laying :**
The stoneware pipes shall be laid with sockets facing up the gradient on desired bedding to proper gradient (IS: 4127-1967)

4. **Jointing:**
The stone ware pipes shall be cement jointed or provided with bituminous joints.

The spun yare soaked in neat cement slurry or tarred gasket is inserted and rammed to occupy maximum one fourth depth of socket and cement mortar (1:1) slightly moistened and carefully inserted by hand tightly and finished of neatly outside the socket at an angle of 45 $_{o}$ (IS: 4127-1967) and should be cured at least for 7 days before testing. Rubber gaskets may also be used for jointing.

SPECIFICATION FOR CONSTRUCTION OF MANHOLE CHAMBER :

1. Construction- The construction of manhole chambers may either be done in brick work or reinforced cement concrete work as pr IS: 4111 (part-I)-1967.

2. Foundation- Foundation bed shall be minimum 15 cm thick of M-15 grade cement concrete (1:2:4) and the thickness of foundation concrete may be increased to 30 cm when sub-soil water is encountered.

3. Brick work- The brick work shall be built with K.B. bricks having crushing strength between 100 to 149 Kg/Sqcm in centimeter mortar (1:3) . The thickness of wall shall however be not less than 25 cm. The walls shall be plastered both inside and outside in cement mortar 1:3. The channel or drain at the bottom of the chamber shall be plastered with cement mortar 1:2 proportion and finished smooth . Cement punning should be done to inside plastering benching and channelling.

4. Sewer connection- A cement concrete collar of 75 mm minimum thickness using 12 mm aggregates and cement concrete of proportion (1:1.5:3) should be provided over the sewer where it passes through manhole walls, and a brick selecting arch should be turned over the sewer pipe.

5. R.C.C. Manholes- Where sewers are to be laid in high sub-soil water condition manholes may be constructed in reinforced cement concrete 1:1;5:3) . The manhole of this type shall be preferably circular type.

6. Channel- (1:2:4) with 12 mm size H.B. G chips : Channel shall be semi-circular in bottom half and of diameter equal to the sewer . Above the horizontal diameter, the sides shall be extended vertically, preferably to the full vertical diameter and the top edge shall be suitable rounded off.

7. Benching (1:2:4) with 12 mm size H.B.G. chips- The benching should have a fall towards the invert of about 1:10.

8. R.C.C Roof slab- The RCC roof slab 1:2:4 with 12 mm h.b. g. chips in case of a deep manhole should not be less than 150 mtr . The manhole covers and frame to the bedded on the top the cover being at road level. The manhole frame should not be embedded in the R.C.C roof slab to facilitate replacement and adjustment where necessary.

9. Rung (Step Iron): Where the depth of manhole is more than 0.8 mtrs rung shall be provided which may be made of tar dipped C.I. or M.S and of suitable dimension. These rungs may be 38 cm apart horizontally. The top rung shall be 45 cm below the manhole cover and the lowest not more than 30 cm above the benching vertical distance between successive rungs shall be 30 cm.

10. Manhole cover:- The size of man hole cover shall be such that there shall be a clear opening of at least 50 cm in diameter and for manholes exceeding 0.9 mtrs in depth circular covers are considered desirable.

11. Size of manhole- The minimum internal sizes of different manholes should be as follows as per paragraph 4.2 .1.2 of manual on sewerage and sewage treatment (2$_{nd}$ edition)
a.**Rectangular Manhole**

i. For depth less than 0.9 m = 900 x 800 mm
ii. For depth from 0.9 m upto 2.5 = 1200 x 900 mm
iii.

12. **Spacing of manhole :**
The maximum spacing of manholes in any sewer line should be as follows

Pipe dia in mm	Spacing in M
Below 900	30
900 to 1500	90 to 150

Manholes should also be built at every change of alignment gradient or diameter at head of all sewers and branches and at the junction of two or more sewer.

Paragraph 4.2.1.1 of manual on Sewerage and Treatment (2nd Edition) may be referred

GENERAL CONDITIONS & TECHNICAL SPECIFICATION FOR ELECTRIFICATION WORKS

1.0 General Requirements

The installations shall generally be carried out in conformity with the requirements of Indian Electricity Act, 1910 as amended up to date and Indian Electricity Rules, 1956 framed there under, the relevant regulations of the Electric Supply Authority concerned and also with the specifications laid down in the Indian Standard IS: 732/1963 "Code of Practice (Revised) for Electrical Wiring Installations (System Voltage not exceeding 650V)". The work shall be executed as per National Electrical Code and if any item is not covered there under or there is any doubt, the specification approved by the Engineer-in-charge will be final and binding.

Ambient Conditions

All Electrical installations and equipments shall be suitable to work in following ambient conditions.

Maximum Temperature	:	50 degree Celsius
Relative Humidity	:	100%
In the vicinity of	:	Puri

System Conditions

The Electrical installations and equipments shall be suitable for operation in following system conditions.

Supply voltage	:	433 Volts +/-10%
Supply frequency	:	50Hz +/-5%
Number of Phases	:	Three

1.1 Scope

1.2 Materials:-

All materials, fittings, appliances used in electrical installations shall confirm to Indian Standard Specifications wherever these exist. A list of approved materials is attached in annexure-I. Materials not included in the list as well as any particular make not included in the list should be approved by the Consultant or Engineer-in-charge before use. All required materials covered under this specification shall be supplied and installed by the contractor complete in all respect except in cases where it is clearly mentioned otherwise. The materials and accessories required for completing the work will form part of the work although they have not been specified separately.

Selection of materials and installation work shall be such as to simplify operation, inspection, maintenance and testing. The work shall include all reasonable precautions and provisions for safety of operation and maintenance personnel.

1.3 Standard:-

(a) Unless otherwise specified, all materials covered under this specification shall be designed, manufactured, tested and installed in conformity with the latest Indian Standard Specifications. In case such Indian Standard Specifications are not published equivalent British Standard Specifications shall be followed. All equipments shall confirm to latest Indian Electricity Rules, PWD and Local/State laws or byelaws as regards to safety, earthing and other essential provisions specified therein.

(b) All equipments and materials selected shall also be supplied and installed taking into consideration the Factories Act, Fire Regulations and Local laws or byelaws. All light fittings and equipments selected shall be of well tied out design. All materials used in the assembly of fittings and their accessories shall be of high quality and manufactured in accordance with the best modern practice.

(c) All the materials supplied by the contractor according to the contract conditions will be subject to inspection and approval by the Consultant or/and Engineer-in-charge or their authorised representative from time to time. The contractor shall extend all required facilities for such inspection free of cost. At the time of inspection, the inspecting officer shall have full liberty to reject any such material, which does not confirm to specifications or the requirements. The owner shall not entertain

any claim for the rejected materials. The contractor shall remove all rejected materials from the site at his own cost.

(d) The owner shall not accept any surplus material procured by the contractor.

(e) The contractor will be responsible to get electrical installations inspected by the Electrical Inspector of the State Government and to obtain the statutory clearance for energisation. The owner will reimburse the necessary inspection fees on production of documentary evidences.

(f) The contractor should possess valid electrical contract license and labour license issued by the appropriate statutory authority of the State Government during the execution of the contract.

(g) The contractor shall be registered with Provident Fund Department for engagement of Labours/ Employees.

1.4 Inspection and Approval

The contractor shall put up samples of all major items for inspection and testing by the Consultant and/or Engineer-in-charge for which the contractor shall furnish minimum 10 days clear notice in advance to enable them to depute their Inspecting Officer. Similar procedure shall be adopted for the approval of samples of minor materials/ accessories to be used for the work.

GENERAL TECHNICAL SPECIFICATION OF

MATERIALS **2.1 Switches & Plug Sockets:-**

All switches, 5A plug sockets, power plug sockets, TV sockets and Telephone sockets shall be clip-in modular type. These shall be of approved make only and bear the ISI mark. The switches and plug sockets shall confirm to IS: 3854/1988, IS: 1293/1988, IS: 6538/1971 & IS: 4615/1968.

2.2 Fan Regulators & Dimmers:-

Electronic type fan regulators and light dimmers of approved make shall generally be used. These shall be of clip-in modular type.

2.3 Wires:-

The wires used for internal electrical wiring shall be of single core PVC insulated unsheathed 1100V grade stranded copper conductor wires (suitably colour coded to distinguish different phases and neutral). These shall be of approved make only and bear the ISI mark. The wires shall confirm to IS: 694 (Part-I & Part-II)/1964. The minimum cross sectional area of conductors for the different uses shall be as specified below.

(a) Lighting point wiring : 1.5sqmm Copper
(b) Power point wiring : 2.5sqmm Copper
(c) Circuit wiring : 2.5sqmm Copper
(d) Sub-main wiring : 4.0sqmm Copper

2.4 Non-Metallic Conduit and Accessories:-

All non -metallic conduits shall confirm to IS: 2509/1963 and their accessories to IS: 3419/1965. The conduits may be either threaded type or plain type and shall be used with the corresponding accessories.

2.5 Metal Boxes (Switch Boards):-

Metal boxes for switchboards shall be made of CRCA sheet steel and round junction boxes shall be made of cast iron. The minimum wall thickness of metal switchboards shall be 1.5-mm (16swg) and cast iron boxes shall be 3-mm.

Fan hook boxes shall be made of CRCA sheet steel of 1.5-mm wall thickness with a 10mm round steel hook inside. The size of the fan hook box shall be 150-mm diameter and 65mm high.

All metal switchboards shall not have less than 4 screwed holes for fixing the top cover. Earthing studs shall be provided in every switchboard. All metal boxes shall be provided with a cover of phenolic laminated sheet (Bakelite sheet). The laminated sheet shall be at least 3mm thick and fastened to the box with brass screws & cup washers. The covers should have a minimum overlap of 12.5-mm on all sides of the box for concealed wiring. The boxes shall be painted inside as well as outside with two coats of anticorrosive primer and two coats of enameled paint of approved shade. Adequate numbers of half punched holes shall be provided for conduit entry. The following sizes of metal switchboards shall normally be used.

Switch board size		
Length	Breadth	Height
100mm	100mm	50mm
100mm	100mm	65mm
150mm	100mm	65mm
200mm	150mm	65mm
250mm	200mm	65mm
300mm	250mm	65mm
450mm	300mm	65mm

2.6 Modular Switch Boxes:-

Modular type galvanised switch boxes shall be used along with modular switches. Both switches and the switchboards (with cover) shall be of the same make. The detailed list of such switchboards along with the modules should be get approved by Engineer-in-charge prior to execution of work.

2.7 Angle/ Batten/ Pendant Holder & Ceiling Rose:-

Brass or Bakelite type 5A, 250V, Angle Holders, Batten Holders, Pendant Holders & three way ceiling rose shall be used confirming to IS: 732(Part-2)/1982 & IS: 371/1979. These shall be of approved make only and bear the ISI mark.

2.8 Distribution Boards:-

All the L.T. Distribution Boards shall be suitable for operation in 3 phase/ single phase, 415/240 Volts, 50Hz, neutral grounded at transformer system. All Distribution Boards shall generally confirm to all relevant

Indian Standards amended up to date.

Distribution boards shall be of wall/ floor mounting type, as specified. These shall be totally enclosed with compartmental arrangement for each switchgear (other than MCB) and bus bars. The compartments shall have hinged doors and shall be of dust, damp & vermin proof construction. The entire enclosure shall be made out of CRCA sheet steel and should be acid treated for rust proofing, thoroughly cleaned, painted with two coats of anticorrosive primer and two coats of white enamel paint for interior and industrial grey enamel paint for exterior. All doors and covers shall be provided with neoprene PVC strips gaskets and shall be lockable. All the hinged doors shall be effectively earthed with flexible copper wires. Cadmium plated fixing screws shall enter holes tapped into an adequate thickness of metal or provided with hank nuts. Self-threading screws shall not be used.

The distribution boards shall be of adequate size with a provision of 25% spare space to accommodate possible future additional switchgears. Knock out holes of appropriate sizes and number shall be provided on detachable plates in the board in conformity with the location of incoming and outgoing cables/ conduits. The switches shall be so arranged that the fuses are not alive when the switch is in OFF position. Any apparatus shall not project beyond the edge of the panel. Switches shall not be mounted within 25mm from any edge of the panel body and holes, other than those meant for fixing the panel, shall not be drilled within 13mm of the edge of the panel. The various live parts shall be effectively screened by barriers of non-hygroscopic, non-inflammable insulating materials or shall be so spaced that an arc can be maintained between such parts and earth. All items of switchgears shall be readily accessible and all connections, including those to instruments and apparatus easily traceable.

The bus bars and interconnections shall be of electrolytic annealed copper of rectangular cross section suitable for carrying full load current for phases & neutral bus bars and shall be extensible on either side. The maximum current density shall be 1.5 Amp/sq-mm for copper bus bars. The bus bars shall be supported on SMC/ DCM/ Glass fibre reinforced polyester, non-breakable non-hygroscopic insulators at regular intervals to withstand the forces arising from short circuit in the system. All bus bars shall be provided in a separate chamber and properly ventilated. The minimum clearance between the phases shall be 25mm and between phase and earth shall be 20mm. The interconnection between bus bars and switchgears of rating above 63A shall be through strips having 125% of the switchgear current rating. All bus bars shall be suitably insulated by means of heat resistant PVC sleeves or PVC insulating tapes and colour coded in phase sequence of R-Y-B & N.

The entire bus bar shall be covered on the front with a Bakelite sheet barrier. All joints shall be of clamped type as far as possible else of bolted construction with double cover fishplates.

All connections between pieces of apparatus or between apparatus and terminal on a board shall be neatly arranged in a definite sequence, following arrangements of the apparatus mounted there on, avoiding unnecessary crossings. Wire interconnections shall be colour coded and connected to terminals only by soldered lugs, crimped lugs without cutting away the strands. The interconnecting wires shall not come in contact with the live bus bars other than at the terminal points. The arrangement of bus bars shall confirm to IS: 375/1963.

An enamelled danger notice plate shall be provided on the boards connected to medium voltage supply & above.

Adequate space shall be provided for accommodating various instruments. These shall be accessible for testing and maintenance without any accidental contact with live parts of circuit breakers, switchgears, bus bars and interconnections. The indicating lamps shall be provided with individual switch and fuses. The voltmeters shall be provided with fuses for each phase. The control wires shall be of 2.5-sqmm Copper for CT circuits and 1.5-sqmm Copper for the rest. The control wires shall be neatly bunched together inside PVC trunking, securely fasten to the compartment and properly marked with ferrules at the end. A separate tamper proof compartment with locking arrangements as per the requirements of the supply authority shall be provided for housing of the energy meters.

(a) Branch Distribution Boards (BDB):-

The branch distribution boards shall be surface mounted or concealed type and made out of 1.6-mm (16 swg) CRCA sheet steel. At least one number hexagonal earthing stud for single phase BDB and two numbers earthing studs for three phase BDB shall be provided. The components of the BDB shall be mounted on a detachable 2mm thick CRCA sheet steel frame works for easy maintenance. The minimum size of wires to be used as interconnecting wires shall be 2.5-sqmm Copper or 4.0-sqmm Aluminium. Each outgoing circuit of the BDB shall be provided with a fuse/ MCB on the phase or live conductor. The earthed neutral conductor shall be connected to a common link and be capable of being disconnected individually for testing purpose. Door interlocking with MCB shall be provided such that doors shall open only with MCB in OFF position. All the live parts inside the BDB shall be covered with a Bakelite sheet with at least 3mm thick.

(b) Main Distribution Boards and Sub Distribution Boards:-

The Main Distribution Boards (MDB) and Sub Distribution Boards (SDB) shall be wall mounted or floor mounted type and made out of 2.0-mm (14swg) CRCA sheet steel. In case of wall mounted boards the entire

sheet steel enclosure shall be mounted on a mild steel angle framework with adequate fixing arrangement for grouting. In case of floor mounted boards the enclosure shall be fixed to a mild steel angle framework with mild steel base channels. All the incoming and outgoing switchgears and breaker other than MCB shall be fixed in separate compartments.

All switchgears above 63A rating and breakers shall be provided with door interlocks so as to open only in OFF position. All MCCB shall be provided with external operating handle. The ON, OFF, TRIP (where available), Rating marking and nomenclature plates shall be provided near operating handle. A continuous earth bus made out of Galvanized Iron or Aluminium strips of adequate size shall be provided at the bottom of panel for the entire length. Arrangement shall be made at both the ends of earth bus for easy entry and termination of earthing lead from external earth installations.

Cable compartments of adequate size shall be provided for easy termination of all incoming and outgoing cables entering from bottom or top. Proper cable supports shall be provided in cable compartments. All incoming and outgoing terminals shall be brought out to terminal blocks or to a extended rigid strip directly from the switch-gear/ breaker. Separate cable compartments shall be provided for incoming and outgoing cables. Ventilation arrangement in the form of finely divided wire mesh shall be provided at both sides towards the top.

(c) Out Door Feeder Pillars (OFP):-

The out-door feeder pillars shall be of floor mounting type, totally enclosed, weather proof having slanting roof. The OFP shall be fabricated with mild steel angle frame and mild steel base channel. The cubicle shall be made out of minimum 2.0-mm thick CRCA sheet steel and of double door version. The OFP shall be designed to mount on masonry plinths and shall be of robust construction to withstand vehicular vibration. All the incoming and outgoing switchgears and breaker other than MCB shall be fixed in separate compartments. All switchgears above 63A rating and breakers shall be provided with door interlocks so as to open only in OFF position. All MCCB shall be provided with external operating handle. The ON, OFF, TRIP (where available), Rating marking and nomenclature plates shall be provided near operating handle. A continuous earth bus made out of Galvanised Iron or Aluminium or tinned copper strips of adequate size shall provided at the bottom of panel for the entire length. Arrangement shall be made at both the ends of earth bus for easy entry and termination of earthing lead from external earth installations.

Cable compartments of adequate size shall be provided for easy termination of all incoming and outgoing cables entering from bottom or top. Proper cable supports shall be provided in cable compartments. All incoming and outgoing terminals shall be brought out to terminal blocks or to an extended rigid strip directly from the switchgear/ breaker. Separate cable compartments shall be provided for incoming and outgoing cables. Ventilation louvers along with finely divided wire mesh shall be provided at both sides towards the top.

A light point controlled with a door switch and fuse shall be provided inside the cubicle for lighting of the interior when the door is open.

2.9 Miniature Circuit Breaker (MCB):-

The miniature circuit breakers (MCB) of appropriate curve (as specified in bill of quantities) and approved make only shall be used. These shall be fully automatic with provision of thermal & magnetic tripping arrangements and Trip-free mechanism. Current limiting type MCB shall generally be used. These shall be rated for a Service Breaking Capacity of minimum 10-kA and confirm to IS: 8828/1993. The MCB shall be ISI marked.

2.10 Moulded Case Circuit Breaker (MCCB):-

The Moulded Case Circuit Breakers (MCCB) of thermo-magnetic type with adjustable current setting (70% to 100% of the rated current specified) and approved make only shall be used. These shall be fully automatic with provision of thermal & magnetic tripping arrangements, mid-trip indication and Trip-free mechanism. “Push to Trip” button shall be available in the MCCB. These shall be rated for a Service Breaking Capacity from 25-kA to 85-kA. In case, the Service Breaking Capacity is not specified, 25-kA MCCB may be provided. Handle operating mechanism with door interlock, defeat interlock and handle interlock shall be provided with MCCB. The breaking time for MCCB shall be less than 20 milliseconds. The MCCB shall confirm to IS: 2516 (Part-I & II)/1977 and IEC 157-1-1973.

2.11 Residual Current Circuit Breaker with Overload Protection (RCBO):-

The Residual Current Circuit Breakers with overload protection (RCBO) shall be suitable for protection against earth leakage, over current & short circuit in the system. A RCCB without in built overload protection along with MCB backup of appropriate rating may be provided in place of RCBO within the tender rate. The RCBO shall have test facility along with fault indication. These shall be capable of withstanding a fault of 1.5 KA up to 32A rating and 3.0 KA above 32A. These shall have a rupturing capacity more than 5MVA. The minimum breaking time for these shall be less than 30 milliseconds. The RCCB shall confirm to IS: 12640/1988 and IS: 8828/1978 and bear ISI mark.

2.12 Rewire-able Fuses

The rewire-able fuses (it Kat) shall be semi- enclosed type consisting of a rewire-able fuse carrier and fuse base and shall be made out of either porcelain or Bakelite. The breaking capacity of these fuses shall be 4000 Amp on 400 Volt. These shall bear ISI mark and confirm to IS:

2.13 Energy Meters (KWH Meter)

The Energy Meters (KWH meter) shall be either whole current or CT operated type. These shall be duly tested and calibrated by the supply authority prior to fixing and necessary test certificate shall be furnished.

2.14 LT Power Cables

The LT power cables shall be of PVC insulated and PVC sheathed, 1100 Volt grade, single core or multi core, un-armoured or GI wire / strip armoured, stranded aluminium conductor cables of approved make and should bear ISI mark. The armoured cables shall confirm to IS: 1554(Part-I)/1976 and un-armoured cables to IS: 694/1977.

2.15 Fluorescent Fittings

The Box type Fluorescent fittings shall be used. All Fluorescent fittings shall be of approved make and in general confirm to IS: 1913/1969. These shall be complete with all standard accessories as per specification such as choke, capacitor, starter and lamp holder etc duly factory wired. Provision shall be extended to earth all the metallic part of the fixtures and all the detachable metal parts such as stove enamelled reflector of industrial fitting, metallic louver of mirror optic fitting etc shall be provided with loop earthing by flexible wire. The choke shall be copper wound and polyester filled. Power factor improvement capacitor shall be provided confirming to IS: 7752(Part-I)/1975 and of such rating to improve the power factor to 0.9.

2.16 Incandescent Fittings

The Incandescent fittings shall be of the following type.

(a) Wall bracket type

(b) Ceiling flush type

(c) Bulk head type

(d) Weather proof type

These shall be complete with all standard accessories as per specification and provision for earthing the metallic parts of the fitting.

2.17 Ceiling Fans

The ac ceiling fans shall be of approved make & brand and suitable for operation on 230V 50Hz single-phase supply. The fans shall consist of all standard accessories such as 300mm long down rod, canopies, shackle, 3 or 4 fan blades, capacitors etc but excluding speed regulator. The fan motor shall be of permanent capacitor run totally enclosed with double ball bearing and the winding shall be made of super enamelled copper wire with class-E insulation. These fans shall confirm to IS: 374/1979 with amendment number 1, 2 & 3.

2.18 Exhaust Fans

The exhaust fans shall be of approved make & brand and suitable for operation on single/ three phase 230/ 415V 50Hz supply. The fans shall consist of all standard accessories such as impeller blade, fixing frames, capacitors, anti vibration pads etc. The exhaust fan motor shall be of permanent capacitor run, continuous rated, totally enclosed with double ball bearing and the winding shall be made of super enamelled copper wire with class-A /class-E insulation. Sound level of the exhaust fans shall not exceed 60db for domestic application and 68db for industrial application. Gravity louver shutters made out of aluminium sheets with a steel frame/ wire guard shall be provided with these fans. These shall have IP: 44 degree of protection. The exhaust fans shall bear ISI mark and confirm to IS: 2312/

3.0 INSTALLATION

3.1 Portions of Wiring

3.1a Point Wiring

Point wiring shall consist of a switch on the board and wiring up to termination point via the control switch and neutral. These termination points can be:

(a) A ceiling rose or connector in case of call bell or ceiling fan or exhaust fan point wiring. The wiring from ceiling rose or connector to ceiling fan or exhaust fan point shall be considered with the installation of fans.

(b) A ceiling rose in case of directly fixed type fluorescent fixtures, suspended pendants.

(c) A back plate in case of suspended type fluorescent fixtures, suspended or stiff pendants, wall brackets, bulkheads, spot light similar fittings.

(d) A lamp holder in case of angle or batten holders.

(e) A convenient wall plug in case of plug on board or separate board points.

Wiring for light points and fan points shall be carried out with minimum 1.5-sqmm Copper or 2.5-sqmm Aluminium stranded conductor wire. For the purpose of measurement, the point wiring shall mean wiring to the all types of points irrespective of the length of the point.

The wiring whether concealed or surface shall be easily accessible for inspection. Power and Heating sub-circuits shall be kept separate and distinct from lighting and fan sub-circuits. The balancing of circuits in three phase installations shall be arranged before hand. Circuits of different phases of ac system shall be kept minimum 2.0-metres apart or enclosed in earthed metal casing. Medium voltage wiring and associated apparatus shall comply, in all respect, with the requirements of rules 50, 51 and 61 of Indian Electricity Rules, 1956.

The position of runs of wiring and the exact position of all points, switch boards, distribution boards shall be marked in the building for approval of Engineer-in-charge prior to execution. The wiring shall be carried out in looping back system in which the phase conductor shall be looped at the switch box and that of neutral at the junction box and point terminals. In no case, joint shall be made bare or by twisting the conductors.

Lights and fans may be wired on a common circuit. Such circuit shall not have more than a total of either 10 points or a load of 800 watts.

For the purpose of determining load per circuit, the following rating for points shall be assumed.

(a)	Light points (Incandescent)	:	60 watts
	(4' fluorescent tubes)	:	40 watts
	(2' fluorescent tubes)	:	20 watts
	(CFL Lamps)	:	20 watts
(b)	Ceiling fan points	:	80 watts
(c)	Exhaust fan points	:	100 watts
(d)	5Amp plug points	:	100 watts
(e)	15Amp plug points	:	1000 watts

Unless and otherwise specified, the following minimum mounting height of the bottom most part of the fittings and fixtures from finished floor level shall be maintained.

(a)	Branch Distribution Boards	:	2.130 metre
(b)	Switch board	:	1.300 metre
(c)	5A & 15A plugs on separate board	:	0.300 metre
(d)	Ceiling fan	:	2.750 metre
(e)	Light fittings	:	2.600 metre
(f)	TV antenna and Telephone outlets	:	0.300 metre

3.1b Circuit Wiring

Circuit wiring shall mean wiring from BDB/ SDB up to the junction boxes for switchboards containing 5A/15A switches and plugs. For the purpose of measurement, in case of multiple switch boards under one circuit, the circuit wiring shall mean the sum of the length of wiring from BDB/ SDB up to junction box of first switch board and junction box of first switch board to the junction box of next switch board and so on. The minimum size of conductor for circuit wiring shall be either 2.5-sqmm Copper or 4.0-sqmm Aluminium. A circuit shall not contain more than 2 number power plugs. If not specified in point wiring to power plugs, the wiring to the same shall be treated as circuit wiring.

3.1c Sub-main Wiring

Sub-main wiring shall mean wiring from Main switch/ Meter board up to BDB/ SDB. The minimum size of wire shall be 4.0-sqmm Copper or 6.0 -sqmm Aluminium. There shall be no jointing of wires as far as practicable. PVC ferrules shall be provided at both the ends of the wire for easy identification.

3.2 Types of Wiring

3.2a Concealed Non-metallic Conduit Wiring

The concealed non-metallic conduit wiring shall be completed in the following three phases.

(a) Conduit laying in roof before casting.

(b) Conduit laying in walls & fixing of switchboard before plastering.

(c) Wire drawing inside conduit, fixing of switch, socket accessories, testing of installations complete.

The size of conduit shall be so chosen that the wires provided inside shall not occupy more than 50% of the cross sectional area. The maximum permissible number of single core wires, which can be drawn inside non-metallic conduit, shall be as per the table given below.

Size of wire in sq-mm	Size of conduit in mm (Maximum no. of wires permissible)						Remarks
	16	20	25	32	40	50	
1.5-sqmm	4	6	10	-	-	-	
2.5-sqmm	3	5	10	-	-	-	
4.0-sqmm	2	3	6	10	-	-	
6.0-sqmm	-	2	5	9	-	-	
10.0-sqmm	-	-	4	7	9	-	

A detail conduit route layout avoiding unnecessary crossing shall be prepared by the contractor and get it approved from Engineer-in -charge prior to laying of conduit in roof slab. The conduits and junction & fan hook boxes shall be rigidly tied to the reinforcement of the slab. Minimum 75mm x 75mm size sheet metal inspection cum pull box shall be provided within 5-metres run of conduit. Suitable type expansion joint fittings shall be provided along the conduit run crossing the expansion joint of the building. The junction boxes shall be provided 300mm off the centre for 4' long tube light fitting and 150mm off the centre for 2' long tube light fitting. Dummy or spare conduits shall be laid wherever required as per direction of Engineer-in-charge.

The drops from the roof slab in walls and columns shall be made vertical as far as practicable. Horizontal run of conduit on brick or stone masonry walls shall be avoided. The conduit and the switchboards shall be fixed in the wall by cutting chase and neatly finished with plastering after fixing. At all curves in the conduit route, the conduit pipe shall be bent with a long radius, which will permit easy drawing of conductors. The metal boxes shall be provided with temporary covers to safe guard against filling of cement mortar etc within the tendered cost.

The wires shall be properly colour coded and carefully drawn inside the conduit through use of fish wire. All the metal boards shall be suitably earthed by means of earth continuity conductor. All Conductors shall be provided with cable sockets at termination points expect at switchboard looping and joint boxes. Wires carrying current in a conduit shall be so bunched that the outgoing and the return wire are drawn into the same conduit. Wires of different phases from different circuits shall not run in one conduit. In three-phase installation, plans shall be made for balancing of loads in all phases before commissioning.

3.2b Surface Non-metallic Conduit Wiring

The surface non-metallic conduit wiring shall be made by rigid non-metallic conduits and completed in one phase only. The size of conduit shall be so chosen that the wires provided inside shall not occupy more than 50% of the cross sectional area. The maximum permissible number of single core wires, which can be drawn inside non-metallic conduit, shall be same as per the table given for concealed non-metallic conduit wiring.

A detail conduit route layout shall be prepared by the contractor and get it approved from Engineer-in-charge prior to laying of conduit. Either plain type or threaded type Bend, elbow and similar other conduit fittings shall be used. Conduits shall be fixed rigidly by means of heavy gauge G.I. saddles of approved quality at an interval not exceeding 500mm and on either side of coupler and bends. Saddles shall be fixed on Nylon fill plugs of appropriate size. The conduit fittings such as inspection boxes, draw boxes, bends, elbows etc shall be so installed that they remain accessible for purpose of drawing and removal of wires.

The wires shall be properly coloured coded. All the metal boards shall be suitably earthed by means of earth continuity conductor. All Conductors shall be provided with cable sockets at termination points expect at switchboard looping and joint boxes.

3.3 Cable Laying & Installation

The cables shall be of approved make and tested at factory in presence of Engineer-in-charge or his authorised representative. The cables shall be despatched to the work site packed on wooden drums with both ends properly sealed. Jointing of the cables in between the terminal points shall be avoided as far as possible. For longer length of cable exceeding the normal length of manufacture, cables may be joined by means of jointing kits only. The cables shall be tested for insulation resistance by 500 -volt insulation Megger for cables up to 1100-volt grade and by 2500-volt insulation Megger for cables beyond 1100V grade prior to laying of the same. Cable loops for future requirement shall be kept at both ends as per direction of the Engineer-in-charge.

One number 6 swg GI wire in case of single phase 230V ac system and either 2 numbers 6 swg GI wire or 2 numbers suitable size GI flat in case of multi phase 400V or more ac system shall run all along the trench or tray with the cables as earth continuity conductor. The supply and laying of earth continuity conductor such as GI wire or flat has been considered separately in the schedule of quantity.

Minimum bending radius for PVC insulated armoured cables shall be 1200mm. At joints and terminals, the individual cores of multi-core cable should never be bent so that radius of bending is less than 12 times the overall diameter of the cable.

Wherever more than one cable shall exist, suitable marker tags inscribed with cable identification details shall be permanently attached to all cables in the man hole, pulpits, joints, open ducts, under ground cables etc at suitable intervals.

The laying and installation of cable shall be carried out as per IS: 1255/1983. The methods of cable laying shall be of following types depending upon the requirements.

(a) Laying directly under ground

(b) Laying inside ducts

(c) Laying on racks or trays in air

(d) Laying along building structural elements

3.3a Laying Directly Under Ground

Cable trenches shall be excavated cutting all types of soil and rock up to a minimum depth of 750mm for L.T. cables & 1200mm for H.T. cables and of appropriate width (not less than 350mm) to accommodate the cables and cable protecting materials within the tendered rate.

The sides and bottom of the trench shall be dressed and filled with 75mm thick layer of fine sand. The cables shall then be laid with bricks on both side of each cable continuously along the length. Space between the bricks shall be filled with fine sand up to 75mm above the top of the cable. The top layer bricks shall be placed side by side continuously as protective cover. The horizontal distance between the adjacent cables shall be minimum 200mm. The clearance between the outer cables to the sides of the trench shall be at least 150mm.

In case of multiple tiers, same procedure shall be applied keeping a vertical clearance of 300mm among the tiers and the top most layers shall be kept at a depth of 750mm for LT cables and 1200mm for H.T. cables from finished ground level.

The trench shall then be filled up with the excavated materials free from stone or sharp edged debris and duly compacted. A crown of earth neither less than 50mm nor more than 100mm in the centre and tapering towards the sides of the trench shall be left to allow for subsidence.

Cable route markers shall be installed at salient and strategically located points parallel to and 500mm or so away from the edge of the trench for easy identification of cable routes at a maximum interval of 10-metres for straight run.

In locations such as road crossing, pipeline crossing, entry to buildings or poles in paved area etc, the cables shall be laid in pipes or closed ducts. Pipes provided for entry to building shall slope upward to prevent entry of water to the building. Stone ware, cast iron, NP-2 class RCC pipes or medium class M.S./G.I. pipe of appropriate diameter shall be laid during the construction to avoid damage later on.

In case of stone ware pipes, a 100mm thick 1:3:6 cement concrete covering shall be provided. In case of cast iron or RCC pipes no concrete covering is required. In case of RCC pipes, the collars shall be embedded with 1:2:4 cement concrete. Top surface of pipe shall be at a minimum depth of 1.0 metre. The minimum size of Hume pipes shall not be less than 100mm in diameter for a single cable and not less than 150mm for multiple cables.

The diameter of the cable protecting pipes shall be at least 1.5 times the outer diameter of the cable. In one pipe, single core cables shall not be laid individually but instead, all the three/four cables of the same system shall be laid.

3.3b Laying inside Ducts

Petroleum jelly or graphite powder or a combination of both may be applied on the outer sheath of the cable as lubricant for reducing the pulling tension on the cable while drawing inside long run cable ducts. The ducts having bell mouth ends shall be made on all manhole positions in order to avoid sharp edges.

While fixing the cables in ducts, stockings or pulling eyes may be used. Stockings shall be slipped over the cable surface while the pulling eyes shall be connected to the conductors. Pulling shall be carried out with manual labour by means of winches or other mechanical means, when the cable to be pulled is fairly long.

3.3c Laying on Racks or Trays in Air

The racks or trays shall be fixed to the wall or column or suspended from ceiling. The racks shall be ladder type made of M.S. or G.I. angles and flat. The trays shall be perforated type made of M.S. or G.I. sheets. The mild steel racks or trays shall be painted with red oxide primer followed by anticorrosive paints. The vertical distance between two racks or trays shall be minimum 300mm and clearance between first cable and the wall (if the racks or trays are mounted on wall) shall be 25mm. The width of rack shall not exceed 750mm. The cables shall be laid directly on the rack or trey with saddles or clamps at an interval of 1 metre each. Each tray or rack shall contain only one layer of cables.

3.3d Laying along Building Structural Elements

Cables can be routed inside the buildings along the structural elements such as walls, columns etc or inside trenches or Hume pipes or G.I. pipes under floor. The cables shall be laid or fixed along the wall or column with the help of M.S./G.I. flat clamps or saddles with an interval not exceeding 0.5-metre. The cables inside brick masonry trenches shall be laid on racks or directly above the floor of the trench and the trench shall be covered with mild steel chequered plates. In case of laying inside Hume pipes or G.I. pipes, man hole chamber with RCC cover shall be provided at suitable location for easy maintenance. The cables shall not intersect each other along its route.

3.4 Jointing of Cables

The quality of joints shall be such that it does not add any resistance to the circuit. The materials and techniques employed for jointing should give adequate mechanical and electrical protection to the joints under all service conditions. The joints shall be resistant to all corrosion and chemical reactions. The following three basic types of cable joints shall be used.

(a) Straight through joints

(b) Tee or branch joints

(c) Termination or sealing joints

3.5 Installation of Distribution Boards

All main switchgears shall be installed in dry situation as near as possible to the point of supply. The neutral wires shall be continuous except at the linked switchgear. Main distribution boards shall be installed in well-ventilated rooms or cupboards accessible to only authorised persons or recessed having locking arrangement. The distribution boards shall not be installed in damp situations, in the vicinity of storage batteries, places exposed to chemical fumes or where inflammable or explosive dust, vapour or gas is likely to be present. These boards shall not be erected above gas stoves, sinks, in bath rooms, lavatories, toilets, kitchens, places exposed to weather or within 2.5 metre of a washing unit in the washing rooms and wash basins.

Fixing of distribution boards in places likely to be exposed to weather, drip or abnormal moist atmosphere shall be avoided. Where it is unavoidable, out door distribution boards with outer casing on the switch boards shall be installed making it weather proof and shall be provided with gland or bushings or adapted to receive screwed conduit according to the manner in which cables are run.

The indoor distribution boards shall be mounted concealed or semi-concealed or surface to the wall or on foundations above the floor. The panels shall be so mounted that it is accessible for fuse replacement and operation of switchgears & breakers.

The top most height of the panel shall not be more than 2-metres from the floor level. In case of Branch Distribution Boards shall generally be installed at a height of 2.13 metre from finished floor level. A minimum clearance of 1 metre shall be provided from the surface of door opening of the boards for maintenance.

All distribution boards shall be marked lighting or power, voltage, number of phases of supply, circuit list, current rating of the circuit and rating of fuse element. All wiring and terminations shall be provided with cable lugs and neatly arranged.

Adequate space shall be provided on bottom or top or back as required for easy cable and conduit entry. The cables shall be terminated at the distribution board with corresponding size of brass cable gland. The glands shall be fixed tightly to the panel without allowing any gap or opening on the hole. The armours of the cable shall be suitably earthed. For conduit entry, PVC couplings for non-metallic flexible conduit and brass coupling for G.I. flexible conduit shall be used. No holes shall be kept open on any side of distribution board.

Distribution boards shall be earthed at two points from two separate & distinct earth electrodes in case of three phase boards and one point in case of single phase boards effectively by means of G.I. wire or flat as

specified.

3.6 Installation of Fluorescent Fixtures

The fluorescent fixtures shall be either directly fixed on walls or ceiling or suspended from ceiling of buildings. The contractor shall make proper marking for alignment and level of fitting as per the drawing prior to installation and get it approved from Engineer-in-charge. The contractor shall assemble and install the fittings as per the manufacturer's instructions. Connection from ceiling rose or connector shall be done with 3-core x 1.5-sqmm flexible copper cord. Each fitting shall be effectively earthed.

For fixing the fitting directly on walls and ceiling, the same shall be fixed on two numbers seasoned wooden round blocks. The round blocks shall be duly painted and fixed to wall or ceiling by means of PVC fill plugs and screws.

In case of fitting being suspended from ceiling, the same shall be fixed by means of two numbers 16 swg stove enamelled mild steel conduit down rods along with cast aluminium ball sockets, conduit check nuts, circular Bakelite cover etc. The down rods shall be painted with 2 coats of enamel paint of approved shade. The fixing arrangement to the ceiling shall be capable of sustaining the entire load of fitting and down rod. The minimum mounting height of the fitting shall not be less than 2.5-metres from the finished floor level.

3.7 Installation of Incandescent Fittings

The incandescent fittings shall be rigidly fixed to wall or ceiling using Bakelite sheet. The metal parts of the fitting shall be effectively earthed by means of earth continuity conductor. The flexible pendants, chandeliers etc shall be suspended from a hook provided in the slab during casting. The bulkhead fittings shall be recessed/ surface mounted on wall or ceiling.

3.8 Installation of Ceiling Fans

Unless otherwise specified, the bottom most part of the ceiling fans shall normally be kept at a height of 2.75 metre above finished floor level. In no case, it shall be lower than 2.4-metres above the finished floor level. A minimum clearance of 300mm shall be maintained from the ceiling/beam to the plane of fan blades. The mounting height of all ceiling fans installed inside a hall or room shall be same. The metal parts of the ceiling fans shall be effectively earthed. The fans shall be assembled and mounted as per the manufacturer’s instructions.

The wiring to the ceiling fan from the nearest point shall be carried out with 3-core x 1.5-sqmm PVC insulated stranded copper conductor cords. The down rod & clamp shall be painted with enamel paint of approved shade without involving any extra cost. Round Bakelite sheet shall be provided on the fan hook boxes.

3.9 Installation of Exhaust Fans

Exhaust fans shall be fitted by means of rag bolts embedded in the wall. The required holes in the wall shall be made and finished neatly with cement plaster and brought to the original finish of the wall within the tendered rates. Gravity louver shutters of suitable size shall be fixed on the outside wall covering the hole for the exhaust fan in order to restrict the inrush of rainwater etc. A wire mesh shall be provided in place of gravity louver shutters to restrict the entry of birds where there is no chance of inrush of rainwater. All the metal parts of the exhaust fans shall be effectively earthed. The fans shall be assembled and mounted as per the manufacturer’s instructions. The wiring to the exhaust fan from the nearest point shall be carried out with 3-core x 1.5-sqmm PVC insulated stranded copper conductor cords.

3.10 Installation of Earthing

The earthing installations shall generally conform to IS: 3043/1966 and requirements of Indian Electricity Rules, 1956.

All three-phase medium voltage equipments shall be earthed by two separate and distinct connections with earth through earth electrodes. Single-phase equipments shall be earthed at least at one point. In case of high & extra high voltages, the neutral point shall be earthed by not less than two separate and distinct connections with earth each having its own electrode.

An earthing electrode shall not be situated within a distance of 1.5-metres from the building whose installation system is being earthed. The cross sectional area of earth continuity conductor in electrical installation shall not be less than 16swg copper or 14swg GI wire. The earth resistance for various installations shall be restricted within the following maximum permissible limits.

Distribution Substations	:	2 ohms
Industrial Buildings	:	4 ohms
Non industrial Buildings	:	5 ohms
Earth continuity inside an installation	:	1 ohm (From electrode to any point in installation)

The following types of earthing installations shall in general be provided.

(a) Pipe earthing

3.10(a) Pipe Earthing

Pipe earth electrodes shall be of perforated class B G.I. pipe of specified length and diameter. Galvanising of pipes shall conform to relevant ISS. The G.I. pipe electrode shall be cut tapered at the bottom and provided with holes of 12-mm diameter drilled not less than 75mm from each other in zigzag manner up to 500-mm from the top of the electrode. A pair of 50mm x 5mm G.I. flat clamp with 2 nos. 18mm diameter drilled holes on either side shall be welded to the electrode at about 150mm below the top of the pipe.

The electrode shall be buried in the ground vertically with its top not less than 200-mm below the ground level. The pipe earth electrode shall be surrounded by, either salt & charcoal in alternate layers or a homogeneous mixture of the both, for a radius of about 150-mm and up to a height of about 250-mm below the top of the electrode. The balance portion of the excavated pit shall be filled with good quality soil and properly compacted.

A brick masonry chamber with hinged cast iron/ removable RCC inspection cover of size 300mm x 300mm shall be constructed within the tendered rate. Watering arrangement shall be made with funnel and wire mesh fixed by means of a reducer socket on the top of the electrode.

3.11 Installation of Earthing Leads

The earthing lead connecting the earth electrode to the apparatus or installation directly shall be of the same material as earth electrode. The earthing leads shall be either wires or strips of adequate size as specified and of either GI or tinned copper. The GI leads shall be connected to the electrode by means of 16mm diameter GI nut bolts with flat & spring washer and the tinned copper leads shall be connected to the electrode by means of 16-mm diameter brass nut bolts with flat & spring washer.

All earth connections shall be visible for inspection. The earthing lead from electrode onwards shall be suitably protected from mechanical injury by means of 20-mm diameter GI pipe for GI wires. The portion of this protection pipe within ground shall be buried at least 300 mm deep from ground level. (Subject to increase up to a depth of 600-mm in road crossings and pavements.) The portion within the building shall be recessed or clamped at not more than 500-mm interval in the walls/ columns/ beams etc and recessed in the floors. Joints in the earthing lead from earth electrode to apparatus shall be avoided as far as practicable. However if joints are inevitable, same shall be done by welding or proper bolting in case of GI strips and brazing or proper bolting in case of tinned copper strips. The welded joints in GI strips shall be applied with bituminous paint and wrapped with bituminous tape.

4.0 TESTING

Before a completed installation or any addition to an existing installation is put into service, the electrical contractor shall carry out the following tests in presence of Engineer-in-charge.

(i) Polarity test

(ii) Insulation resistance test

(iii) Earth continuity test

(iv) Earth electrode resistance test

4.1Polarity Test

It shall be ensured by this test that the single pole switches have been fitted on the live side of the circuit they control. In a two-wire installation, test shall be made to verify that all switches in every circuit have been fitted to phase conductor or non-earthed conductor of the circuit. In three or four-wire installation, test shall be performed to verify that every non-linked single pole of switch is connected to one of the phase conductor of supply.

4.2 Insulation Resistance Test

The insulation resistance for medium voltage circuits shall be measured by applying a dc voltage at least twice the working voltage, provided that it does not exceed 500 volts between earth and whole system of conductors or any section thereof with all fuses in place and all switches closed. All the lamps shall be in position except in earth concentric wiring. In earth concentric wiring, both poles of installation shall be electrically connected together. Where the supply is derived from 3 wire ac or dc or poly-phase ac system, the neutral pole of which is connected to earth directly or through added resistance, the working voltage shall be deemed to be that maintained between the outer or phase conductor and neutral.

The insulation resistance of an installation measured as above shall not be less than 50 Mega-Ohms divided by the number of points of the circuit provided that the whole installation shall be required to have insulation resistance greater than one Mega-ohm.

Control rheostats, heating and power appliances and electric signs may, if desired, be disconnected

from the circuit during the test, but in this case the insulation resistance between the case of frame and all live parts of each rheostat, appliances and signs shall not be less than half a Mega-ohm.

The insulation resistance shall also be measured between all conductors connected to one pole or phase conductor of the supply and all conductors connected to the neutral or the other pole or phase conductor of supply. Such test shall be made after removing all metallic connections between two poles of the installation. The insulation resistance between the conductors of installation shall not be less than that specified above.

4.3 Earth Continuity Test

The earth continuity conductor including metal conduits and metallic envelope of cables in all cases shall be tested for electric continuity and electrical resistance of the same along with the earthing lead but excluding any added resistance of earth leakage circuit breaker measured from the connection with the earth electrode to any point in the earth continuity conductor in the completed installation shall not exceed 1 ohm.

4.4 Earth Electrode Resistance Test

The resistance of each earth electrode shall be tested with an earth tester and the combined earth resistance of the earth grid of an installation shall be maintained as mentioned below.

Distribution Substations	:	2 ohms
Industrial Buildings	:	4 ohms
Non industrial Buildings	:	5 ohms
Earth continuity inside an installation	:	1 ohm (From electrode to any point in installation)

4.5 The completed installation shall be taken over only if the results obtained from the above tests are within the limits mentioned above and in accordance with I.E. Rules. On completion of testing of installation, a certificate shall be furnished by the contractor countersigned by the certified supervisor having a valid electrical supervisory licence issued by Electrical Licensing Board of the State Government under whose direct supervision the installation was carried out. This certificate shall be in a prescribed form obtainable from local supply authority.

5.0 SPECIAL CONDITIONS OF CONTRACT

5.1 Authorities

The contractor while executing the work shall obey to the provisions of the Government Acts relating to the work and the regulations and byelaws of statutory bodies or local authorities and supply authorities. The contractor shall undertake to provide all test certificates and make necessary arrangements to obtain electric supply.

5.2 Drawings

The installations work shall be carried out as per the approved execution drawings. Prior to laying of conduits or cables, the contractor shall submit drawings for same indicating the route, conduit size and numbers, location of inspection boxes etc. for approval.

The contractor on completion of the installation shall submit the following drawings in tracing paper.

As built electrical layout drawings of each floor showing the position of points & outlets, type of fittings & fixtures, location of switch boards & distribution boards, circuit & phase indication, position of earth electrodes, cable & conduit routes, position of lightning terminals & conductors etc neatly drawn.

As built schematic single line diagram of the entire installation showing

(i) All distribution boards having description of capacity, system & source of supply, type & their numbers;

(ii) Location, size, type, length of main and sub-main cables/ wires;

(iii) Load details of each circuit or ways of distribution board or switchgear.

The drawings shall furnish the identification details such as name of work, job no., accepted tender no., date of completion, site location, name & address of owner, name & address of consultant, signature & name of contractor, his address, scale of drawing.

5.3 Commercial

All types of labourers referred in the schedule such as masons, electricians, wiremen, cable jointers, helpers, labourers etc are required to carry out electrical installation work to a building with all necessary tools and plants with them.

After completion of the installation, the contractor shall test the same in the presence of Engineer-in-charge for safety and durability as per IS specification and I.E. Rules. He shall get the electrical installation inspected by the Electrical Inspecting Authority and obtain necessary inspection report and statutory clearance to energise the installation at his own cost. However the owner shall reimburse all fees for inspection

prescribed by the statutory authority and paid by the contractor on production of documentary evidence. The contractor shall submit necessary test certificates as and when required.

After completion of testing, necessary statutory inspection by competent authority and contract/ agreement with local supply authority, the contractor at his own cost shall arrange for final commissioning and energisation of installations before final handing over to the owner.

Rate quoted shall include all cost of labours with tools and plants, sundries and accessories, transportation of materials from local store, insurance, storage and handling, providing watch and ward to the installation carried out by him and materials in his custody, and expenses for maintaining the installation in proper order till final taking over. The contractor shall make good the damages caused during the course of work at his own cost.

Only materials of approved make shall be used. All other materials not included in the list of approved materials shall be got approved from Engineer-in-charge. If required, the materials may be sent for testing to any standard testing laboratory for conforming the quality and specification as per ISS. The cost towards testing shall be borne by the contractor. The owner shall not accept any surplus material procured by the contractor.

The work shall be carried out in accordance with the specification of the schedule complete with cost of all materials (except otherwise mentioned), all types of labour involved, all types of tools & plants required, sundries and accessories and as per the drawing, design and direction of Engineer-in-charge.

The electrical installation work shall be carried out by a registered and licensed electrical contractor duly authorised by the local Electrical Licensing Authority. The Contractor shall engage a Licensed Electrical Supervisor to supervise the work directly. Copy of valid license and details of previously executed works of the contractor and his supervisor shall be furnished along with the tender.

5.4 Terms of Payment

Payment, up to maximum 80% of the quoted rate on each item completed but awaiting testing and commissioning, shall be made. Another 10% payment shall be made after successful testing in presence of Engineer-in -charge & inspection by statutory authority. The balance 10% payment shall be made after completion of work with final commissioning, energisation, handing over to owner & submission of performance bank guarantee.

5.5 Performance Guarantee

The entire electrical installations carried out by the contractor shall be guaranteed for a trouble free operation against any bad workmanship, bad quality of material used for a minimum period of 12 months from the date of taking over by the owner or 18 months from the date of commissioning, whichever is earlier. The Contractor shall rectify the defects, if any, found during this period and replace all faulty materials free of cost.

The performance guarantee shall be executed in shape of a bank guarantee, in the prescribed format of the owner, amounting to 5% of the total value of electrical works executed, through any Nationalised Bank valid till completion of the guarantee period.

List of Approved Make

Sl No	Material Description		Make of materials
1	Non-metallic conduit & accessories	:	Berlia/ Uniflow/ Sudhakar
2	Switch, socket, fan speed regulators, modular switch box etc	:	Legrand/ MK India/ Crabtree/ Siemens
3	PVC insulated wires	:	Finolex/ KDK/ Rajanigandha/ Anchor/ NICCO/ L&T/ Havells
4	Bakelite sheets	:	Hylam/Formica
5	PVC insulated cables (with ISI mark only)	:	NICCO/ INCAB/ Fort Gloster/ CCI/ Universal/ Finolex/ Havells
6	Cable lugs	:	Dowells/ Ismal/ Clipon
7	Cable jointing kits	:	M Seal
8	Switchgears viz. isolator switches, SFU, starter, change over switch, HRC fuse holder etc	:	Siemens/ L&T / ABB / Legrand
9	MCB, RCCB, MCCB and associated distribution board	:	Siemens/ L&T/ ABB / Legrand
10	Instrument viz voltmeter etc	:	AE / IMP/ Meco/ Cosmo/ Saltzer/ Conzerv
11	Selector switch	:	Kaycee/ Saltzer
12	Energy meters	:	GEC/Capital/Jaipur
13	LT Distribution Board (Fabricated)	:	ESS/ Technocrat/ Utkal
14	Metal clad plug socket	:	Crompton/Havells
15	Fluorescent fixtures	:	Philips/Crompton/ Bajaj/ PAC
16	Incandescent lamp luminaries	:	Decon/Philips/Crompton/Bajaj
17	Ceiling Fans	:	Crompton/ Khaitan/ Usha/ Bajaj/ Polar/ Orient/ Ortem/ Almonard
18	Exhaust fan	:	Calcutta/Almonard/Crompton/ Khaitan
19	Call bells & Buzzers	:	Anchor/Cona/Rider
20	G.I.Pipes	:	TATA/Jindal/Prakash

GENERAL CONDITIONS

1. Drawings and specifications:

The contractor after the award of the contract and on signing the agreement shall be furnished free of cost two copies of each of the drawings, specifications, descriptive schedules and other details necessary for execution of work. All further drawings and details as may be prepared by the department/ consultant from time to time for reasonable development of the work described in the contract documents and reasonably necessary to explain and amplify the contract drawings and to enable the contractor to execute and complete the work shall also be supplied in duplicate to the contractor free of cost.

Any further copies of such drawings required by the contractor shall be paid for by him.

The contractor shall keep one copy of all the drawings, specifications, price schedule of items and quantities at work site and the Engineer-in-charge/ consultant/ or his authorized representative shall at all reasonable times have access to the same.

2. Contractors responsibility:

a) The Contractor shall provide at his coat every thing necessary for the proper execution of the work according to the intend and meaning of the drawings, schedule of items and quantities and specifications taken together whether the same may be of any not be particularly shown or described therein provided that the same can reasonably be inferred there from and if the Contractor finds any discrepancy in the drawings or between the drawings, schedule of quantities and specifications, he shall immediately in writing refer the same to the Engineer-in-charge/Consultant whose decision shall be final and binding.

b) Any work done at any time or even before receipt of such details shall be removed / replaced by the Contractor without any expense to owner. If the work is not in order and if so directed by the Engineer-in-charge / Consultant, error, in consistencies in drawings and local conditions effecting the works shall be brought to the notice of the Engineer-in-charge/Consultant immediately for his decision.

c) All drawings, bill of quantities and specifications and copies thereof furnished by the department Consultant, are his property. They shall not be used on any other work and shall be returned to the Department / Consultant at his request on completion and before issue of final certificate or termination of the Contract.

d) All materials and workmanship shall be of the respect kinds described in the specification, BOQ contract and in accordance with the instruction of the Engineer-in-charge/Consultant. The contractor must satisfy himself about the same while furnishing samples for approval of the Engineer-in-charge/ Consultant, before in Municipality in the works.

e) The Engineer-in-charge/ Consultant may from time to time cause at his discretion such tests on samples of materials or workmanship of all/any materials and work as he may consider necessary at places of manufacture, fabrication, on the site or at such other places. The expenditure incurred for all such tests shall be borne by the Contractor.

f) All approved samples are to be preserved by the Contractor in a regular manner in the site office for inspection and verification of the Engineer-in-charge/Consultant or his representative from time to time.

3. Alteration, Addition & Omissions:

The Engineer-in-charge/ Consultant shall make any variation of the form, quality or quantity of the works or any part thereof that may in his opinion be necessary and for that purpose or if for any, other reason it shall, in his opinion be desirable, he shall have power to order the Contractor to do so and the Contractor shall do any or all of following:

a) Increase or decrease the quantity of any work included in the contract.
b) Omit any such work;
c) Change the levels, lines, position and dimensions of any part of the works and;
d) Execute additional works of any kind necessary for the completion of the work.

No such variation shall in any way vitiate or invalidate the contract, but the value of all such variations shall be taken into account and shall be added to or deducted from the contract sum accordingly, but no such variation shall be made by the Contractor without prior written instruction from the Engineer-in-charge or Consultant.

a) The schedule of quantities/ rates shall be deemed to have been prepared and included in accordance with the method of measurement of work set out and as per the relevant specifications or in its absence relevant IS: code of practice.

Any error in the specification or in quantity or omission of any item from the Schedule of Quantities/ rates shall not vitiate the contract but be adjusted by adding to or deduction from the contract sum provided that no rectification of errors, if any, shall be allowed in the contract schedule of rates.

4. Valuation of variations:

a) All extra or additional work done or work omitted shall be valued at the rates and price set out in the prices schedule of quantities, and/or derived there from. If in arriving at the contract sum, the Contractor have added to or deducted from the total of the items in the tender any sum either as a percentage or proportion, then the same percentage of proportion shall apply to all items or works in the prices schedule as also for valuation of variation.

b) If the contract does not contain any rate or price applicable to the extra or additional work, or the rate or price in the priced schedule of quantities has become in applicable in the opinion of the Engineer-in-charge/ Consultant by virtues of such addition or omission, then suitable rates or price shall be agreed such rates shall be derived by analysis based on standard schedule of rates of State PWD/ PHD or in case such is not available therein, from any approved schedule with the various elements valued at local market price plus 15(Fifteen) percent towards overheads.

5. The Offers are also to include:

a) To supply all materials, labour, supervision, services, supports, scaffoldings, approach road, construction equipments, tools and plant etc. as required for proper execution of all the items of the work as per drawing and specifications.

b) To provide all incidental items not shown or specified in particular, but reasonable or necessary for successful completion of the work in accordance with the drawings, specifications and schedule of quantities.

c) Cleaning, Uprooting the stumps, vegetation and old masonry etc. met in the trenches and excavation.

d) Providing shoring and shuttering to avoid sliding of soils and removal of the same or completion.

e) De-watering as required and directed.

f) Excavation at all depths (unless otherwise mentioned in schedule), stacking separately usable and disposal of surface earth and materials from site as directed.

g) Curing of all concrete and cement work as per specification and direction.

h) Centering, shuttering as required for all concrete work.

I) Bending, binding, tying the grill and placing in position, including supply of all materials and labour etc.

j) To provide water and power required for construction, testing and commissioning.

k) Testing of materials and works as per specification and direction.

SPECIAL CONDITION

The contractor shall abide by the Employee Provident Fund and Miscellaneous Provision Act-1952. He should maintain wages register properly and must obtain Employees Provident Fund Code No. and a clearance from the Regional Provident Fund Authorities to the effect that, he has provided provident fund benefits to his labourers / employees.

Executive Officer
Bargarh Municipality.

SCHEDULE OF ITEMS

NOTES :-

1. Details of the items under this schedule shall be read in conjunction with the corresponding Specifications, Drawings and other Tender Documents.
2. The work shall be carried out as per drawings, specifications, the description of items in the Schedule and or Engineer's instructions. Drawings enclosed with these documents are only preliminary for giving some ides of the work involved. Final drawings will be issued progressively during execution of the works.
3. Items of work provided in this Schedule but not covered in the Specifications shall be executed strictly as per instructions of the Engineer.
4. Unless specifically mentioned otherwise in the contract, the Tenderer shall quote for the finished items and shall provide for the complete cost towards labour, materials, plant and machinery, operational costs, levies, taxes, insurance, consumable, scaffolding, transport, repairs, rectification, maintenance till handing over, revenue expenses, contingencies, overheads, watering, curing, water, power profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the work according to the Contract.
5. The quantities of the various items mentioned in this Schedule are approximate and may vary upto any extent or be deleted altogether. The quoted rates of each item will remain firm as long as the variation in the total value of the works executed under this contract including extra items, if any but excluding any price escalation remain within +/ -25% (twenty five percent) of the tendered value of the works. The Contractor, in his own interest, should get an indication of the probable extent of work to be executed under any particular item in this schedule, before undertaking any preliminary work or purchasing bought out components related to the work.
6. Rates shall be quoted both in figures and in words in clear legible writing. No overwriting is allowed. All scoring and cancellation should be countersigned by the Tenderer. In case of illegibility, the interpretation, the decision of the Engineer-in-charge of work shall be final. All entries shall be in English Language. In case if on check there are differences between the rates given by the bidder in words and figures or in the amounts worked out by him, the following procedure should be followed.

(i) When there is difference between the rates in figures and in words, the rates which correspond to the amount worked out by the bidder shall be taken as correct.

(ii) When the amount of an item is not worked out by the bidder or it does not correspond with the rate retain either in figures or words, then rate quoted by the bidder in words shall be taken as correct.

(iii) When the rate quoted by the bidder in figures and in words tallies but the amount is not worked out correctly, the rates quoted by the bidder shall be taken as correct and not the amount.

7. Engineer's decision shall be final and binding on the Contractor regarding clarification of items in the Schedule with respect to the other sections of the Contract.
8. Unless otherwise specified all works shall be executed following relevant Orissa Standard Specification, Indian Standard Specification, relevant IRC & MOS&T specification and all materials shall confirm to Indian Standard.

FORM OF BID/TENDER

[Note : the Appendix forms part of the Bid/Tender. Bidders/Tenderers are required to fill up all the blank spaces in this Form of Bid/Tender and Appendix]

From :

[Name & address of the tenderer]

To

The Executive Officer
Bargarh Municipality,
Bargarh.

Sub: **Construction of Proposed Private Bus Stand at Bargarh.**

Dear Sir,

1. Having examined the Drawings, Conditions of Contract, Specification and Bill of Quantities for the execution of the above named works, I/We, the undersigned, offer to execute, complete and maintain the whole of the said works in conformity with the said Drawings, Condition of Contract, Specifications and Bill of Quantities for the sum of (Rs..... ....) or such other sum as may be ascertained in accordance with the said Conditions.

2. I/We undertake , if my/our Bid is accepted to commence the works within **(Seven)** days of receipt of the work order to commence, and to complete and hand over whole of the works comprised in the Contract within **stipulated time** from the date of work order.

3. If my/our Bid is accepted I/We will furnish a security in the form of Bank Guarantee (approved form) to be jointly and severally bound with me/us in an amount of (Two) percent of the above named sum in accordance with the Conditions of Contract or a Demand Draft in an amount of (Two) percent of the above named sum in accordance with the Conditions of Contract.

4. I/We agree to abide by this Bid for the period of **120 (One hundred twenty) days** from the date of Bid opening prescribed in the general rules and guide lines to contractors and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

5. Unless and until an Agreement is prepared and executed, this Bid, together with your written acceptance thereof, shall constitute a binding Contract between us.

6. I/We understand that you are not bound to accept the lowest or any Bid you may receive.

7. I/We agree that we will not withdraw the bid during the period of validity of bids that will be required for intimation of acceptance or non-acceptance as stipulated in general rules and guide lines for

contractors or during such extended period as agreed to by us, such period to date from the last date by which bids are due to submitted to the (Bargarh Municipality) and if we do so withdraw I/We shall forfeit the bid security to Bargarh Municipality.

Dated this .....day of 2013

Signature ..... in the capacity of ..... duly authorized to sign

Bid for and on behalf of ....(in block capitals).

Name of the Witness **:** .....

Address **:** .....

.....

Signature **:** .....

PREAMBLE TO THE SCHEDULE OF QUANTITIES

1. The quantities given in this Schedule of Quantities are liable to variation. Such variation in quantities shall not, however, vitiate the contract in any way whatsoever and Contractor shall be paid for actual measured quantities of work executed by them at the rates given in the tender.
2. The rate quoted shall include all the operations, materials, equipments etc. mentioned in the specifications of respective items of work required to complete job.
3. The rate quoted shall include all statutory taxes in force of local body, State or Central Govt., such as Entry Tax, Octroi, Sales Tax, Contract Sales Tax, Royalty etc., the cost of all carriage of materials, labour, tools and plants, curing and finishing, centering and shuttering, loading and unloading, storage, insurance and all other incidental charges etc. complete.
4. The rates quoted in the Schedule of Quantities are to be full and inclusive of the works described in the Schedule of Quantities, specification including all costs and expenses which may be required for the execution of the work described together with other associated items such as general risks, liabilities and obligations, construction of temporary stores, fencing, watching, lighting, insurance of men and materials, cleaning of site and building after completion of work.
5. The Contractor shall submit various samples of materials for the work. Only such materials as are approved shall be used in the work. All samples of approved materials shall be kept at site in the custody of the clients and shall be handed over to the Contractor after completion of the work.
6. All extra or additional work done by order of Engineer-in-charge shall be valued at the rate and prices set out in the contract, if applicable.
   For extra items where rate is not available in the contract the rate shall be determined as under.
   a) If the rate can be derived from similar items existing in the contract, it will be derived so.
   b) If the rate cannot be derived from the existing item of contract, and the rate exists in the schedule of rate, it will be paid at schedule of rate.
   c) If the rate does not exist in the schedule of rate but can be derived from analogous items existing in the schedule of rate, the rate will be derived accordingly.
   d) If the rate can not be derived as per above clauses mentioned at (a), (b) & (c), the rate for such items is to be arrived at by actual analysis taking into consideration the market value of materials and actual labour involved. 10% extra shall be allowed on the labour component towards over head and profit.
7. All the measurement shall be jointly taken by Contractor's representative and Engineer-in-charge of the work at site and they shall be jointly signed. Any dispute arising out of this shall be referred to the Authorized Officer's of the Municipality and his decision shall be binding on both the parties.
8. Purchase vouchers of materials in original shall be produced for verification on demand by the Authorized Officer of the Municipality. Carriage or transport charges shall not be considered for the purpose of this payment.
9. Any deviation between specifications, schedule of quantities and drawings found by the Contractor, the same shall be brought to the notice of the Authorized Officer of the Municipality immediately.
10. Rates shall be quoted both in figures and in words in clear legible writing. No overwriting is allowed. All scoring and cancellation should be countersigned by the Tenderer. In case of illegibility, the interpretation, the decision of the Engineer- in-charge of work shall be final. All entries shall be in English Language. In case if on check there are differences between the rates given by the bidder in words and figures or in the amounts worked out by him, the following procedure should be followed.

(iv) When there is difference between the rates in figures and in words, the rates which correspond to the amount worked out by the bidder shall be taken as correct.

(v) When the amount of an item is not worked out by the bidder or it does not correspond with the rate retain either in figures or words, then rate quoted by the bidder in words shall be taken as correct.

(vi) When the rate quoted by the bidder in figures and in words tallies but the amount is not worked out correctly, the rates quoted by the bidder shall be taken as correct and not the amount.

11. In case of doubt regarding the meaning and scope of specifications of different items of works and in case of variation in the provisions of IS Specification, National Building Code and Orissa Details Standard Specification and I.R.C., MOS&T specification, the decision of the Executive Officer, BARGARH MUNICIPALITY will be final and binding, and no extra claim over and above the accepted agreement, rules will be payable to the Contractor on this account.
12. The Contractor shall carry out the electrical, sanitary and water supply through the agency as approved by the Municipality whose name shall be submitted to the authorized officer for approval. All works carried out shall comply with Rules, Bye-laws, regulations in force. All testing fees for materials as required shall be borne by the Contractor only.
13. All formalities such as obtaining approvals for water supply, drainage and fire fighting installations, getting the works inspected or tested in the presence of concerned officials obtaining completion certificates for the installation and final connection of water supply and drainage for the building shall

be the responsibility of the Contractor and no extra payment shall be payable to the Contractor on this account.

14. The work of plumbing and drainage shall be carried out by skilled plumbers in line and level as instructed and as per good engineering practice.
15. The holes in walls, RCC members, etc. shall be made very carefully after prior permission of the authorized officer of the Municipality before laying necessary pipe lines and the same shall be made good as per the surrounding surface without any extra cost, as per the satisfaction of the authorized officer.
16. The Municipality can omit or add item. Any extra item of to be carried out, the rate for the same shall be decided by the Authorized Officer of the Municipality.
17. All the fittings of external pipes and sanitary ware shall be fitted in such a way that they shall be absolutely watertight.
18. All the fittings and fixtures shall be of I.S.I/ Approved make.

Authorized Officer
Bargarh Municipality

SPECIAL NOTE

1. The rates to be quoted for different items must be inclusive of cost and carriage of all materials, labour, tools and plants, hire charges, curing and finishing, scaffoldings, centering and shuttering, Sales Tax, Octroi, Royalties and all other local and Central Taxes and duties, insurance and other incidental charges etc. complete except where otherwise specifically mentioned.

2. The works carried out for any item of work is to be completed as per the direction of the Authorized Officer of the Municipality (herein referred as Authorized Officer) is not specifically otherwise mentioned in the item.

3. Royalty on minor minerals used in the contract work shall be deducted from the Contractor's bill at source at rates prescribed as per statutory rules. However, the amount deducted towards royalty charges can be refunded to the Contractor if clearance certificate from the concerned Department is produced by the Contractor establishing payment of the royalty.

THE RATES TO BE QUOTED IN THE TENDER SCHEDULE SHALL INCLUDE

1. Making all drips, grooves, moulds, curved surface and chamfered edges, etc. in concrete and/or plasterwork as directed.
2. Forming all expansion and/or construction joints as directed.
3. All projections toothing and ornamental work and finishing to shape as directed.
4. Embedding all electric pipes, boxes, fan hooks, false ceiling suspensions and insets of any other description etc. in RCC slab or beam as directed.
5. Installing a calibrated cube-testing machine at site, getting it calibrated every year and resubmitting a test report to Bargarh Municipality.
6. Preparing test cubes and testing them at site or in an approved laboratory.
7. Working up or hacking of concrete surface for providing keys for further concrete work including applying thick cement slurry or mortar as directed.
8. Providing 12mm thick cement plaster (1:4) with punning and a layer of bitumen craft paper on all surfaces serving as bearing for RCC work.
9. Basement floor shall be taken as floor level one.
10. Use of shuttering oil as specified.
11. Use of cement slurry over shuttering before commencing concreting.
12. Machine mixing consolidating by vibrating and tamping, hoisting, all lifts and leads and curing.
13. Sinking of floors in specified areas.
14. Providing dowel bars wherever necessary (cost of bars to be paid as reinforcement).
15. Forming cut outs, openings and reconstructing at a later stage as necessary unless otherwise specified.
16. Work in narrow, width, small quantities and curved alignments, etc.
17. Removing rust, mill scales, oil grease, paint etc. from reinforcing bars.
18. Wastage due to cutting bars to required lengths.
19. Cost of 18 gauge annealed binding wire.
20. Providing cover to steel with cement concrete briquette spacers.
21. Payment of steel weight actually placed in position as per design and drawing and as directed as per Indian Standard Section, weights and no allowance shall be made for rolling margins.
22. Sand used shall be coarse river sand with fineness modulus 2.5 and aggregate shall be hard granite stone unless otherwise specified.
23. The rates quoted for RCC and shuttering for beams, slabs and fins. etc. shall include for inverted cantilever, circular and sloping members unless otherwise mentioned.
24. The tender rate should include providing and mixing water proofing material in cement concrete work wherever required in the proportion recommended by the manufacturers.

NB: The rates of consumption of cement for different grades of concrete in RCC works should be as per the

latest circular / Analysis of Rates followed by Govt. of Orissa.

TENDER FOR WORKS.

I/We hereby tender for the execution for the Bargarh Municipality, Bargarh of the work specified in the under written memorandum at the rates specified thereon within the period as mentioned in the tender call notice from the date of written order to commence and accordance in all respects with the specification, designs, drawings and other documents referred to in rule thereof and subject to the annexed conditions of contract and with such materials as are provided for in all respects in accordance with such conditions.

MEMORANDUM.

a)	Name of the work	**Construction of Proposed Private Bus Stand , Bargarh.**
b)	Estimated cost	**`53.70 lakh**
c)	Earnest Money Deposit	**`53.700/- (Rupees Fifty three thousand seven hundred) only**
d)	Period of completion	**9 (Nine) Calendar Months**
e)	Initial security deposit (including earnest money) to be deposited before drawal of agreement 2% (Two percent) of the tendered amount.	
f)	Percentage to be deducted from the bill	@ 5% (five percent) towards performance guarantee.
g)	Total number of items of work tendered for	As per schedule attached hereto.

Signature of Tenderer **Signature of Authorized officer**

Should this tender be accepted I/We hereby agree to abide by and fulfill all the terms and provisions of the said conditions of contract annexed hereto or in default thereof forfeiture to pay to the Bargarh Municipality, Bargarh or his successors in office of the sum of money mentioned in the said conditions.

Dated _____
WITNESS _____
Occupation _____

CONTRACTOR

WITNESS _____
Occupation _____

The above tender is hereby accepted by me on behalf of the Bargarh Municipality, Bargarh

Signed on behalf of the
Bargarh Municipality

Common seal of the Municipality is affixed in the manner laid down as per the provisions of Rules framed under Orissa Municipality Rules in presence of me.

Signature
Designation of the Officer of the
Bargarh Municipality

FORMS AND FORMATS

SECURITY DEPOSIT

BANK GUARANTEE PROFORMA IN LIEU OF SECURITY DEPOSIT

Bank Guarantee to be executed on non-judicial stamped paper worth Rs.40.00 (Rupees forty only).

1. In consideration of the _____, Bargarh Municipality, Bargarh (hereinafter called "The Municipality having agreed to allow (M/s_____) (hereinafter called "the said Contractor_____ terms and conditions of an agreement no. (_____date _____) made between the Municipality and (M/s_____) for supply of materials (as detailed in the said agreement) and for the due fulfillment by the said contractor(s) of the terms and conditions contained in the said agreement, on production of Bank Guarantee for Rs._____) we (_____) (hereinafter referred to "the Bank") do hereby undertake to pay the Municipality an amount not exceeding Rs._____ against any loss or damage caused to or suffered by or would be caused or suffered by the Municipality by reason of any breach by the said contractor(s) of any of the terms of conditions contained in the said agreement.
2. We (_____) do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the Municipality Stating that the amount claimed is due from the Municipality Stating that the amount claimed is due by way of loss or damage caused to or suffered by the Municipality by reason of any breach by the said contractor (s) of any of the terms and conditions contained in the said agreement or by reason of the contractor (s) failure to perform the said agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____.

   We (_____) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the Municipality under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or the (_____)Bargarh Municipality, certifies that the terms and conditions of the said agreement have been full and properly carried out by the said contractor(s) and the guarantee shall then be in-effective.

   Unless a demand or claim under this guarantee is made on us in writing or before the (_____) we shall be discharged from all liability under this guarantee thereafter.
4. We (_____) further agree that the Municipality shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said contractors and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said contractor(s) or for any forbearance, act or omission on the part of the Municipality or any indulgence by the Municipality to the said contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.
5. We (_____) lastly undertake not to revoke this guarantee during its currency.
6. Not withstanding what is stated above the guarantee is valid upto (_____) from the date of execution and our liability therein is limited to a maximum of Rs._____ unless a suit or an action to enforce a claim under the guarantee is filed against (_____) on or before (_____) all rights of the Bargarh Municipality, under the guarantee, shall be forfeited and the said Bank shall be released and discharged from all liabilities there under.

Date at _____ the _____ day of _____ two thousand _____.

N.B. : 1. Name of the supplier.

2. Number and date of order/agreement.
3. Name of the Bank.
4. Name of the Office.
5. Validity period or date up to which the guarantee is valid.

Signature of the Constituent
Authority of the Bank With Seal

PERFORMANCE GUARANTEE FORMAT

PROFORMA FOR PERFORMANCE BANK GUARANTEE

Bank Guarantee No._____

Date _____

WHEREAS _____ (hereinafter referred to as "The Owner") which expression shall unless repugnant to the context includes their (legal representatives, successors and assigns having) their registered office at _____ _____ has placed a purchase order (hereinafter referred to as the "Supplier") which expression shall unless repugnant to the context include their legal representatives, successors and assigns) for supply of _____ on the terms and conditions as set out, (interalia), in the Owner's purchase order no._____ dated _____ and various documents forming part thereof hereinafter collectively referred to as the "Said purchase order" which expression shall include all amendments, modifications and/or variations thereto.

AND WHEREAS one of the conditions of the "Said purchase order" is that the Supplier shall furnish to the Owner a Bank Guarantee from a Nationalised Bank for _____ (_____ percent) of the total value of the "Said purchase order against due and faithful performance of the materials supplied including defects liability obligation against the performance guarantee obligations of the supply made under the said purchase order.

AND WHEREAS the "Supplier" has approached _____ (hereinafter referred to as the Bank) having their registered office at _____ and at the request of the supplier and in consideration of the promises the Bank have agreed to give such guarantee as hereunder :-

(i) The Bank hereby undertake to pay the amount due and payable under this guarantee without any demur merely on a demand from the Owner stating that the amount claimed is due by reason of (default made by the supplier in supplying the materials as per) the terms and conditions of the said purchase order including defects liability obligations in fulfilling the performance guarantee obligations against the supply made by the supplier under the said purchase order. Any such demand made on the Bank by the owner shall be conclusive as regards the amount due and payable by the Bar under this guarantee. However, the Bank's liability under this guarantee shall restricted to an amount not exceeding _____(Rupees _____).

(ii) The Owner will have the full liberty without reference to the Bank and without affecting the guarantee to postpone for any time or from time to time the exercise of any powers and rights conferred on the owner under the said purchase order and to enforce or to for bear from endorsing and powers or rights or by reasons of time being given to the supplier which under law relating the surety would but for the provisions have the effect of releasing the surety.

(iii) The rights of the Owner to recover the said sum of _____ (Rupees _____) only from the Bank in manner aforesaid will not be affected or suspended by reasons of the feet that any dispute or disputes have been raised by the supplier or that any dispute(s) are pending before any office, tribunal or court.

(iv) The guarantee herein contained shall not be affected by the liquidation or winding up, dissolution, change of constitution or insolvency of the supplier but shall in all respects and for all purchases be binding and operative until payment of all money due to the Owner in respect of such liability or liabilities is affected.

Notwithstanding any thing stated above, the liability of the Bank under this Guarantee is restricted to Rs._____ (Rs. _____only) and this guarantee shall expire on _____unless a demand or a claim under this guarantee is filed against the Bank within _____ i.e. the date of expiry of the guarantee, all the rights of the Owner under the said guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities hereunder. Accordingly, this Guarantee shall remain in force till _____.

However, if the supplier's obligations against which this Guarantee is given are not completed or fully performed within the period, Bank hereby agrees to further extend the guarantee for a further period of six months.

We have the power to issue this Guarantee in your favour under the discretionary powers vested on us.

Signature of the Constituent
Authority of the Bank with Seal

A G R E E M E N T

The Agreement is made this ---------- day of ---------- 2012

between BARGARH MUNICIPALITY, (BARGARH MUNICIPALITY), , having its Office at BARGARH, represented by ---------- Engineer-in-charge, ----------here in after referred to as "Municipality" which expression shall where the context so requires or admits, also includes its successors or assignees of the one part.

AND

---------- represented by ---------- hereinafter called the "Contractor" which expression shall where the context so requires also includes its successors or assignees of the one part.

Whereas BARGARH MUNICIPALITY invited tenders from intending contractors for execution of ---------- at ---------- and whereas the Contractor offered his tender to construct, execute & complete such work in all respect in conformity with provision of Agreement and whereas BARGARH MUNICIPALITY has accepted his tender & issued work order in his letter No.----------dt.---------- for execution & completion of the work with the following condition. Now this Agreement witnesses as follows :

1. In this Agreement, words, expression shall have the same meaning as are respectively assigned to them to the conditions of contract hereinafter referred to.
2. The following documents shall be deemed to form and to be read and construed as part of this Agreement as follows:
   i) Terms and conditions : Annexure - 'A'
   ii) Bill of quantities : Annexure - 'B'
3. That in consideration of the payment of Rs. --------- by the Municipality to the contractor as hereinafter mentioned, the contractor hereby covenants with the Municipality to construct & complete the work in all respects in conformity with the provisions of the contract.
4. The Municipality hereby covenants to pay the contractor the contract price in consideration of the construction & completion at the time and in the manner prescribed in the contract.
5. The Contractor will not vary or deviate from the said plans and specification without obtaining permission in writing of the Municipality.
6. The Contractor shall make good any defects, shrinkage or other faults that may appear in the works **within defect liability period** after their completion.
7. In-case the Contractor shall commit the break of any covenants herein contained the Municipality shall be at liberty to terminate this Agreement giving 15 days notice.
8. The Contractor shall indemnify to the Municipality from all claims for injury, death caused to any person under workmen Compensation Act. 1938. Besides the contractor shall comply all the provisions of prevailing Labour laws during execution of work.
9. Both the parties agree by mutual consent that any dispute relating to this Agreement is barred from Arbitration. All problems shall be mutually settled and the decision of Bargarh Municipality shall be final and binding on the contractor.
10. In the event of any dispute that may arise out of this assessment the competent Courts situated at Bargarh shall have the jurisdiction to decide such disputes / litigations between parties hereto.

IN WITNESS WHEREOF the parties have caused their respective common seals to be herein to affixed (or have here into set their respective hands & seals) the day and year first written above.

Witness :

1. Signature of the Party of the one part
2.

Witness :

1. Signature of the Party of the other part
2.

GENERAL RULES AND DIRECTIONS
FOR
THE GUIDANCE OF CONTRACTORS

GENERAL RULES AND DIRECTION
FOR THE GUIDANCE OF CONTRACTORS

ITEM RATE TENDER & CONTRACT FOR WORKS

1. All works proposed for execution by contract will be notified in a form of invitation to the Contractors signed by the Executive Officer/ Municipal Engineer or any other officer so authorized by the Municipality.
   The notice will state the work to be carried out, the items and approximate quantities thereof as well as the date of submitting and opening of tenders also the amount of earnest money to be deposited and the amount of the security deposit to be deposited by the successful tenderer and the percentage if any, to be deducted from bills. Copies of the specification, designs and drawings and any other documents required in connection with the submission of tender signed for the purpose of identification by the Executive Officer/ Municipal Engineer /Authorized Officer shall be open for inspection by the Contractor at the office of the Executive Officer/ Municipal Engineer / Authorized Officer of Bargarh Municipality, Bargarh, during office hours. Tenderers are to got through the drawings, design and specification and other documents and inspect the site before submission of tender.
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 payments made on account of work, when executed by a firm must also be signed by the several partners, except where the contractors 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 works tendered for and the memorandum of materials to be supplied by the Bargarh Municipality, Bargarh and their issue rates shall be filled in and completed in the office of the Executive Officer/ Municipal Engineer / Authorized Officer before the tender form is issued, if a form is issued to an intending tenderer 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. Any person who submits a tender fill up the usual printed form stating at what rate he is willing to undertake each item of the work. Incomplete tender and tenders which propose any alteration in the work specified in the said form of invitation to tender, or which contain any other conditions of any sort, or omit to note the time within which the work can be finished, or which are not accompanied by the required earnest money will be liable to rejection. No single tender shall include more than one work, but contractors who tender for two or more works shall submit a separate tender for each. Tender shall bear the name of the work to which they refer written outside the envelop Deposits for earnest money herein before mentioned shall be made in the form of Demand Draft in the prescribed form in favour of **Executive Officer Bargarh Municipality** on any Nationalized Bank payable at **Bargarh** and the Bank Draft thereof should be enclosed with the tender amount to be furnished along with the tender shall not be less than the amount specified in the Tender Call Notice.
6. Executive Officer/ Municipal Engineer or any authorized officer will open the tenders in the presence of the intending contractors who may be present at the time and will enter the amounts of the tenders in a comparative statement in a suitable form. In the event of a tender being rejected the earnest money forwarded there with shall thereupon be returned to the tenderer.
7. The Municipality shall have the right to reject all or any of the tenders without assigned any reason thereof.
8. In the event of a tender being selected for acceptance, the Municipality inform the tenderer of his selection, who shall thereupon sign copies of the specification and other documents mentioned in rules 1 and 4 for the purpose of identification, within ten days being called upon to do so, failing which the offer will be rejected with forfeiture of EMD. The tenderer of the selected tender shall also deposit the required amount of the Security money (2% of tendered value) within the prescribed time. If the selected tenderer fails to deposit the required amount of the security money in shape of Demand Draft or Bank Guarantee, the Municipality may reject the tender with forfeiture the earnest money. Format for such Bank Guarantee (both as EMD and Initial Security Deposit to be treated as Performance Guarantee) is enclosed. However, the Contractor may furnish the EMD on online mode only.

9. When a tender is selected for acceptance, the tenderer shall deposit in the Municipality Office the required amount of the security money in shape of Bank Guarantee in the prescribed form on any nationalized bank located in the State of Orissa or Bank Draft in favour of the '**Executive Officer**

Bargarh Municipality' on any nationalized Bank in Bargarh. No tender shall be finally accepted until the required amount of the security money has been deposited.

10. The amount of initial security deposit money to be deposited by the tenderer whose tender is selected for acceptance shall be 2(two) percent (including EMD already deposited) of the tendered amount of the work. The security money shall be deposited by the selected tenderer within such time as may be notified to him in writing by the Municipality, failing which tender shall be liable for rejection and Earnest money may be forfeited. **This ISD will be released after successful completion of work and preparation of final bill.**
11. When tender has been selected for acceptance and the required amount of the security money has been deposited, the authorized officer of the Municipality shall scrutinize all pages of the Item rate tender and contract for works to see that the form has been properly filled up and signed by the Contractor and the signature of witnesses. He shall then, if he is competent to accept the tender, sign the acceptance of the tender or if he is not so competent, shall send the tender document for acceptance to the officer competent to accept it.
    In addition to the earnest money deposit (at the time of submission of tender) and security money (to be deposited by the selected tenderer before drawl of agreement) a further deduction of 5 (Five) percent will be made from each and every bill of the Contractor towards performance security by the Municipality. **The entire (5%) security money so deducted will be released to the Contractor after one calendar year from the date of completion of the work.**
12. Besides, deductions towards Sales Tax on works contract, and Income Tax & royalties will be made from each and every bill of the Contractor as per statutory orders of the competent/appropriate authority and credited to the concerned Departments of State/ Central Governments. Necessary certificate towards such deduction will be furnished by the Municipality to the Contractor.
13. The total amount of security money to be deposited by the tenderer entrusted with execution of the work shall be 7 percent of the estimated value of the work and towards this amount the earnest money already deposited by him shall be credited. At least 2/7th of this security inclusive of the earnest money shall be deposited by the tenderer within such times as may be notified to him in writing by the office opening the tenders failing which the tender shall be liable to rejection. The remaining amount of the security money outstanding after completion of the contract with the tenderer may be made up by deduction of 5 percent of the amount of each payment to be made to him in shape of running bills for the work done under the contract.
14. The tenderer has to furnish valid Income Tax Clearance Certificate, Income Tax PAN, valid VAT clearance certificate and valid EPF registration certificate along with the tender.
15. The tender will remain valid up to **120 days (One hundred twenty days)** from the date of receipt of tender.
16. The tenderer has to furnish the details of work in hand and details of work done during the last three years as per the format furnished below.

A) Details of work in Hand :

SL No	Name of the work	Total value of the work	Approx. value of the work already executed	Value of the work in hand	Authority under whom executed	Remarks
1	2	3	4	5	6	7

B) Details of past experience:

SL No	Name of the work	Total agreement value	Authority under whom executed	Stipulated time & period of completion	Actual time period taken for completion	Remarks
1	2	3	4	5	6	7

17. No other terms and conditions as other than those mentioned in the tender documents will be accepted.
18. The tenderer can attend the office of the **Executive Officer Bargarh Municipality** to clarify any doubts regarding the tender conditions, specifications & drawings etc.

CONDITIONS OF CONTRACT

CONDITIONS OF CONTRACT

CLAUSE - I

All compensation/penalty or other sums of money payable by the Contractor to Municipality under the terms of this contract may be deducted from, or paid by, the sale or a sufficient part of his security deposit or from the interest arising there from, or from any sums which may be due or may become due to the Contractor by the Municipality on any account whatsoever and in the event of his security deposit being reduced by reason of any such deduction or sales as aforesaid the Contractor shall within ten days thereafter make good in cash or Bank Draft any sum or sums which may have been deducted from, or raised by, sale of the security deposit or any part thereof.

CLAUSE - II

PENALTY FOR DELAY:

Time is deemed to be essence of the contract on the part of the Contractor. The time allowed for carrying out the work as entered in the tender shall be strictly observed by the Contractor and shall be reckoned from the date on which the written order to commence the work is given to the Contractor. On receipt of the work order, the Contractor will give a schedule of construction and stick to the time schedule during execution. In case he fails to observe the approved time schedule during the intermediate period of the execution of work, penalty will be levied and will be recovered @ 1/2% on the value of work lagging behind for every week delay in execution of the portion or component of work for which programme is given in the time schedule.

The penalty thus recovered at different stages may be waived in full or part if the authorized person of **Bargarh Municipality** in-charge of the work is satisfied that the Contractor has made up the delay at subsequent stages and the work proceeds as per original time schedule. The decision of the authorised officer in charge of the work is final and binding as regards recovery and waive of penalty at the intermediate stages of the execution of the work.

If the work is delayed at the completion stage the penalty levied cannot be considered unless the work is finished in all respect within the time schedule. The work should not be considered as finished until such date as the Municipality shall satisfy as the date on which the work is finished after necessary rectification of defects as pointed out by the Municipality or its authorized officer are fully complied with by the Contractor to the Municipalitys satisfaction provided all ways that entire amount of penalty to be paid under provision of this Clause shall not exceed 10% of the contract value of the work.

Penalty levied for any delay which will occur during the last 3 months of the contract period can not be considered for waiver by any Authority other than the Executive Officer of the Municipality. Subject to the consideration that the application for waiver or penalty to the Executive Officer of the Municipality can only be considered if work gets finally finished within time schedule.

It is mutually agreed by both the parties that in case of any dispute arising out of the provisions of this clause, the decision of the Executive Officer of the Municipality is final and binding on both the parties and the decision is neither arbitrable or changeable within the court of law.

CLAUSE - III

ACTION WHEN WHOLE SECURITY DEPOSIT IS FORFEITED :

In any case in which under any clause or clauses of this contract, the Contractors shall have rendered himself liable to pay compensation/ penalty amounting to the whole of his security deposit in the hands of the Municipality (whether paid in one sum or deducted by installments) the authorized officer on behalf of the Executive Officer of the Municipality, shall have power to adopt any of the following courses, as he may deem best suited to the interest of Municipality.

(a) To rescind the contract (of which rescission notice in writing to the Contractor under the hand of the authorized officer of the Municipality shall be conclusive evidence) and in which case, the security deposit of the Contractor shall stand forfeited, and be absolutely at the disposal of the Municipality.

(b) To employ the labour, paid by the Bargarh Municipality and to supply materials to carry out the work, or any part of the work, debiting the Contractor with the cost of the labour and the price of the materials (of the amount of which the cost and price certificate of the authorized officer of the Municipality shall be final and conclusive against the Contractor) and crediting him with the value of the work done, in all respects in the same manner and at the same rates as if it had been carried out by the Contractor under the terms of his contract, the certificate of the authorized officer of the Municipality as to the value of the work done shall be final and conclusive against the Contractor.

(c) To measure up the work of the Contractor, and to take such part of the work of the contract as shall be un-executed out of his hands and to give it to another Contractor to complete, in which case any expenses which may be incurred in excess of the sum which would have been paid to the original Contractor if the whole work had been executed by him (of the amount of which excess the certificate in writing of the authorized officer of the Municipality shall be final and conclusive) shall be borne and paid by the original Contractor and may be deducted from any money due to him by Bargarh Municipality under the contract or otherwise or from his security deposit or the proceeds of sale thereof, or a sufficient part thereof.

In the event of any of the above courses adopted by the Municipality, the Contractor shall have no claim to compensation for any loss sustained by him by reason of his having purchased or procured

any materials, or entered into any engagements, or made any advance on account of or with a view to, the execution of the work or the performance of the contract. And in case the contract shall be rescind under the provision aforesaid, the Contractor shall not be entitled to recover or be paid any sum for any work, thereto for actually performed under this contract, unless and until the authorized officer of the Municipality shall have certified in writing the performance of such work and the value payable in respect thereof and he shall only be entitled to be paid the value so certified.

(d) Security deposit of the Contractor shall be refunded only after final bill is paid and completion of defect liability period of 12(Twelve) months from the date of completion of the work .

CLAUSE - IV

CONTRACTOR REMAINS LIABLE TO PAY COMPENSATION IF ACTION NOT TAKEN UNDER CLAUSE- IV :

In any case in which any of the powers, conferred upon the Municipality by Clause-III hereof shall have become exercisable and the same shall not be exercised. The non-exercise thereof shall not constitute a waiver of any of the conditions hereof and such powers shall but withstanding be exercisable in event or any future case of default by the Contractor of which by any clause or clauses hereof he is declared liable to pay compensation/ penalty amounting to the whole of his security deposit, the liability of the Contractors for past and future compensation/penalty shall remain unaffected.

POWERS TO TAKE POSSESSION OF OR REQUIRE REMOVAL OF OR SELL CONTRACTOR'S PLANTS :

In the event of the authorized officer of the Municipality putting in force the powers vested in him under the preceding clause he may, if he so desires, take possession of all or any tools, plants, materials and stores, in or upon the works, or the site thereof or belonging to the Contractor, or produced by him and intended to be used for the execution of the work or any part thereof, paying or allowing for the same in the account at the contract rates, or in case of these not being applicable, at current market rates to be certified by the officer authorized by the Municipality whose certificate thereof shall be final otherwise the Municipality may by notice in writing to the Contractor or his clerk for the works, foreman or other authorized agent require him to remove such tools plant, materials or stores from the premises (within) a time to be specified in such notice), and in the event of the Contractor failing to comply with any such requisition, the Municipality may remove them at the Contractor's expense or sell them by auction or private sale on account of the Contractor and at his risk in all respects, and the certificate of the authorized officer of the Municipality as to the expense of any such removal and the amount of the proceeds and expense of any such sale shall be final and conclusive against the Contractor.

CLAUSE - V:

EXTENSION OF TIME:

If the Contractor shall desire an extension of the time for completion of the work on the ground of his having been unavoidably hindered in its execution or any other ground, he shall apply in writing to the Municipality within 30 days of the date of the hindrance on account of which he desires such extension as aforesaid and the Municipality shall, if in its opinion (which shall be final) reasonable grounds be shown therefore, authorize such extension of time, if any, as may in its opinion, be necessary or proper. The Municipality shall at the same time inform the Contractor whether it claims compensation for delay and recover the same as a penalty for delay. No price escalation will be allowed in the event of extension of time granted on genuine grounds.

CLAUSE - V I:

FINAL CERTIFICATE:

On completion of the work, the Contractor shall be furnished with a certificate by the Municipality of such completion, but not such certificate be given not shall the work considered to be completed until the Contractor shall have removed from the area of the premises (to be distinctly marked by the Municipality in the site plan) on which the work shall be executed, all scaffolding, surplus materials and rubbish, and cleaned off the dirt from all woodwork, doors, windows, walls, floors or other parts of any structure, in upon or about which the work is to be executed or of which he may have had possession for the purpose of the execution thereof nor until the work shall have been measured by the authorized officer of Bargarh Municipality in accordance with the rules of the department whose measurements shall be binding and conclusive against the Contractor. If the Contractors shall fail to comply with the requirements of this clause as to removal of scaffolding, surplus materials and rubbish, and cleaning off dirt on or before the date fixed for the completion of the work, the authorized officer of the Municipality may at the expense of the Contractor remove such scaffoldings, surplus materials and rubbish, and dispose of the same as he thinks fit and clean off such dirt as aforesaid, and the Contractor shall forthwith pay the amount of all expenses incurred and shall have no claim in respect and such scaffolding or surplus materials as aforesaid except for any sum actually realized by the sale thereof.

CLAUSE - VII:
PAYMENT ON INTERMEDIATE CERTIFICATE TO BE REGARDED AS ADVANCE AND BILL TO BE SUBMITTED MONTHLY:

A bill shall be submitted by the Contractor each moth or before the date fixed by the Municipality for all works executed in the previous month and the authorized officer of the Municipality or his subordinate shall take the requisite measurement for the purpose of having the same verified and the claim as far as admissible, adjusted if possible, before the expiry of ten days from the presentation of the bill. If the Contractor does not submit the bill within the time fixed as aforesaid, the authorized officer of the Municipality or his subordinate shall measure up the said work in the presence of the Contractor whose counter signature to the measurement list shall be sufficient warrant and the authorized officer of the Municipality or his subordinate shall prepare a bill from such list which shall be binding on the Contractor in all respects.

Provided that, if any balance of the 7% (seven percent) security is outstanding from each such payment shall be deducted so much, not exceeding 5% as may be necessary to make up the balance of the security. **All such intermediate payments to the Contractor shall be regarded as payments by way of advance against the final payment only** and not as payments for work actually done and completed and shall not preclude the requiring of bad, unsound and imperfect or unskilled work to be removed and taken away and reconstructed or re-erected, or be considered as an admission of the due performance of the contract, or any part thereof in any respect, or the accrual of any claim nor shall it conclude, determine or effect in any way the powers of the Municipality under these conditions or any of them as to the final settlement or adjustment of the accounts or otherwise, or in any other way vary or affect the contract.

Payment to the contractor will be made in a regular basis subjected to availability of funds.

CLAUSE - VIII:

The final bill shall be prepared by the officer of the Bargarh Municipality in accordance with the rules of the Municipality in the presence of the Contractor within three month of the date of completion.

CLAUSE - IX:
STORES SUPPLIED BY MUNICIPALITY :

Deleted

CLAUSE - X:
WORKS TO BE EXECUTED IN ACCORDANCE WITH SPECIFICATION, DRAWING AND ORDERS ETC.:

The Contractor shall execute the whole and every of the work in the most substantial and workman like manner, and both as regards materials and otherwise in every respect in strict accordance with the specification. The Contractor shall also conform exactly, fully and faithfully to the designs drawing and instructions in writing relating to the work signed by the authorized officer of the Municipality lodged in his office, and to which the Contractor shall be entitled to have access at such office, for the purpose of inspection during office hours and the Contractor shall, if he so require, be entitled at his own expenses to make or cause to be made copies of the specifications, and of all such designs, drawings and instructions as aforesaid.

CLAUSE - XI:
DO NOT INVALIDATE CONTRACTS:

The authorized officer of the Municipality shall have power to make any alterations minor addition to the original specifications drawings, designs and instructions, that may appear to him necessary and advisable during the progress of work and the Contractor shall be bound to carry out the work in accordance with any instructions which may be given to him writing signed by the authorized officer of the Municipality and such alteration shall not invalidate the contract and any additional work which the Contractor may be directed to do in the manner above specified as part of the work shall be carried out by the Contractor on the same conditions in all respects on which he agreed to do the main work, and at the same rates as are specified in the tender for the main work.

EXTENSION OF TIME IN CONSEQUENCE OF ALTERATIONS:

The time for the completion of the work shall be extended in the proportion that the additional work bears to the original contract work and the certificate of the authorized officer of the Municipality shall be conclusive as to such proportion.

RATES OF WORK NOT IN ESTIMATE OR SCHEDULE OF RATES OF THE GOVERNMENT OF ORISSA :

And if the additional work includes any class of work for which no rate is specified in this contract, then such class of work shall be carried out at the rates entered in the current sanctioned schedule of rates of the Government of Orissa for the locality during the period when the work is being carried on by adding/ subtracting only the differential cost of cement, steel, octroi, royalty and contract tax, no difference of labour rates is to be considered and if such last mentioned class of work is not entered in the current schedule of rates of the Government of Orissa then the Contractor shall within seven days of the date of his receipt of the order to carry out the work inform the authorized officer of the Municipality of the rate which it is his intention to charge for such class of work, and if the authorized officer of the Municipality does not agree to this rate he shall by notice in writing be at liberty to cancel his order to carry out such class of work and arrange to carry it out in such manner as he may consider advisable.

No deviations from the specification stipulated in the contract nor additional items of work shall ordinarily be carried out by the Contractor, nor shall any altered, additional or substituted altered or additional items have been approved and fixed in writing by the officer authorized by the Municipality. The Contractor shall be bound to submit his claim for any additional work done during any month on or before the 15th day of the following month accompanies by a copy of the order in writing of the authorized officer of the Municipality, for the additional work and that the Contractor shall not be entitled to any payment in respect of such additional work if he fails to submit his claim within the aforesaid period.

Provided always that if the Contractor shall commence work or incur any expenditure in regard thereof before the rates shall have been determined as lastly hereinbefore mentioned, in such case he shall only be entitled to be paid in respect of the work carried out or expenditure incurred by him prior to the date of the determination of the rates as incurred by him prior to the determination of the rates as aforesaid according to such rate or rates as shall be fixed by the Municipality. In the event of a dispute, the decision of the Executive officer, Bargarh Municipality will be final and binding.

CLAUSE - XII:

NO COMPENSATION FOR ALTERATION IN OR RESTRICTION OF WORK TO BE CARRIED OUT:

If at any time after the commencement of the work the Executive Officer, Bargarh Municipality shall for any reason whatsoever not require the whole thereof as specified in the tender to be carried out the authorized officer of the Municipality shall give notice in writing of the fact to the Contractor who shall have no claim to any payment or compensation whatsoever on account of any profit or advantage, which he might have derived from the execution of the work in full but which he did not derive in consequence of the full amount of the work not having been carried out, neither shall he have any claim for compensation by reason of any alterations having been made in the original specifications, drawing, designs and instruction which shall involve any curtailment of the work as originally completed.

CLAUSE - XIII:

ACTION AND COMPENSATION PAYABLE IN CASE OF BAD WORK:

If it shall appear to the authorized officer of the Municipality or his sub-ordinate in-charge of the work, that any work has been executed with unsound, imperfect or unskilled workmanship or with materials of any inferior description, or that any materials or articles provided by him for, the execution of the work are unsound or of a quality inferior to that contracted for or otherwise not in accordance with the contract, the Contractor shall on demand in writing from the authorized officer of the Municipality specifying the work materials or articles complained of notwithstanding that the same may have been inadvertently passed certified and paid for forthwith rectify or remove and reconstruction work so specified in whole or in parts as the case may require, or as the case may be, remove the materials or articles at his own proper charge and cost and in the event of his failing to do so within a period to be specified by the authorized officer of the Municipality in his demand aforesaid, then the Contractor shall be liable to pay compensation at the rate of one percent on the amount of the estimate for every day not exceeding ten days. while his failure to do so hall continue and in the case of any such failure the Authorized Officer of the Municipality may rectify or remove and re-execute the work or remove and replace with others, the materials or articles complained of as the case may be at the risk and expense in all respects of the Contractor. The compensation deducted under this clause is not refundable at any stage.

CLAUSE - XIV:

WORK TO BE OPEN TO INSPECTION:

All work under or in coarse of execution or executed in pursuance of the contract shall at the times be open to the inspection and supervision of the authorized officer of the Municipality and his subordinates and the Contractor shall at the times during the usual working hours, and at all other times at which reasonable notice of the intention of the authorized officer of the Municipality or his subordinate to visit the works shall have been given to the Contractor either himself be present to receive orders and instruction or have a responsible agent duly accredited in writing present for that purpose. Orders given to the Contractor's agent shall be considered to have the same force as if they had been given to the Contractor himself.

CLAUSE - XV:

NOTICE TO BE GIVEN BEFORE WORK IS COVERED UP:

The Contractor shall give not less than five days notice in writing to the officer authorized by the Municipality or his sub-ordinate in-charge of the work before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimensions thereof be taken before the same is so covered up or placed beyond the reach of measurement and shall not cover up or placed beyond the reach of measurement, any work without the consent in writing of the Authorized Officer of the Municipality or his subordinate -in-charge of the work and if any work shall be covered up or placed beyond the reach of measurement without such notice having been given or consent obtained, the same shall be uncovered at Contractor's expense, or in default thereof no payment or allowance shall be made for such work or the materials with which the same was executed.

CLAUSE - XVI:
CONTRACTOR LIABLE FOR DAMAGE DONE AND FOR IMPERFECTION FOR 12 MONTHS AFTER CERTIFICATE:

If the Contractor or his work people or servants shall break deface, injure or destroy any part of a building, road, fence, enclosure, or grass land, or cultivated ground contagious to the premises on which the work or any part of it is being executed, or if any damage shall happen to the work, while in progress from any cause whatsoever or any imperfection became apparent in it within **12 (twelve)** months from the date of final certificate of its completion shall have been given by the officer authorized by the Municipality, as aforesaid, the Contractor shall make the same good at his own expense, or in default, the authorized officer of the Municipality may cause the same to be made good by other workman, and deduct the expense (of which the certificate of the authorized officer of the Municipality shall be final) from any sums that may be then or at any time thereafter may become due to the Contractor or from his security deposit or the proceeds of the same thereof, or of a sufficient portion thereof and the Contractor shall be liable to pay any part of the expenses not so recovered by the authorized officer of the Municipality. It may be clearly understood that so far as this contract is concerned, the contractor has to actually maintain and attend to rectification of all defects at his cost for a period of 18 months from the date of handing over/ completion of the work and he will make provisions for attending to such repairs and maintenance in his rates.

CLAUSE - XVII:
CONTRACTOR TO SUPPLY PLANT, LADDERS, SCAFFOLDING ETC. :

The Contractor shall supply at his own cost all materials (except such special material, if any, as may in accordance with the contract be supplied from the Municipality's stores), plant tools, appliances, implements, ladders, cordage, tackle, scaffolding and temporary works requisite or proper for the proper execution of the work, whether original, altered or substituted, and whether included in the specification or other documents forming part of the contract or referred to in these conditions or not or which may be necessary for the purpose of satisfying on complying with the requirements of the Municipality as to any matters as to which under this conditions he is entitled to be satisfied which he entitled to require together with carriage therefore to and from the work. The Contractor shall also supply without charge the requisite number of person with the means and materials necessary for the purpose of setting out works and counting, weighing and assisting in the measurement or examination at any time and from time to time of the work or materials/ Failing his so doing the same may be provided by the Municipality at the expense of the Contractor and the expenses may be deducted from any money due to the Contractor under the contract, or from his security deposit or the proceeds of sale thereof, or of a sufficient portion thereof. The Contractor shall also provide all necessary fencing and lights required to protect the public from accident, and shall be bound to bear the expenses of defence of every suit, action or other proceedings at law that may be brought by any person for injury sustained owing to neglect of the above precautions, and to pay any damages and cost which may be awarded in any such suit, action or proceedings to any such person or which may with the consent of the Contractor be paid to compromise any claim by any such person.

CLAUSE - XVIII:
NO FEMALE LABOUR SHALL BE EMPLOYED WITHIN THE LIMITS OF A CANTONMENT:

The Contractor shall not employ for the purpose of this contract any person who is below the age of twelve years and shall pay to each labourer for the work done by such labourer, wages not less than the minimum wages paid for similar work in the neighborhood (whichever is higher). No female labour shall be engaged after 5 PM.

a) The authorized person of the Municipality shall have the right to enquire into and decide any complaint alleging that the wages paid by the Contractor to any labourer for the work done by such labourer is less than the minimum wages paid for similar work in neighborhood.

The authorized officer of the Municipality shall have the right to decide whether any labourer employed by the Contractor is below the age of twelve years and to refuse to allow any labourer whom he decides to be below the age of twelve years, to be employed by the Contractor.

b) The Contractor shall employ at least one Engineering Graduates or one Engineering Diploma holders as apprentices at his own cost specifically for this work. The apprentice will be selected by the Executive Officer of the Municipality. The period of employment will commence within one month after the date of work order and would last till the date when 90% of the work is completed. The fair wage to be paid to the apprentices should be not less than Rs.5,000/- for Graduate & Rs.3500/- for Diploma Holders. The Contractor shall furnish at the commencement of the work and thereafter after every three calendar months, in writing, a certificate duly countersigned by the authorized officer of the Municipality, the name and address of the apprentices engaged in the work.

CLAUSE - XIX:
WORK NOT TO BE SUBLET:

The Contract shall not be assigned or sublet without the written approval of the officer of the Municipality. And if the Contractor shall assign or sublet his contract, or attempt to do so, or become insolvent or commence

any insolvency proceeding or make any composition with his creditor, or attempt to do so, or if any bribe, gratuity, gift, loan, perquisite reward or advantage, pecuniary or otherwise, shall either directly or indirectly be given promised, or offered by the Contractor, or any of his servants or agents to any public officer or person in the employ of Municipality in any way relating to his office or employment, if any such officer or person shall become in any way directly or indirectly interested in the contract, the officer authorized by the Municipality may thereupon by notice in writing rescind the contract and the security deposit of the Contractor's shall thereupon stand forfeited and be blacklisted and the same consequences shall ensure as if the contract shall not be entitled to recover or be paid for any work therefore actually performed under the contract and for which payment had not been made, since the date of detection of such occurrence.

CLAUSE - XX:

SUM PAYABLE BY WAY OF COMPENSATION TO BE CONSIDERED AS A REASONABLE COMPENSATION WITHOUT REFERENCE TO ACTUAL LOSS:

All sums payable by way of compensation under any of these conditions shall be considered as reasonable compensation to be applied to the use of Municipality without reference to the actual loss or damage sustained, and whether or not any damage shall have been sustained.

CLAUSE - XXI:

CHANGES IN CONSTITUTION OF FIRM:

In the case of tender by partners, any change in the constitution of the firm shall be forthwith notified by the Contractor to the Municipality for its information. In case of failure to notify the change in the constitution within fifteen days, the officer authorized by the Municipality may be notice in writing rescind the contracts and the security deposit of the Contractor shall thereupon stand forfeited and the absolutely at the disposal of the Municipality and the same consequences shall ensure as if the contract had been rescinded under clause 3 hereof, and in addition the Contractor shall not be entitled to recover or be paid for any works therefore actually performed under the contract.

CLAUSE - XXII :

All works to be executed under the contract shall be executed under the direction and subject to the approval in all respect by the authorized person of the Municipality for the time being who shall be entitled to direct at what point or points and in what manner they are to be commenced and from time to time carried on.

CLAUSE - XXIII:

LUMP SUM IN ESTIMATES:

When the estimate on which a tender is made include lump sums in respect of parts of the work, the Contractor shall be entitled to payment in respect of the items of work involved or the part of the work in question at the same rates as are payable under this contract for such items, or if the part of the work in question is not, in the opinion of the officer authorized by the Municipality capable of measurement, may by him discretion pay the lump sum amounts entered in the estimate, and the certificate in writing of the authorized officer of the Municipality shall be final and conclusive against the Contractor with regard to any sum or sums payable to him under the provisions of this clause.

CLAUSE - XXIV:

ACTION WHERE NO SPECIFICATION:

In the case of any class of work for which there is no such specification as is mentioned in rule 1, such work shall be carried out in accordance with ISI, ODS and specification furnishes by Architect/ Municipality Engineer and in the event of these being no specification, then in such case the work shall be carried out in all respects in accordance with the instructions and requirements of the Officer authorized by the Municipality.

CLAUSE - XXV:

DEFINITION OF WORKS:

The expression "words" of "work" where used in these conditions shall, unless there be something either in the subject or context repugnant to such construction, be construed and taken to mean the works by or by virtue of the contract to be executed, whether temporary or permanent and whether original, altered, substituted or additional.

CLAUSE - XXVI :

The Municipality shall be entitled to recover in full from the Contractor any amount that the Municipality may be liable to pay under Workman's Compensation Act VIII of 1923, to any workmen employed in course of execution of any part of the work covered by these contract.

CLAUSE - XXVII:

That for the purpose of jurisdiction in the event of dispute if any, the contract should be deemed to have been entered into within the State of Orissa and it is agreed that neither party to the contract agreement will be competent to bring a suit in regard to the matters covered by this contract at any place outside the State of Orissa.

CLAUSE - XXVIII:

The Municipality will have the right to inspect the scaffolding and centering made for the work and can reject partly or fully such structure if found defective in their opinion.

CLAUSE - XXIX:

Sanitary arrangements will be made by the Contractor at his own cost for his labour camp.

CLAUSE - XXX:
The Contractor shall bear all taxes including sales tax, income tax, royalty, octroi, fair weather charges and tollage, contract tax etc. in respect of this work.

CLAUSE - XXXI : DELETED

CLAUSE - XXXII :
After the work is finished all surplus materials and debris are to be removed by the Contractor and preliminary works such as vats, mixing platforms etc. are to be dismantled and all materials removed from site. The ground upto 100'-0" wide from the work site should be cleared and dressed.

CLAUSE - XXXIII:
FAIR WAGE CLAUSE:

a) The Contractor shall not employ for the purpose of this contract any person who is below the age of twelve years and shall pay to each labourer for work done by such labourers' fair wages. Explanation: - "Fair Wage" means wages, whether for time or piece work prescribed by the State Public Works Department provided that where higher rates have been prescribed under the minimum wages Act, 1948, wages at such higher rates should constitute fair wages.
The Municipality shall have the right to enquire into and decide any complaints alleging that wages paid by the Contractors to any labourer for work done by such labourer is less than the wages as per the sub paragraph (I) above.

b) The Contractor shall notwithstanding the provisions of any contract to contrary, cause to be paid a fair wage to labourers indirectly engaged on the work including any labour engaged by his sub-contractors in connection with the said work, as if the labourers had been immediately employed by him.

c) In respect of all labour directly or indirectly employed in the works for the performance of the contractor's part of this agreement, the Contractor shall comply with or cause to be complied with all regulations made by Municipality in regard to payment of wages, wages period deductions from wages, recovery of wages not paid and deductions unauthorized made, maintenance of wage register, wage cards publication of scale of wages and other forms of employment, inspection and submission of periodical return and all other matter of like nature.

d) The authorized officer of the Municipality shall have the right to deduct, from the money due to the Contractor, any sum required or estimated to be required for making good the loss suffered by a worker or workers by reason of non-fulfillment of conditions of the contract for the benefit of the workers non-payment of wages or of deductions made from his or their wages, which are not justified by their terms of the contract or non-observance of the regulations. Money so deducted should be transferred to the workers concerned.

e) Vis-à-vis, the Municipality, the Contractor shall be primarily liable for all payments to be made under and for the observance of the regulations aforesaid without prejudice to his right to claim indemnity from his sub-contractor.

f) The regulations aforesaid shall be deemed to be a part of this contract and any breach thereof shall be reach of this contract. The Contractor before commencement of the work shall obtain necessary labour contract license from the appropriate authorities and submit an attested copy of the same to the Municipality.

CLAUSE - XXXIV:
The Contractor shall abide by the relevant Act and Rules/ Regulations in force of the State of Orissa regarding labour employed in construction work. The Contractor shall be fully and solely responsible for any compensation/fine that may be imposed for violation of the said Rules/ Regulations/ Act.

CLAUSE - XXXV:
The contractor shall abide by the relevant Act like Minimum Wages, Employees Provident Fund, ESI etc. and Rules/Regulations in force of the state of Orissa from time to time for the labour employed in construction work. The contractor shall be fully and solely responsible for any compensation/fine that may be imposed for violation of the said Rules/ Regulations/ Act.

CLAUSE - XXXVI:
The Contractor should have the Sales Tax Registration number otherwise additional 4% is to be kept withheld from his bills till Sales Tax Registration Number is produced by the Contractor. If Contractor fails to produce the Sales Tax Registration Number before final bill is paid, the whole amount is to be shown as recovery for want of Registration Number and credited to Bargarh Municipality account.

CLAUSE - XXXVII:
Steel centering and shuttering materials shall be used for all RCC works as far as possible.

CLAUSE - XXXVIII:

The consumption of paper/water and Electricity at the site office shall be reduced to minimum as far as practicable.

CLAUSE - XXXIX:

Reduction of dust at work site and use of facemask by the workers in the duty area should be strictly followed.

CLAUSE - XXXX:

Solid waste at the work site shall be segregated and shall be disposed off safely.

CLAUSE - XXXXI:

Paints should be properly used with safety measures and excess or drop outs, if any, are to be suitable disposed.

CLAUSE-XXXXII

An amount of 1% cess on the cost construction will be deducted from each bill of the contractor.

ORISSA P.W.D./ ELECTRICITY DEPARTMENT CONTRACTOR'S LABOUR REGULATION

1. Short Title:

These regulations may be called "The Orissa Public Works Department/ Electricity Department Contractor's Regulation.

2. Definitions:

In these regulations, unless otherwise expressed or indicated the following words and expressions shall have the meaning hereby assigned to them respectively, that is to say:

(a) "Labour" means workers employed by a Contractor of the Bargarh Municipality directly or indirectly through a sub-contractor or other person or by an agent on his behalf;

(b) "Fair Wages" means wages whether for time or piece work prescribed by the State Public Works Department/ Electricity Department for the area in which the work is done;

(c) "Contractor" shall include every person whether a sub-contractor or headman or agent employing labour on the work taken on contract;

(d) "Wages" shall have the same meaning as defined in the Payment of Wages Act and include time and piece rate wages, if any.

3. Displace of notices regarding wages, etc.: The Contractor shall :

(a) Before he commences his work on contract display and correctly maintain and continue to display and correctly maintain, a in a clean and legible condition, in conspicuous places on the work, notices in English and in the local Indian Language spoken by the majority of the workers, giving the rate of wage prescribed by the State Public works Department/ Electricity Department for the district in which the work is done.

(b) Send a copy of such notices to the authorized officer of Bargah Municipality.

4. Payment of Wages:

i) Wages due to every worker shall be paid to him direct.

ii) All wages shall be paid in current coin or currency or in both.

5. Fixation of wage period :

(a) The Contractor shall fix the wage period in respect of which the wages be 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 Contractor, 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.

6. Wage book and wages cards etc.:

i) The Contractor shall maintain a wage book of each worker in such form as may be convenient, but the same shall include the following particulars:

(a) Rate of daily or monthly wages.

(b) Nature of work on which employed.

(c) Total number of days worked during each wage period.

(d) Total amount payable for the work during each wage period.

(e) All deductions made from the wages with an indication in each case of the ground for which the deduction is made.

(f) Wage actually paid for each wage period.

ii) The Contractor shall also maintain a wage card for each worker employed on the work.

iii) The authorized officer of Bargah Municipality may grant an exemption, from the maintenance of wage bond, wage cards to a Contractor who in his opinion, may not directly or indirectly employ more than 100 persons on the work.

7. Fines and deduction which may be made from wages:

a) The wages of a worker shall be paid to him without any deduction of any kind except the following:

i) Fines;

ii) Deductions for absence from duty, i.e. from the place or places where by the terms of his employment he is required to work. The amount of deductions shall be in proportion to the period for which he was absent.

iii) Deductions for damage to or loss of good expressly entrusted to the employed person for custody or for loss of money for which he is required to account whereas such damage or loss is directly attributable to his neglect or default.

iv) Any other deductions, which the Orissa Govt. may from time to time allow.

b) No fines shall be imposed on a worker and no deduction for damage or loss shall be made from his wages until the worker has been given an opportunity of showing cause against such fines or deduction.

c) The total amount of fines which may be imposed in any one wage period on a works shall not exceed an amount equal to five paise in a rupee of the wages payable to him in respect of that wage period.

d) No fine imposed on any worker shall be recovered from him by installments, or after the expire of 60 days from the date on which it was imposed.

8. Register of fines, etc. :

i) The Contractor shall maintain a register of fines and of all deductions for damage or loss. Such register shall mention the reason for which fine was imposed or deduction for damage or loss was made.

ii) The Contractor shall maintain a list of English and the in the local Indian Language, clearly defining acts and omissions for which penalty of fine can be imposed. It shall display such list and maintain it in a clean and legible condition in conspicuous places on the work.

9. Preservation of register:

The wage register, the wage cards and the register of fines, deduction required to be maintained under these regulations shall be preserved for 12 months after date of the last entry made in them.

10. Powers of Labour Welfare Officers to make investigations of inquiry:

The Labour Welfare Officer or any other persons authorized by the Government of Orissa on their behalf shall have power to make inquiries with a view to ascertaining and enforcing due and proper observance of the fair wage clause and the provisions of these regulations. He shall investigate into any complaint regarding default made by the Contractor, sub-contractor in regard to such provisions.

11. Report of Labour Welfare Officers:

The Labour Welfare Officer or others authorized aforesaid shall submit a report of the results of his investigation or inquiry to the authorized officer of Bargah Municipality indicating the extent, if any, to which the default has been committed with a note that necessary deductions from the Contractor's bill be made and the wages and other dues be paid to the labourers concerned.

12. Appeal against the decision of Labour Welfare Officers:

Any persons aggrieved by the decision and recommendation of the Labour Welfare Officer or other person so authorized may appeal against such decision to the Labour Commissioner within 30 days from the date of decision forwarding simultaneously a copy of his appeal to the authorized officer of Bargah Municipality but subject to such appeal, the decision of the officer shall be final and binding upon the Contractor.

13. Inspection of Register:

The Contractor shall allow inspection of the wage book and wage cards to any of the workers or to his agent at a convenient time and place after due notice is received or to the Labour Commissioner or any other person authorized by the Government of Orissa on his behalf.

14. Submission of return:

The Contractor shall submit periodical returns as may be specified from time to time.

15. Amendments:

The Government of Orissa may from time to time, add to or amend these regulations and on any question as to the application, interpretation of affect of these regulations, the decision of the Labour Commissioner or any other person authorized by the Government of Orissa in that behalf shall be final.

The terms and conditions of the contract have been read/ explained to me and quoted my rates accordingly and certify that we have clearly understood them.

Signature of Tenderer

SPECIAL CONDITIONS OF FORMING A PART OF THIS CONTRACT

1. All works are to be executed and measured in conformity with the relevant upto date I.S. Specifications, National Building Code and Orissa Detailed Standard Specification, I.R.C. and MOS&T Code of practice and specification.
   In case of variation in the norms, specifications and methods of execution and measurement as prescribed in the different codes and in case of doubt regarding means and scope of specification of any items, the decision of Executive Officer, BARGARH MUNICIPALITY will be final and binding in this regard. No extra monetary compensation over and above the accepted agreement rates for various item will be paid to the Contractor on this Account.
2. In case of any technical specification not covered in the relevant I.S. Specifications, National Building Code and Orissa Detailed Standard Specification, I.R.C. and MOS&T Code etc., the specification given by the Consultant/ Purchaser/ BARGARH MUNICIPALITY is final and binding on the Contractor.
3. Every tenderer must examine the detailed specification of Orissa Public Works Department, relevant IS specifications and provisions in National Building Code and IRC, MOS&T specification before submitting his tender. The right is reserved with the Municipality without impairing the contract to make such increase or decrease in the quantities or items of work mentioned in the schedule of quantities attached to the tender notice as may be considered necessary to complete the work fully and satisfactorily. Such increase/ decrease shall in no case invalidate the contract or rates. However, increase in quantity of any particular item upto 25% of the tendered quantity the rate quoted/accepted will remain in force. It shall be definitely understood that the Municipality does not accept any responsibility for the correctness or completeness of the quantities shown in the schedule. The schedule is liable to alternation by omission or addition or deduction and such omissions, additions and deductions shall in no case invalidate the contract and no extra monetary compensation will be entertained. At any point of time, the contract can be terminated if so desired by the Municipality without assigning any reason thereof after issue of notice in writing by the Municipality before 30 days of the proposed date of termination. In the event of such termination, the Contractor shall not be entitled to any monetary compensation whatsoever.
4. It is the responsibility of the Contractor to ensure production of quality concrete of required strength and durability which shall be ascertained by regular field and Laboratory tests in accordance with IS:516 and other relevant Indian Standards. All cost involving such test shall be borne by the Contractor.

5. The Contractor shall provide at site required proper plant and machinery including testing equipment's, instruments etc., for concrete at his own cost. The Contractor shall not be paid any thing extra for carrying out any test as directed either at site or at Laboratory. In case of Laboratory test , the name of the Laboratory or Institutions shall be suggested by BARGARH MUNICIPALITY.

6. INSURANCE AGAINST FIRE, ACCIDENT, DAMAGE AND THEFT:

a) The Contractor shall ensure that he and his sub-contractors use one safe and reliable equipment's. The Contractor shall be responsible for the safe custody and storage of all equipment's, materials, construction tools, tackles and machinery at the site, which are covered by this contract. All Contractors' equipment shall be at the sole risk of the Contractor. The Contractor shall take necessary insurance cover for all tools, tackles and other constructions equipment's and machinery and materials, owned hired or used by the Contractor for performance of the works but which does not form a part of the permanent work. The Contractor shall take necessary action to protect to protect all finished or partially finished construction and protect adjacent or adjoining properly, which might be damaged by the process of construction or erection. All expenses incurred for ensuring the above shall be at the Contractor's account.

b) The Contractor shall at the time of signing the contract insure the works and keep them insured until the completion of the contract against loss or damage by fire, theft or other accident in an Office to be approved by BARGARH MUNICIPALITY, Bargarh in the joint names of the owner and Contractor (the name of the former being placed first in the policy) for full amount of the contract and for any further sum called upon to do so by BARGARH MUNICIPALITY, the premium of such further sum being allowed to the Contractor as an authorized extra. Such policy shall cover the property of the BARGARH MUNICIPALITY only, fees for assessing the claim and in connection with the Service generally therein, and shall not cover any property of the Contractor or any sub-contractor or Employees. The Contractor shall deposit the policy and receipt for the premiums with the BARGARH MUNICIPALITY within Twenty-one days from the date of signing the contract unless otherwise instructed by BARGARH MUNICIPALITY. In default of the Contractor insuring as provided above, BARGARH MUNICIPALITY on his behalf may so insure and may deduct the premiums paid from any money due or which may become due to the Contractor. The Contractor shall as soon as the claim

under policy is settled or the work reinstated by the Insurance Office, should they select to do so, proceed with all due diligence with the completion of the works in the same manner as though the fire had not occurred and in all respects under the same conditions of the contract, the Contractor in case of rebuilding or reinstatement after fire, shall be entitled to such extension of time for completion as BARGARH MUNICIPALITY deems fit.

The amount so due as aforesaid shall be the total value of the works duly executed and of the contract materials and goods delivered upon the site for use in the works up to and including a date not more than seven days prior to the date of the said certificate less than amount to be retained by BARGARH MUNICIPALITY (as hereinafter provided) and less any installments paid under this article provided that such certificates shall only include the value of the said materials and goods as and from time as they are responsible, properly and not prematurely brought upon the site and then only if properly stored and/or protected against weather.

7.(a) Steel reinforcement if available shall be supplied by the Municipality either in the form of coils or in Standard straight lengths normally available in the market.

(b) No extra payment shall be made to the Contractor for straightening the coiled or bent rods.

8. The measurement of steel reinforcement shall be made on the basis of linear measurement as per standard practice. For the purpose of recovery of the quantity of steel utilized in the work, will be calculated on the basis of standard unit weight of various size bars as mentioned below. In case of any deviation in unit weight from the standard weights mentioned below by more than the percentage allowed by code the same shall be to the Contractor's account. No compensation shall be paid for such variation in unit weight.

Nominal size of Bar in mm	Weight per Metre in Kg.	Nominal size of bar in mm.	Weight per Metre in Kg.
6	0.222	16	1.58
8	0.395	20	2.47
10	0.617	25	3.85
12	0.888	28	4.83

9. All centering/ shuttering and scaffolding shall be of steel materials of approved quality and confirming to relevant BIS specification. Use of timber in the Centering/ shuttering shall not be permitted except where essentially required and unavoidable.
In any case the centering, shuttering work shall be rigid smooth and leak proof so that the resulting concrete members are free from undulations, honey combs and are true to size.

10. All concrete structure will be exposed smooth. However, where the columns, beams, ceilings and RC walls are actually plastered, the same shall be done in approved proportion of cement mortar and payment shall be made for such plastering actually done at the quoted rate for such item in the contract.

11. It is the Contractor’s responsibility to correctly demarcate the layout and orientation of the building and fixation of the level pillars at site by his own technical staff as directed by Municipality.
All expenditure in connection with tool and plants instrument materials etc., required in connection with demarcation of layout including minor levelling the ground, fixation of level, bench marks and centre line etc., shall be borne by the Contractor.

12. The Contractor before any casting of RCC works/ plastering works/ flooring work shall obtain the services/ clearance from the Officer authorized by the Municipality.

13. Dewatering of foundations where necessary shall be borne by the Contractor.

14. As regards extra items of work, extra quantity of any item in excess of the schedule, order must be obtained from the Municipality and in such cases; the matter shall be dealt as per provision of Clause-11 of the Contract.

15. The Contractor shall be responsible for any accident to any person and shall have to bear the cost of all litigation arising out of any such accident and also for the payment of any money, damages or compensation payable in respect of such accident to any person, employed by him for the work in any capacity whatsoever.

16. The Contractor shall submit to the Authorized Officer of the Municipality monthly return of labour both skilled and unskilled employed by him on the work.

17. No monetary compensation shall be entertained on account of natural calamities like cyclone, earthquake and flood etc., but suitable extension of time may be granted by the Municipality on consideration of the application of the Contractor.

18. Provisional deduction towards Sales Tax and Income Tax shall be made from each and every bill of the Contractor.

19. The rates quoted by the Contractor shall be inclusive of transportation, carriage, lead, loading, unloading al taxes, levy, octroi etc. including contract of the State Government and Excise duties. In the event of variation on the above taxes, levies, duties etc. rates shall not be changed.

20. If the Contractor removes any Municipality materials or stock supplied to him from the site of work with a view to dispose off the same dishonestly, he shall, in addition to any other liabilities Civil or Criminal arising out of the contract be liable to pay a penalty equivalent to five times the price of the materials on stock, accounting to the stipulated rate and the penalty so imposed shall be recovered from any sum that may then or at any time thereafter become due to the Contractor or from his security deposit or the proceeds of sale thereof
21. The Contractor should be fully liable to indemnify the Municipality for payment of any compensation under workmen's compensation Act VIII of 1923 on account of the workmen being employed by him and the full amount of compensation paid will recovered from the Contractor.
22. Every tenderer is expected before quoting his rates to inspect the site of proposed work. He should also inspect the quarries and satisfy himself about the quality and availability of materials, medical aids, labour and foodstuffs etc., and the rates may be inclusive of all the items of work. In every case the materials must comply with the relevant specification.
23. For the purpose of jurisdiction in the event of dispute, if any, contract should be deemed to have been entered into at the place, where the contract is signed on behalf of the Municipality within the State of Orissa and it is agreed that, either party to the contract or the agreement will be competent to bring a suit in regard to the matters covered by this contract at Bargarh within the State of Orissa.
24. After the work is finished, all surplus materials and debris are to be removed by the Contractor and preliminary works such as vats, mixing platforms etc. are to be dismantled and all the materials are to be removed from the site. No extra payment will be made to the Contractor on this account. The rate quoted should be inclusive of all these items.
25. The Municipality will have the right to inspect the scaffolding and centering made for the work and can reject partly or fully such structure if found defective in their opinion.
26. The Contractor will have to arrange for water supply and electricity at his own cost for all works and make sanitary arrangements for his workmen employed at his own cost for his labour camps. Contractor has to arrange adequate lighting arrangements for night work whenever necessary at his own cost.
27. The tenderer shall have to abide by the C.P.W.D. Safety Code introduced by the Government of India, Ministry of Works Housing and Supply in their standard order No.44250 Dt.25.11.57.
28. The Municipality will have the right to supply at any time in the interest of work any Deptt. materials to be used in the work in addition to those mentioned in Clause-IC(b) conditions of contract and the Contractor shall use such materials without any controversy or dispute on that account. The rates of such materials will be at the stock issue rates fixed by the Municipality plus storage charges or market rates prevailing at the time of supply whichever is higher.
29. The Contractor will be responsible for the loss or damage if any, departmental materials, equipment's supplied to him under condition No.9 of the General Conditions and No.35 of the Special Conditions of Contract during execution of work due to any reasons whatsoever and the cost of such materials will be recovered from him at the prevailing stock issue rates plus storage charges or market rates whichever is higher.
30. When any items of work not specifically covered by the accepted tender or contract, is to be executed, it can be taken up departmentally or through any other agency as the Municipality fees fit.
31. In selection of fittings/ glazed tiles, stone/ grills/ paints etc., the decision of the Municipality is final in regard to quality, make, shade etc.
32. No part of the contract shall be sublet without written permission of the Municipality or transfer be made by Power of Attorney authorizing others to receive payment on the Contractor's behalf.
33. **Under no circumstances interest is chargeable for the dues or additional dues if any payable for the work. (As per Orissa Works Department's letter No.3662 Dt.20.12.79).**
34. The Contractor shall make all arrangements at his own cost for proper storage of materials and guarding the same.
35. The Municipality reserves the right to delete any item of work incorporated in this agreement from the scope of the contract and execute the same either departmentally or through other agency, without assigning any reason thereof. Such deletion shall not invalidate the contract and no monetary compensation whatsoever shall be paid to the Contractor in this regard.
36. The Contractor shall carry out all the required tests for the works at his own cost in the manner prescribed in relevant I.S. Codes. The tests should be done in presence of the authorized person of the Municipality or his sub-ordinate and duly certified by him regarding the correctness of the tests. The Contractor shall submit a copy of the test results to the authorized Officer of the Municipality immediately after the test. In case the Contractor fails to carry out the tests in the manner prescribed in the relevant I.S. Code, the same shall be carried out by the Municipality and the cost so involved shall be recovered from any amount due to the Contractor.

37. In case some machineries are available with the Municipality the same can be utilized by the Contractor on payment of the prescribed hire charges to Municipality. The hire charges as fixed by the Municipality shall be binding on the Contractor.

38. The Contractor has to provide a net work of pipe lines for proper watering and curing of the works and provide outlet points at suitable places at his own cost. Curing shall be done by the Contractor at his own cost with an arrangement of flexible pipes and nozzles etc. The cost of energy charges, for running of pumps, machineries and lighting arrangements etc. are to be borne by the Contractor. If at any stage, it is observed that the curing being done by the Contractor is not proper and acceptable to the Municipality then the same shall be got done by the Municipality departmentally, or through other agency on actual cost + 25% basis without an prior notice to the Contractor. This amount with 25% surcharge shall be recovered by the Municipality from any amount due to the Contractor.

39. The Municipality will at his discretion and convenience and for the duration of the execution of the work may provide land for construction of Contractors field, office, godowns work shops and assembly yard required for the execution of the contract nearest to the site. The tenderer shall at his own cost construct all these temporary buildings structures and provide suitable water supply and sanitary arrangement as approved by the authorized officer of BARGARH MUNICIPALITY and other inspectorates.

40. **MATERIALS OBTAINED FROM DISMANTLING:**
If the Contractor in the course of execution of the work is called upon to dismantle any part for reasons other than those stipulated specifically in the tender else where the materials obtaining in the work of dismantling etc. will be considered as the Municipality's property and will be disposed off to the best advantage of the Municipality.

41. **WORKS ON SUNDAYS & HOLIDAYS**
For carrying out works on Sundays and holidays except curing, the Contractor will approach the authorized Officer of BARGARH MUNICIPALITY or his representative at least two days in advance and obtain permission in writing. The Contractor shall observe all labour laws and other statutory rules and regulations in force. In case of any violation of such laws, rules and regulations, consequence if any, including the cost there to shall be exclusively borne by the Contractor and the Municipality shall have no liability whatsoever on this account.

42. The Contractor is required to abide by the fair wages clause as introduced by the Govt. of Orissa in Works Deptt., letter No.LA-VIIR-18-16/52/75 Dt.26.02.1965, No.II-36/61-28812(A) Dtd.27.5.1961 and No.IIM-58-77-22059 Dtd.16.8.1977 or as modified from time to time.

43. The Municipality reserves the right to award a single group or more groups to any tenderer depending on his capability as ensured by the authorized officer of BARGARH MUNICIPALITY and also reserves the right to accept or reject any or all offers without assigning any reason thereof.

44. Cement, Steel and any other materials as may be decided by the Municipality will be issued to the Contractor from time to time according to requirement against signed receipts. The cement consumption register will be maintained at site.

45. The Contractor will enlist himself with State Labour Department and with Regional Provident Fund Commissioner and will abide by the statutory rules and acts being enforced by them like labour license etc. In case of any complaint by them, pecuniary or otherwise. BARGARH MUNICIPALITY is entitled to recover such of their claims from the dues of the Contractor and dispose the same as instructed by them and may terminate the contract, in case of violation.

46. The Contractor shall be required to obtain requisite license from the concerned Labour Officer for employment of labours in work and should follow the prevailing labour laws.

47. Empty Cement bags shall not be taken back by the Municipality and the same shall the property of the Contractor. However, recovery shall be effected @ Rs.3.00 (Rupees three) only per each empty cement bag from the bills of the Contractor. (If cement has been issued by the Municipality from its stores)

48. Concrete for reinforcement, cement concrete and flooring shall generally be machine mixed, unless otherwise permitted by authorized Officer of BARGARH MUNICIPALITY. Concrete mixer if available can be supplied by the Municipality at approved hire charges of the Municipality, which will include the running and maintenance and salary of the machine operator.

49. Cut pieces of steel reinforcement shall not be taken back by the Municipality, and shall be utilized by the Contractor as far as practicable. However, the quantity of cut pieces resulting after bonafied consumption is required to be duly certified by the Engineer-in-charge which will be accounted for and recovery shall be effected at the issue rate stipulated in the contract. The Contractor can dispose the scrap steel after obtaining due approval of the Municipality.

50. All gold, silver and other things of any subscriptions, precious stones, coins, treasures, relics, antiques, and other similar things, which shall be found in, under or upon the site, shall be the property of the Municipality.

51. **As per provisions under section 3(1) of the building and other construction workers welfare cess act.1996, cess @ 1% of the cost of construction will be deducted from each bill of the contractor.**

52. **Payment for variation in Price**

(Vide Works Department Memorandum No.12073/W dt.7.4.1986, No.14379 dt. 22.6.91 & No. 22874 dtd. 24.10.92) and No. 8310 dated 17/05/2006. And amendment issued vide Works Deptt. Lr. No. 5608/W/dt. 03.04.07.

A). Where the original period of contract is more than six months increase / decrease of cost of Steel, Cement & Bitumen are to be paid/recovered. Payments in case of increase are to be made with prior approval of M.D, BARGARH MUNICIPALITY when the total claim is more than Rs.50,000/- and with prior approval of the CGM(C) when the claim is up to Rs.50,000/- subject to the fulfillment of the conditions mentioned below:-

(i) Cost shall be determined as follows:-

Steel	: Rates as fixed by steel Authority of India Ltd. (SAIL)
Cement	: Average factory price of three manufacture of cement inside the state.
Bitumen	: Rates as fixed by Indian Oil Municipality (IOC)

(ii) Cost of the project should be more than Rs.50.00 lakhs. However, the differential cost on such materials may be paid to the contractors after deducting the hike percentage amount in the tender for those materials from the calculated amount of differential cost.

(iii) Contractors have to submit the vouchers showing procurement from an authorized dealer for the said work within 28 days before utilization of steel, cement & bitumen.

(iv) Differential cost will be allowed only for the original agreement period, but not for the extended period even through it might have been validity extended.

(v) Differential cost will be allowed only after successful completion of the work as per the approved work programme.

(vi) Recovery in case of decrease shall be made by concerned Engineer-in-charge from the contractor immediately.

B). "If during the progress of the work the price of any material (excluding the cost of steel, cement and Bitumen) incorporated in the work (not being materials supplied from Engineer-in-charge's store in accordance with Clause- there of) increases or decreases as a result of increase or decrease in the average wholesale price Index (all commodities), and the contractor there upon necessarily and properly pays in respect of that materials (incorporated in the work) such increased or decreased price, then he shall be entitled to reimburse or liable to refund quarterly as the case may be, such an amount, as shall be equivalent to the plus or minus difference of 75% in between the Average wholesale Price Index (all commodities) which is operational for the quarter under consideration and that operated for the quarter in which the tender was opened, as per the formula indicated below provided the work has been carried out with in the stipulated time or extension there of as are not attributable to him.

Formula to calculate the increase or decrease in the price of materials.

$Vm=0.75 \times Pm/100 \times R \times (i-io/io)$

Vm = Increase or decrease in the cost of work during the quarter under consideration due to change in the price of the materials.

R = The value of work done in Rupees during the quarter under consideration.

io = The average Wholesale Price Index (all commodities) for the quarter in which the tender was opened (as published in R.B.I. bulletin from time to time.)
i = The Average Wholesale Price Index (all commodities) for the quarter under consideration.

PM = Percentage of materials component as per sub-clause of this clause.

C) Similarly, if during the progress of work, the wages of labour increase or decrease as a result of increase or decrease in minimum wages for labour prescribed by Government and the contractor necessarily and properly pays in respect of labour engaged on execution of the work such increased or decreased wages then he shall be entitled to reimburse or liable to refund quarterly, as the case may be such an amount as shall be equivalent to the 75% plus or minus difference in between the minimum wages for labour which is operating for the quarter under consideration and that operated for the quarter in which the tender was opened as per the formula indicated below.

Formula to calculate the increase or decrease in the price of Labour.
VI=0.75 X PlXR/100 X R X (i-io/io)

VI = Increase or decrease in the cost of work during the quarter under consideration due to changes in the minimum wages rate of labour.

R = The value of work done in Rupees during the quarter under consideration.

io = The minimum wages for labour as prevailed during the quarter under consideration in which the tender was opened.

I = The minimum wages for labour prevailed during the quarter under consideration.

PL = Percentage of labour component (as per sub-clause).

D) Similarly, if during the progress of work, the price of Petrol, Oil and Lubricants (Diesel oil being the representative item for the price adjustment) increases or decreases as a result of the price fixed there for by the Government of India and the contractor there upon necessarily and properly pays, such increased price towards Petrol, Oil and Lubricants used on execution of the work, then he shall be entitled to reimburse or liable to refund quarterly, as the case may be such an amount as shall be equivalent to the 75% plus or minus difference in between the price of P.O.L. which is operating for the quarter under consideration and that operated for the quarter in which the tender was opened as per the formula indicated below.

$$KI = \frac{0.75 \times K2}{100} \times \frac{R(D2 - D1)}{D1}$$

KI = Increase or decrease in the cost of work during the quarter under consideration due to changes in the price of P.O.L.

R = The value of work done in Rupees during the quarter under consideration.

D1 = Average Price per liter of diesel oil which was fixed by the Government of India during the quarter in which the tender was opened.

D2 = Average Price per liter of diesel oil which is fixed during the quarter under consideration.

K2 = Percentage of P.O.L. component as per sub-clause.

The following shall be the percentage of materials, labour and P.O.L. component for reimbursement/refund on variation in price of material, labour and P.O.L. as per sub- clauses (B), (C) & (D) of this clause

Category of Works.	Contractor Supply			Departmental
	% Materials	% Labour	% P.O.L.	Supply of materials
Irrigation works				
a) Structural works	20%	30%	5%	45%
b) Earthwork, Canal work, Embankment work etc.	20%	60%	5%	15%
(R&B) Works				
a) Bridge works	20%	30%	5%	45%

b) Road works	45%	40%	5%	10%
c) Building works	*30%	30%	5%	35%

(Where brick is supplied by the Department, it should be 20% instead of 30%)

E) Vide works Department letter No.21369 dated-22.09.91, the reimbursement/refund on variation in price of materials, labour and P.O.L. as per sub-clauses (B), (C) and (D) of this clause shall be applicable in the following manner.

"In term of aforesaid escalation clause, where the period for completion of the work as stipulated in the agreement is less than one year, no escalation admissible at all, in case of work where the stipulated period of completion is one year and more escalation on account of price variations is admissible, only for the remaining period after excluding the first one-year period there-of. Provided that the work has been carried out by the contractor within the stipulated time or extension there-of as are not attributable to the contractor in terms of the relevant provisions of the agreement. In the situation, where the period of completion initially stipulated in the agreement is less than one year and subsequently the completion period has been validly extended on the ground that the delay in completion of the work is not attributable to the contractor and in the result the total period including the extended period stand at one year or more, escalation is admissible only the balance portion of work executed beyond one year."

F) The contractor shall for the purpose of sub-clauses (B), (C) & (D) of this clause keep such books of account and other documents as are necessary to show that the amount of increase claimed or reduction available and shall allow inspection of the same by a duly authorized representatives of Govt. and further, shall at the request of the Engineer-in-charge furnish, verified in such a manner as the Engineer-in-charge may require any document kept and such other information as the Engineer-in-charge may require. The contractor shall within a reasonable time of his becoming aware of any alteration in the price of such material, wages of labour and/or price of P.O.L. give notice thereof to the Engineer-in-charge stating that the same is given pursuant to this condition together with an information relating there to which he may be in a position to supply.

53. **Payment of Mobilisation advance**

Mobilisation advance can be paid on application by the contractor up to a maximum of 10% of agreement value on furnishing of bank guarantee in required format & will carry interest at the rate prescribed by Nationalised Banks on commercial loans plus 2%(Two percent) extra till the advance is fully recovered. The advance will be recovered in such installment as may be decided by BARGARH MUNICIPALITY.

Signature of Tenderer

SPECIAL TERMS & CONDITIONS FOR SAFETY MEASURES

1. The Contractor shall barricade all openings near his work place properly.
2. The Contractor should use sand materials for staging and shuttering work. It should be strong enough to take the load. If staging and shuttering work are to be executed on filled up area, care should be taken to see that the filed up earth/sand are properly rammed.
3. The Contractor shall provide temporary handrails to al staircases for use by the workers and supervising officers.
4. The temporary staircases made during concreting should be strong enough for movement of workers with materials.
5. During de-shuttering operation suitable care should be taken so that the shuttering materials will not fall on any body.
6. All external and internal scaffolding works for plastering, painting etc. are to be done properly. Safety belts should be used by the worker while working.
7. Any other safety measures that may be required during construction should also be taken in addition to the measures mentioned above.
8. The Contractor should have one First Aid Box at the site to provide First Aid to the workers.
9. Suitable steps should be taken for any fire during execution of work either from direct fire or from electric fire.
10. Suitable lighting arrangement should be made during execution of the work.
11. Reinforcement and other materials should be properly kept so that they do not interfere in execution of work.
12. The Contractor shall not keep any labour inside the incomplete building during construction.
13. Temporary electric lines should be properly drawn and all labour should be instructed to be careful while using the same.
14. Safety helmets should be used by the worker and supervision during execution of the work.
15. No overhead lines should be erected while doing reinforcement on concreting works.
16. Before locking of any room it should be checked by the watchman if any workers are inside.
17. ESI insurance should be obtained for the labourers by the Contractor against any accident.

18. Special Pre-caution for operational control for the construction sites as per functional procedure of ISO-14001.

(a) The approach to the construction site is accessible and relatively free for plying of materials, transport vehicles as well as vehicle of workers/ supervisors and inspecting officials.

(b) During dry weather, regular sprinkling of water is done in the construction areas to ensure control of suspended particles like dust etc.

(c) The construction materials like bricks/ laterite stone/ metal/ chips/ steel rods/ sand etc. are stacked/ stored in proper manner in identified locations. Cement is stored in a proper shed as per BIS Code.

(d) Construction water/ seepage water is properly drained out to avoid water logging in the construction areas.

(e) Solid waste/ debris are collected and dumped at identified locations before disposal thereof at designated places/ areas. This locations is barricaded so as to ensure that the waste materials like, broken glass, pointed nails, steel scraps with sharp edge etc. do not cause physically injuries to the workers or supervisor or visitors.

(f) Reusable materials like empty containers, empty cement bags, wooden/ steel centering, shuttering plates/ planks etc. are properly stacked for carrying those to other construction sites/ Central Stores.

(g) The vehicles which carry debris/ excess earth etc. from the construction sites are not allowed to be over loaded nor are these vehicles allowed to speed up beyond a given speed limit so as to ensure that these materials do not get spilled during transportation and thereby pollute the atmosphere.

(h) Dug-up areas/ pits, openings on upper floors are properly barricaded to avoid accident to workers/ others.

(i) Provision is made for safe drinking water at the construction site for use by the labourers and other persons working/ supervising works there.

(j) Wastage of construction water is avoided.

(k) As far as practicable dust-preventing masks, safety belts and helmets, industrial gloves etc. are provided to the workers to avoid possible accidents and physical injuries to them.

(l) First Aid Box is kept to attend to minor injuries immediately.

(m) The address and telephone numbers of the nearest Police Station, Fire Brigade and Hospital are recorded on a display board for information of all concerned.

The Contractor should take all necessary steps as mentioned above without any additional claim to the Municipality.

APPROVED

Sd/-
Executive Officer
BARGARH MUNICIPALITY