

BID IDENTIFICATION NO.: Civil/ EST/09/2026-27



ISO 9001 & 14001 CORPORATION

COVER – I

TECHNICAL BID DOCUMENTS / DETAILED TENDER CALL NOTICE FOR THE WORK

Name of the Work: Construction of Block Level Stadium (With Indoor Hall) in

Bonai Block under Sundargarh District.

(% RateTender)

Estimated Cost Put To Tender -Rs.1302.74Lakhs

**CHIEF GENERAL MANAGER (CIVIL)
IDCO, BHUBANESWAR**

<u>Sl. No.</u>	<u>CONTENTS</u>	<u>PAGES</u>
1.	Tender Call notice	
2.	Check list	
3.	Contract data	
4.	Instruction to Bidders (ITB)	
5.	Detailed Tender Call Notice	
6.	Technical specification of Civil Portion of Work	
7.	Technical Specification of P.H. Portion of Work	
8.	Technical Specification of Electrical Portion of Work	
9.	Annexure – I	
10.	Schedule A to J & L	
11.	FORM-8 (Undertaking)	

File No-HO/Civil/T&E-E- 5397/01/2026

15374

Date:30/05/26

Invitationfor Bids
BidIdentification No. Civil/Est/09/2026-27

The Chief General Manager(Civil),IDCO,IDCO Towers, Janpath, Bhubaneswar invites **percentage rate bids** In double cover system in online mode only, for the following work.

Sl. No.	Name of Work	Value of work (Approx.)	Divisional Head With Headquarters	Tender Fee	Period of completion	Class of Bidder	EMD
1	2	3	4	5	6	7	8
1.	Construction of Block level Stadium (with Indoor Hall) in Bonai Block under Sundargarh District.	Rs.1292.06 Lakhs (approx)	Divisional Head, IDCO, Rourkela Division, Rourkela	Rs.11,800.00 (Online)	12 (Twelve) Calendar Months	'A' and Special Class contractors of PWD & Equivalent Class of other Departments.	Rs 13.00 lakhs (Online)

1. Bid documents consisting of Plans, Specifications, DTCN / BOQ and the set of terms and conditions of contract and other necessary documents etc can be seen / downloaded from the Government website: www.tendersodisha.gov.in in during the period dated from **18.00** Hours of dt.**24.06.2026** to **17.00** Hours of dt.**09.07.2026**.
2. Online bids shall be received till **17.00** Hours of dt.**09.07.2026**.
3. Bidders are required to furnish Tender Fee & EMD/Bid security at column (5) & (8) in on-line mode only within the bid submission period. Scanned copy of Transaction receipt of Tender Fee/EMD shall have to be uploaded along with the Technical Bid failing which bid shall be summarily rejected. The bidders with pending or failure payment status shall not be able to submit their bid.
4. The technical bids will be opened at **11.30** Hours of dt.**10.07.2026** in the office of the Chief General Manager (Civil), IDCO, IDCO Towers, Janpath, Bhubaneswar. 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 last date of opening of the bids as specified, the bids will be opening on the next working day at the same time and venue.
5. Other details can be seen in the bidding documents.
6. The authority will not be held responsible for any technical snag or network failure during online bidding.
7. The bidder must possess compatible Digital Signature Certificate (DSC) of Class – I or Class – III.
8. The authority reserves the right to reject any or all bids without assigning any reason thereof.
9. The addendum/Corrigendum if any will be hosted in the e-procurement website & www.idco.in website.

Sd/-

Chief General Manager(Civil)
IDCO ,Bhubaneswar

Odisha Industrial Infrastructure Development Corporation
(A Government of Odisha Undertaking)
IDCO ,IDCO Towers,Janpath,Bhubaneswar–
751022,Odisha,INDIA
+91-0674-2541525,2540820 Fax:2542956/2541982
cgmcivil2@idco.in/www.idco.in

1st Corrigendum to tender Call Notice No-15374 Dt. 30.05.2026

The availability & opening of tender online for bidding published in the newspaper for “**Construction of Block level Stadium (with Indoor Hall) in Bonai Block under Sundargarh District**” (Bid Identification No. Civil/Est-09/2026-27) are modified as below.

Sl. No.	Items	As per Tender Call Notice	Modified as
1.	Availability of tender on-line for bidding	from 18:00 Hours of Dt.24.06.2026 to 17:00 Hours of Dt.09.07.2026	from 18:00 Hours of Dt.08.07.2026 to 17:00 Hours of Dt.23.07.2026
2.	Technical Bid will be opened online	Dt.10.07.2026 at 11:30 Hours	Dt.24.07.2026 at 11:30 Hours

Further details can be seen from the Government web site www.tendersorissa.gov.in. Any further Addendum /corrigendum notice (if any) will be uploaded in the web site www.idco.in (Tender & Quotation) /www.tendersorissa.gov.in only. There will be no press publication in this regard. Before finally uploading the bid, the bidders are requested to check the corrigendum/ Addendum if any.

Sd/-
Chief General Manager (Civil)
IDCO ,Bhubaneswar

**Er. Shantanu Kumar Naik,
Chief General Manger (Civil)**

File No-HO/Civil/T&E-E- 5369/01/2026

20184

Date:06/07/26

2nd Corrigendum to tender Call Notice No-15374 Dt. 30.05.2026

The availability & opening of tender online for bidding published in the newspaper for “**Construction of Block level Stadium (with Indoor Hall) in Bonai Block under Sundargarh District**” (Bid Identification No. Civil/Est-09/2026-27) are modified as below.

Sl. No.	Items	As per 1 st corrigendum	Modified as
1.	Availability of tender on-line for bidding	from 18:00 Hours of Dt.08.07.2026 to 17:00 Hours of Dt.23.07.2026	from 18:00 Hours of Dt.03.08.2026 to 17:00 Hours of Dt.18.08.2026
2.	Technical Bid will be opened online	Dt.24.07.2026 at 11:30 Hours	Dt.19.08.2026 at 11:30 Hours

Further details can be seen from the Government web site www.tendersorissa.gov.in. Any further Addendum /corrigendum notice (if any) will be uploaded in the web site www.idco.in (Tender & Quotation) /www.tendersorissa.gov.in only. There will be no press publication in this regard. Before finally uploading the bid, the bidders are requested to check the corrigendum/ Addendum if any.

Sd/-
Chief General Manager (Civil)
IDCO ,Bhubaneswar

Odisha Industrial Infrastructure Development Corporation
(A Government of Odisha Undertaking)
IDCO ,IDCO Towers,Janpath,Bhubaneswar--
751022,Odisha,INDIA
+91-0674-2541525,2540820Fax:2542956/2541982
cgmcivil2@idco.in/www.idco.in

**Er. Shantanu Kumar Naik,
Chief General Manger (Civil)**



File No-HO/Civil/T&E-E- 5369/01/2026

22913

Date:03/08/26

3rd Corrigendum to tender Call Notice No-15374 Dt. 30.05.2026

The availability & opening of tender online for bidding published in the newspaper for “**Construction of Block level Stadium (with Indoor Hall) in Bonai Block under Sundargarh District**” (Bid Identification No. Civil/Est-09/2026-27) are modified as below.

Sl. No.	Items	As per 2 nd corrigendum	Modified as
1.	Availability of tender on-line for bidding	from 18:00 Hours of Dt.03.08.2026 to 17:00 Hours of Dt.18.08.2026	from 18:00 Hours of Dt.24.08.2026 to 17:00 Hours of Dt.10.09.2026
2.	Technical Bid will be opened online	Dt.19.08.2026 at 11:30 Hours	Dt.11.09.2026 at 11:30 Hours

Further details can be seen from the Government web site www.tendersorissa.gov.in. Any further Addendum /corrigendum notice (if any) will be uploaded in the web site www.idco.in (Tender & Quotation) /www.tendersorissa.gov.in only. There will be no press publication in this regard. Before finally uploading the bid, the bidders are requested to check the corrigendum/ Addendum if any.

Sd/-
Chief General Manager (Civil)
IDCO ,Bhubaneswar

Odisha Industrial Infrastructure Development Corporation
(A Government of Odisha Undertaking)
IDCO ,IDCO Towers,Janpath,Bhubaneswar–
751022,Odisha,INDIA
+91-0674-2541525,2540820Fax:2542956/2541982
cgmcivil2@idco.in/www.idco.in

4th Corrigendum to tender Call Notice No-15374 Dt. 30.05.2026

The availability & opening of tender online for bidding published in the newspaper for “**Construction of Block level Stadium (with Indoor Hall) in Bonai Block under Sundargarh District**” (Bid Identification No. Civil/Est-09/2026-27) are modified as below.

Sl. No.	Items	As per 3 rd corrigendum	Modified as
1.	Availability of tender on-line for bidding	from 18:00 Hours of Dt.24.08.2026 to 17:00 Hours of Dt.10.09.2026	from 18:00 Hours of Dt.03.09.2026 to 17:00 Hours of Dt.18.09.2026
2.	Technical Bid will be opened online	Dt.11.09.2026 at 11:30 Hours	Dt.19.09.2026 at 11:30 Hours

Further details can be seen from the Government web site www.tendersorissa.gov.in. Any further Addendum /corrigendum notice (if any) will be uploaded in the web site www.idco.in (Tender & Quotation) /www.tendersorissa.gov.in only. There will be no press publication in this regard. Before finally uploading the bid, the bidders are requested to check the corrigendum/ Addendum if any.

Sd/-
Chief General Manager (Civil)
IDCO ,Bhubaneswar

Odisha Industrial Infrastructure Development Corporation
(A Government of Odisha Undertaking)
IDCO ,IDCO Towers,Janpath,Bhubaneswar–
751022,Odisha,INDIA
+91-0674-2541525,2540820Fax:2542956/2541982
cgmcivil2@idco.in/www.idco.in

**Er. Shantanu Kumar Naik,
Chief General Manger (Civil)**

File No-HO/Civil/T&E-E- 5369/01/2026

26235

Date:03/09/26

5th Corrigendum to tender Call Notice No-15374 Dt. 30.05.2026

The availability & opening of tender online for bidding published in the newspaper for “**Construction of Block level Stadium (with Indoor Hall) in Bonai Block under Sundargarh District**” (Bid Identification No. Civil/Est-09/2026-27) are modified as below.

Sl. No.	Items	As per 4 th corrigendum	Modified as
1.	Availability of tender on-line for bidding	from 18:00 Hours of Dt.03.09.2026 to 17:00 Hours of Dt.18.09.2026	from 18:00 Hours of Dt.07.09.2026 to 17:00 Hours of Dt.23.09.2026
2.	Technical Bid will be opened online	Dt.19.09.2026 at 11:30 Hours	Dt.24.09.2026 at 11:30 Hours

Further details can be seen from the Government web site www.tendersorissa.gov.in. Any further Addendum /corrigendum notice (if any) will be uploaded in the web site www.idco.in (Tender & Quotation) /www.tendersorissa.gov.in only. There will be no press publication in this regard. Before finally uploading the bid, the bidders are requested to check the corrigendum/ Addendum if any.

Sd/-
Chief General Manager (Civil)
IDCO ,Bhubaneswar

Odisha Industrial Infrastructure Development Corporation
(A Government of Odisha Undertaking)
IDCO ,IDCO Towers,Janpath,Bhubaneswar–
751022,Odisha,INDIA
+91-0674-2541525,2540820Fax:2542956/2541982
cgmcivil2@idco.in/www.idco.in

**Er. Shantanu Kumar Naik,
Chief General Manager (Civil)**



File No-HO/Civil/T&E-E- 5369/01/2026

26568

Date:07.09.2026

6th Corrigendum to tender Call Notice No-15374 Dt. 30.05.2026

The availability, opening ,EMD & Price of tender online for bidding published in the newspaper for “Construction of Block level Stadium (with Indoor Hall) in Bonai Block under Sundargarh District” (Bid Identification No. Civil/Est-09/2026-27) are modified as below.

Sl. No.	Items	As per 5 th corrigendum	Modified as
1.	Availability of tender on-line for bidding	from 18:00 Hours of Dt.07.09.2026 to 17:00 Hours of Dt.23.09.2026	from 18:00 Hours of Dt.11.09.2026 to 17:00 Hours of Dt.28.09.2026
2.	Technical Bid will be opened online	Dt.24.09.2026 at 11:30 Hours	Dt.29.09.2026 at 11:30 Hours

Sl. No.	Items	As per TCN	Modified as
1.	Price	Rs 1292.06 lakh	Rs 1303.00 lakh
2.	EMD	Rs 13.00 lakh	Rs 13.03 lakh

Further details can be seen from the Government web site www.tendersorissa.gov.in. Any further Addendum /corrigendum notice (if any) will be uploaded in the web site www.idco.in (Tender & Quotation) /www.tendersorissa.gov.in only. There will be no press publication in this regard. Before finally uploading the bid, the bidders are requested to check the corrigendum/ Addendum if any.

Sd/-
Chief General Manager (Civil)

Odisha Industrial Infrastructure Development Corporation
(A Government of Odisha Undertaking)
IDCO ,IDCO Towers,Janpath,Bhubaneswar–
751022,Odisha,INDIA
+91-0674-2541525,2540820Fax:2542956/2541982
cgmcivil2@idco.in/www.idco.in

CHECKLIST TO BE ENSURED BY THE BIDDER

Sl. No	Particulars	Reference to DTCN Clause No.	Whether furnished		Reference to Page no.
			Yes	No	
01.	Tender fee Rs.11,800.00 <i>(To be paid Online)</i>	No.4 & 5(i)			
02.	E.M.D for Rs.13,03,000/-(@1% (One percent) of the estimated cost put to tender of Rs.1302.74 lakhs rounded to thousand rupees (To be paid Online/BG format) <i>(Scanned copy of financial instrument shall be furnished)</i>	No.5(i) & 20			
	Or				
	E.M.D @1%in case of deploying machineries outside the State	No.5 (i) & 20			
03	Additional Performance Security in case the bid price/rate is less than the estimated cost put to tender to be submitted by the successful lowest(L1)bidder .	No.62.2			
04.	Copy of valid Registration Certificate	No.5 (i) & 21			
05.	Copy of GST Registration Certificate	No.5 (i) & 21			
06.	Copy of PAN Card	No.5 (i) & 21			
07	EPF Registration	No.5 (i) & 21			
08	EPF Latest Challan	No.5 (i) & 21			
09	Copy of Profit Loss Statement	No.5 (i)			
10.	No Relationship Certificate in Schedule – A	No.35			
11.	Works Experience: List of projects under execution / executed that are similar in nature to the work.	Schedule-B& Schedule –D			
12. (A)	Information regarding current litigation, debarring / expelling of the tender or abandonment of the work by the tenderer (Schedule-E)	No.49			
(B)	<i>Affidavit (Schedule-F)(to be uploaded)(Duly notarized)</i>	No.49			
13.	M.O.U. (Memorandum of Understanding duly notarized) with eligible registered electrical contractor having valid H.T. / L.T. license;	No. 8(i)& Schedule - J			
14.	Assessed Available Bid Capacity. (The 'Bid Capacity' as a qualifying criteria would be henceforth applied for all works above Rs.3.00 crore only) as per Circular no.11931 dt.07.06.2017.	No. 112 (h)			
15.	Similar nature of work. (Schedule- D)	No. 112 (g)			
16.	Qualification of Key personnel engaged. (Schedule (G)	No. 63			
17.	Work Programme.				
18.	Tools & Plants and machineries as per the requirement in Schedule-C (Minimum 80% marks to be obtained). (Proof of ownership of Tools & Plants and machineries is to be furnished in shape of copy of invoices with GST No. / required sale deed in case of 2 nd purchase / required lease deed with owner ship documents of the leaser duly notarized. (Tax paid invoices are only to be considered) The bidder may produce certificate in the prescribed Performa on availability and quality of centering and shuttering materials of the Divisional Head/ equivalent and higher rank officers of Govt./ Govt. undertaking/ PSU issued within 90 days of last date of receipt of tender. Incomplete certificates are liable for rejection.	No.7 & 112(e) & Schedule-C			

Performa for Centring and Shuttering materials

Certified that M/s.....,Class Contractor possess.....Sqm of **steel** shuttering plates for centering materials in good condition for use in building construction works. The shuttering materials are physically available at and we have no objection if shifted for other works.

Seal and Signature of issuing Authority

	List of plants and equipments	Requirement			
(i)	Water Tanker of 4000 ltr. Capacity wheel mounted/mounted over Truck/ Tractor	2nos			
(ii)	Truck/Tipper	2nos			
(iii)	Welding machine 450 Ampere or more	1no			
(iv)	Generator of 125.00 KVA Capacity or more	1no			
(v)	Batching Plant of minimum 15 cum/hour capacity	1no			
(vi)	Concrete pump with pumping accessories along with minimum 30 mt.pipe	1 set			
(vii)	Concrete mixer	2nos			
(viii)	Concrete vibrator : Needle type	2nos			
(ix)	Concrete vibrator : Screed type	2nos			
(x)	Concrete vibrator : Plate type	2nos			
(xi)	Complete staging, shuttering, centering arrangement . For steel shuttering-	2000sqm			
(xii)	Water Pump – 1 HP Capacity	2nos			
(xiii)	Cube Testing Machine	1 no			
(xiv)	Excavator	1 no			
(xiv)	Bar bending machine	1 no			
(xv)	Bar Cutting Machine	1 no			
	e-mail ID &				
	Contact no				

CONTRACT DATA

A. GENERAL INFORMATION

SI No	Item	Details
1	Name of the Work	Construction of Block level Stadium (with Indoor Hall) in Bonai Block under Sundargarh District.
2.	Employer	Chief General Manager (Civil)
3.	Employer's Representative	Divisional Head, IDCO, Rourkela Division, Rourkela
4	Estimated Cost (In.) (Civil, Electrical & PH.)	Rs.1302.74 Lakhs

B. BID INFORMATION

5	Intended completion period/Time period assigned for Completion	12 (Twelve) Calendar Months
6	Last Date & time of submission of Bid	17.00 Hours of 28.09.2026
7	Tender Fee	
	i Amount	Rs.11,800/-
	ii	Instructions to be followed for online payment available in the e-procurement portal during the process of tender by the bidder.
8	Bid Security	
	i Amount	Rs. 13,03,000/- (To be paid online/BG)
		Divisional Head, IDCO, Rourkela Division, Rourkela
	ii	Instructions to be followed for online payment available in the e-procurement portal during the process of tender by the bidder.
	iii Type of instrument	As specified in the BID Document
9	Additional Performance Security	(Clause No.62 of DTCN.) Additional Performance Security (As per Works Department OM No.173 dt.03.01.2026) shall be obtained from the bidder when the bid amount is less than estimated cost put to the tender. In such an event, only the successful bidder who has quoted less bid price / rates than the estimated cost put to tender shall have to furnish the Additional Performance Security as per the following rate. Additional performance security shall be taken on an incremental basis from the selected bidder for low bid prices in the project works as under.
	i Amount	(i) Where the bid price is below 0% but not below 10% of the project cost put to bid, no additional performance guarantee/ security Percentage is required.
		(ii) Where the bid price is below 10% but not below 20% of the project cost put to bid, the additional performance guarantee/security percentage shall be incremented by 0.1% for every percentage of bid price below 10% of the

			project cost put to bid starting at 11% with the additional bid performance guarantee being 0.1% and this additional performance guarantee percentage shall be applied on the bid price.
			(iii) Where the bid price is 20% or more below of the project cost put to bid, the additional performance guarantee percentage shall be incremented by 0.2% for every percentage of bid price below 20% of the project cost put to bid in addition to 1% of the bid price and this additional performance guarantee percentage shall be applied on the bid price.
			(iv) The additional performance guarantee percentage shall be rounded off to the next lower percentage based on whether the decimal point of the percentage of bid price is below 0.5% or next higher percentage based on whether the decimal point of the percentage of bid price is 0.5% or more.
			(v) The additional performance security shall be treated as part of the performance security.
			(vi) Justification for abnormally low bids shall be scrutinized by the Departmental Technical Committee and recommended to the competent authority of the Administrative Department for the approval of the Additional Performance Security (APS). An abnormally low bid is one in which the Bid price, in combination with other elements of the Bid, appears so low that it raises material concerns as to the capability of the Bidder to perform the contract at the offered price. Procuring Entity may, in such cases, seek written clarifications from the Bidder, including detailed price analyses of its Bid price in relation to scope, schedule, resource mobilization, allocation of risks and responsibilities, and any other requirements of the bid document. If, after evaluating the price analyses, the procuring entity determines that the Bidder has substantially failed to demonstrate its capability to deliver the contract at the offered price, the Procuring Entity may reject the Bid/Proposal. However, it would not be advisable to fix a normative percentage below the estimated cost, which would automatically be considered as an abnormally low bid.
	ii	In favour of	Divisional Head, IDCO, Rourkela Division, Rourkela
	iii	Type of instrument	As specified in the BID Document
10	The Financial years of last five years		2021-2022 to 2025-2026
11	Bid validity period		90 days
12	Currency of Contract		Indian Rupees
13	Language of Contract		English

Instruction to Bidders (ITB) E-procurement

- 1.1. The authority belonging to the major discipline is competent to invite tender of composite bids. He will also nominate the Divisional Head 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 Chief General Manager / Divisional Head 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 not required to produce any documents viz. copy of Registration, GST Registration Certificate etc, at the time of purchase of tender document but will be required for verification purpose at later stage. 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 L1 Bidder is required to attend the officer inviting the bid for verification of original documents within five days of opening the Price 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 e-Mudra 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 **www.tendersodisha.gov.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. All bidders are to furnish EMD & Tender Fee in online mode (Instructions to be followed for online payment available in the e-procurement portal during the process of tender by the bidder). There will be exemption to any bidder. If the EMD is furnished by any other mode other than the prescribed mode, the tender of such party is liable to be rejected.
- 1.8.4. If the software application has the provision of payment of Tender Fee through payment gateways of *authorized* bankers by directly debiting the account of the bidders, bidders will be required to avail online payment.
- 1.8.5. The bidder intending to participate in the bid online shall furnish costs of bid in online mode (Instructions to be followed for online payment available in the e-Procurement portal during the processing of tender by the bidder)
- 1.9. **DELETED.**
- 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 the State Governments and Contractors of Equivalent Grade/ Class Registered with Central Government/ MES/ Railways/ IDCO venders 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 online bids. In addition to the above IDCO Vendors of equivalent range are also eligible. The work experience, available technical personnel is to be furnished as per clause 112 of **DTCN**(enclosed).

Contractors not registered with Govt. of Odisha can participate in the e-procurement after necessary enrolment in the portal but have to subsequently register themselves

with the appropriate registering authority of the state Govt./IDCO before award of the work as per prevalent registration norms of the state.
- 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 IDCO to provide consulting services for the preparation or supervision of the works, and any of its affiliates shall not be eligible to bid.
- 2.3. If the bidder has a relative employed as an Officer in the rank of Assistant Engineer/Under Secretary and above in the Government of Odisha in the concerned Department, he shall inform the same in **Schedule-I** of the bid document mentioning the exact details in a covering letter along with the tender, failing which his bid will not be considered. Also if the fact of relationship subsequently comes to light, his contract will be rescinded. The bid security or the performance security will be forfeited and he shall be liable to make good any loss or damage resulting from such cancellation. In case the bidder has no relationship with any of the officers mentioned above he shall have to furnish with his bid an undertaking to that effect.

- 2.4. He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any gazetted officer in the concerned Department. Any breach of this condition by the contractor would render him liable for penal action for suppression of facts.
- 2.5. **No Engineer of gazetted rank or other gazetted officer employed in Engineering or Administrative duties in an Engineering Department of Govt. of Odisha/IDCO is allowed to work for contractor for a period of two years after his retirement from IDCO service, without prior permission of Govt. of Odisha/IDCO in writing. Such a contract is liable to be cancelled if either the contractor or any of his employees is found any time to be such a person who had not obtained the permission of Govt. of Odisha/IDCO as aforesaid before submission of the tender for engagement in the contractor's service.**

3. QUALIFICATION CRITERIA:

- 3.1. For submission of Bids through the E-Procurement Portal, the bidder shall up-load the scanned copy/copies of documents listed under clause 3.2 in prescribed format wherever warranted in support of eligibility criteria and qualification information. The L-1 bidder shall have to produce the original documents in support of the scanned copies and statements uploaded in the portal within 5 days of opening of price bid. **The Bids from Joint ventures are not acceptable.**
- 3.2. The bid shall include following information and documents.
 - (a) Copy of valid contractor's registration certificate, PAN card, GSTRegistration certificate should accompany the technical bid.
 - (b) Copies of original documents defining the constitution or legal status, place of registration, and principal place of business; written power of attorney of the signatory.
 - (c) Major construction equipment to be deployed to carry out the Contract. The contractors are required to furnish evidence of ownership of principal machineries /equipment's for only those machineries / equipment's asked for in the tender documents.
 - (d) In case if contractor executing several works, he is required to furnish a time schedule for movement of equipment/machinery from different site to this work site when work is to be executed.
 - (e) The contractor shall furnish ownership documents for those machineries which he is planning to deploy for the tendered work.
 - (f) In case the contractor proposes to engage machineries and equipment as asked for in the tender document, owned or hired but deployed outside the state, he/she is required to furnish additional 1% EMD/Bid security.
 - (g) The contractor intending to use/lease equipment/machineries are required to furnish proof of ownership from the company/persons providing equipment/ lease deed and duration of such contract.
 - (h) Copy of sub-contract agreement with eligible Registered Electrical Contractors having valid L.T. / H.T. license (Associated with the sub-contractor).
 - (i) Details of work under progress as per tender documents.
 - (j) Details of works executed during the last five years and works in hand (list of on-going works as per bid documents).
 - (k) Copy of EPF Registration & Copy of latest Challan.
 - (l) Copy of GST Registration Certificate.
- 3.3. **DELETED**
- 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.Been black listed/their registrations by the competent authority.

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 Tender Fee 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 local taxes, Cess, ferry, tollage charges, royalties and any other charges but excluding GST. GST as applicable will be borne by IDCO
- 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 may consist of general arrangements drawings or typical sections of the project. Bidder may download 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 as well as in the office of the Divisional Head as mentioned in the contract data will be open for inspection during working hours on all working days by the bidders. The bidder is required to download all the documents including the drawings for preparation of his bid. It is not necessary on the part of the Bidder to upload the drawings or other Bid documents (after signing) while uploading his bid. He is required to upload 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 a 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 every day 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 7 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 **www.tendersodisha.gov.in** / **www.idco.in** notice board and will not be published in newspaper.
- 9.3. To give prospective bidders reasonable time in which to take an addendum into account in preparing their bids, the Officer inviting the Bid 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 / Hindi / Oriya 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) Invitation for Bids (IFB)
 - (ii) Instructions to bidders (ITB)
 - (iii) Conditions of Contract
 - (iv) Contract Data
 - (v) Specifications
 - (vi) Drawings
- 11.2. 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 percentage rate 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. **“Tender Fee” & “Bid Security”** shall comprise
 - (i) Tender Fee (online)
 - (ii) **Bid Security in prescribed shape. (online /BG)**
 - B. **“Technical Bid”** shall comprise.
 - (i) Declaration under the Official Secret Act, 1923
 - (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. **Deleted**
- 12.3. In case of **percentage rate** tender, the bidder will only fill in the designated cell and activate “less” or “excess” to indicate how much his price offer is excess or less (**Up to two decimal Place**) 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, excluding GST and other levies including Building and other Construction Workers Welfare Cess @ 1% payable by the contractor under the contract, or for any other causes shall be included in the rates, prices submitted by the bidder. GST, purchase tax, turnover tax or any other tax on material in respect of this contract shall be payable by the Contractor and IDCO/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. Bidders while quoting their offers shall consider the following as regards price adjustment towards **Cement, Steel & Bitumen** and escalation of **all components** of work as per Sub-Clause 31 of Condition of P-1 Contract.
- 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 Statute, 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 **90 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 Chief General Manager/ 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.
- 14.3. **DELETED.**

15. BID SECURITY:

The Bidder shall furnish, as part of his Bid, a Bid security for the amount mentioned under Contract Data in online mode as instructed for online payment available / in BG format. The bidder shall scan all the written pages of the bid security and upload the same to the system in the designated place.

The successful lowest bidder will produce the original of all scanned documents for verification within 5 days of opening of the tender (Price Bid). In the eventuality of failure on the part of the lowest successful bidder to produce the original documents, he will be debarred in future from participating in tender for three years and will be blacklisted by the competent authority. In such a situation, successful L-2 bidder will be required to produce his original documents for consideration of his/her tender at the negotiated rate equal to L-1 bidder.

15.1.1. DELETED

15.1.2. Fixed deposit receipt of any scheduled bank approved by the Reserve bank of India / Indian Post Office Time deposit/ National Savings Certificate / Kisan Vikas Patra /Bank Guarantee duly pledged in favour of the Divisional Officer from any scheduled Bank in India counter guaranteed by its local Branch at **Rourkela/** e- Bank Guarantee executed on the National e-Governance Services limited (NeSL) Digital Document Execution portal towards E.M.D/ISD/ any other security deposit. If EMD/ISD/SD is furnished by any other mode other than the above prescribed mode, the tender of such party is liable to be rejected.

15.1.3. DELETED.

15.1.4. DELETED

15.2. The Bid shall be declared non-responsive and shall be rejected if submitted without an acceptable Bid Security and not secured as indicated in Sub-Clauses 15.1.

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

15.4. All the participating bidders are to be furnish Tender Fee(Online), EMD through (online /BG)mode.

15.5. Deleted.

15.6. The Bid Security of the successful bidder will be discharged when the bidder has signed the Agreement and furnished the required Performance Security and Additional Performance security if any

15.7. The Bid Security may be forfeited

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

15.7.2. 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.

15.7.3. DELETED.

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

15.7.4.1. Sign the Agreement; or

15.7.4.2. 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 cannot 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 Tender Fee, 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. 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 for clarification within a stipulated period of 7 days, provided such document in no way alters the Bidder's price bid. If the Bidder fails to submit Such documents with in the stipulated date, his bid shall be evaluated on it's own merit.

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 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 within 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 withdrawal after expiry of the closure time of the 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 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. Deleted.
- 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 cannot be opened.
- 21.5.1. Deleted.
- 21.5.2. Subject to confirmation of the bid security by the issuing institutions, the bids accompanied with appropriate Tender Fee 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 to clarify his technical bid, if necessary.
- 21.5.4. 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 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 email 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. If any of the information/ statements/documents/certificates furnished by the bidder is found to be false/fabricated/bogus, his EMD/Bid Security shall stand forfeited and his registration in the portal shall be blocked and the bidder is liable to be blacklisted.
- 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 anywhere.

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. During the detailed evaluation of "Technical Bids", the officer inviting the bid will determine whether each bid:-

24.1.1. Deleted.

24.1.2. Has submitted legible documents for evaluation

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

24.1.4. 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

24.3.1. Which affects in any substantial way the scope, quality, or performance of the works.

24.3.2. 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

24.3.3. 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

25.1. If the officer **inviting** the Bid in his opinion judges that the price quoted by the lowest qualified bidder is high or a special condition imposed by the bidder is to be withdrawn, the bidder shall be invited for negotiation by the officer inviting the Bid or by an officer authorised by him in writing. Negotiations on financial bid with only the lowest bidder shall be carried out, if necessary. Negotiation of bid will be carried out by manual way.

25.2. **DELETED.**

25.3. **DELETED**

25.4. **DELETED.**

25.5. **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 Orissa Industrial Infrastructure Development Corporation (IDCO) reserves to himself 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. The successful bidder registered under other State Government / MES / Railways / CPWD/IDCO vendors in equivalent rank has to register under state PWD before signing of the agreement.

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 within 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 of IDCO 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 within 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 Engineer-in-Charge 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.

If L1 bidder does not turn up for agreement after finalization of the tender, then he shall be debarred from participation in bidding for three years and action will be taken to blacklist the contractor. In that case, the L2 bidder, if fulfils, other required criteria would be called for drawing agreement for execution of work subject to the condition

that L2 bidder negotiates at par with the rate quoted by the L1 bidder otherwise the tender will be cancelled. In case a contractor is black listed, it will be widely published and intimated to all departments of Government and also to Govt. of India agencies working in the state.

(Amendment to Para-3.5.14 Note-I of OPWD Code Vol.-I by inclusion).

29.2.1. Following documents shall form part of the agreement.

- 29.2.1.1. 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.

29.2.1.2. Standard Bid Document P.W.D. Form **P-1**

- 29.3. The letter to proceed with the work shall be issued by Engineer-in-charge 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 Engineer-in-Charge/Divisional Head on behalf of IDCO.
- 29.5. Upon signing of the agreement by the successful bidder, the Engineer-in-Charge will promptly notify the other bidders that their bids have been unsuccessful.

30. CORRUPT OR FRAUDULENT PRACTICES:

- 30.1. The Engineer-in-Charge 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.
- 30.2. 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.

Procedure for Electronic receipt, accounting and reporting of Cost of Tender Paper and Earnest Money Deposit on submission of bids

1. The State Government have formulated rules and procedures for Electronic receipt, accounting and reporting of the receipt- of Cost of Tender Paper and Earnest Money Deposit on submission of bids through thee-procurement portal of Government of Odisha i.e., "<https://tendersodisha.gov.in>".
2. Electronic receipt of cost of tender paper has been successfully tested through SBI payment gateway. Now it has been decided to introduce electronic receipt of **Cost of Tender Paper and Earnest Money Deposit on submission of bids** through payment gateway of designated banks such as SBI/ ICICI Bank /HDFC Bank for all Government Departments, State PSUs. Statutory Corporations, Autonomous Bodies and Local Bodies etc. in phases (ANNEXURE-I). The process out line as well as accounting and reporting structure are indicated below:
 - a) It will be carried out through a single banking transaction by the bidder for multiple payments like **Cost of Tender Paper and Earnest Money Deposit on submission of bids**.
 - b) Various payment modes like Internet banking/ NEFT/RTGS of Designated Banks and their Aggregator Banks as well can be accessed by the intending bidders.
 - c) Reporting and accounting of thee-receipts will be made from a single source.
 - d) Credit of receipts into the Government accounts and to the designated Bank account of the participating entities indicated in Para2 above would be faster.
3. Only those bidders who successfully remit their **Cost of Tender Paper and Earnest Money Deposit on submission of bids would be eligible to** participate in the tender/bid process. The bidders with pending or failure payment status shall not be able to submit their bid. Tender inviting authority, State Procurement Cell, NIC, the designated Banks shall not be held responsible for such pendency or failure.
4. **Banking arrangement:**
 - a) Designated Banks (SBI/ICICI Bank/HDFC Bank) payment gateway are being integrated with e-Procurement portal of Government of Odisha (<https://tendersodisha.gov.in>)
 - b) The Designated Banks participating in **Electronic receipt, accounting and reporting of Cost of Tender Paper and Earnest Money Deposit on submission of bids** will nominate a Focal Point Branch called e-FPB, who is authorized to collect and collate all e-Receipts. Each such branch will act as the Receiving branch and Focal Point Branch notwithstanding the fact that the bidder might have debited his account in any of the bank's branches while making payment.
5. **Procedures of bid submission using electronic payment of tender paper cost and EMD by bidder:**
 - a) **Log on to e-Procurement Portal:** The bidders have to log onto the Odisha e-Procurement portal (<https://tendersodisha.gov.in>) using his/her digital signature certificate and then search and then select the required active tender from the "Search Active Tender" option. Now. The submit button can be clicked against the selected tender so that it comes to the "My Tenders" section.
 - b) **Uploading of Prequalification/Technical/Financial bid:** The bidders have to upload the required requalification /Technical/Financial bid, as mentioned in the bidding document and in line with WorksDepartmentofficememorandumno.7885, dt.23.07.2013.
 - c) **Electronic payment of tender paper cost and EMD:** Then the bidders have to select and submit the bank name as available in the payment options
 - i. A bidder shall make electronic payment using his/her internet banking enabled account with designated Banks or their aggregate or banks.
 - ii. A bidder having an account in other Banks can make payment using NEFT/RTGS facility of designated banks.
 - iii. Online NEFT/RTGS payment using internet banking of the banking which the bidder holds his

account, by adding the account number as mentioned in the challan as an inter-bank beneficiary.

- d) **Bid submission:** Only after receipt of intimation at the e-Procurement portal regarding successful transaction by bidder the system will activate the 'Freeze Bid Submission' button to conclude the bid submission process.
- e) **System generated acknowledgement receipt for successful bid submission:** System will generate an acknowledgement receipt for successful bid submission. The bidder should make a note of 'Bid ID' generated in the acknowledgement receipt for tracking their bid status.

6. Settlement of Cost of Tender Paper;

- a) **Cost of Tender Paper:** In respect of Government receipts on account of **Cost of Tender Paper**, the e-Procurement portal shall generate a MIS for the State Procurement Cell (SPC). The MIS will contain an abstract of the cost of tender paper collected with reference to **Bid Identification Number**. The State Procurement Cell shall generate Bank-wise-head-wise challans separately for **Cost of Tender Paper** and instruct the designated Banks to remit the money to the State Government account under different heads. In respect of the cost of tender paper received through the e-procurement portal, the remittance to the Cyber Treasury account will be made to the Head of Account 0075-Misc, General Services-800-Other Receipts-0097-Misc. Receipts-02237-Cost of Tender Paper.
- b) For the time being, the State Procurement Cell (SPC) will use the over the counter payment facility of the Odisha Treasury portal. Thereafter, remittance through NEFT & RTGS will be facilitated through the Odisha Treasury portal.
- c) Similarly, in case of State PSUs, Statutory Corporations, Autonomous Bodies and Local Bodies etc., **Cost of Tender Paper**, the e-Procurement portal shall generate a MIS for the State Procurement Cell (SPC). The MIS will contain an abstract of the cost of tender paper collected with reference to **Bid Identification Number**. The State Procurement Cell shall generate Bank-wise list of challans and instruct the designated Banks to remit the money through the Odisha Treasury portal. The cost of tender papers will be credited to the registered Bank account of the concerned State PSUs, Statutory Corporations, Autonomous Bodies and Local Bodies etc.
- d) The bank will refund (in case the Tender Inviting Authority (TIA) issues such instructions) the tender fee, EMD to the bidder, in case the tender is cancelled before opening of Bid as per direction received from TIA through e-procurement system.
- e) Back-end Transaction Matrix of Electronic receipt of Cost of Tender Paper and Earnest Money Deposit on submission of bids is enclosed in the Annexure.

f) Bank Account details:

- 1. Name of the Account Holder: Odisha Industrial Infrastructure Development Corporation
- 2. Bank Name: State Bank of India, IDCO Towers Branch, Janpath, Bhubaneswar-751022
- 3. IFSC Code: SBIN0007891
- 4. Account No.-10835304369

7. Settlement of Earnest Money Deposit on submission of bids:

The Bank will remit the **Earnest Money Deposit on submission/cancellation of bids** to respective bidders' accounts as per direction received from TIA through e-procurement system.

8. Forfeiture of EMD: Forfeiture of Earnest Money Deposit on submission of bid of defaulting bidder is occasioned for various reasons.

- a) In case the **Earnest Money Deposit on submission of bid** is forfeited, the e-Procurement portal will direct the Bank to transfer the EMD value from the Pooling Account of SPC to the registered account of the tender inviting authority.
- b) The Tender inviting authorities of the Government Departments will deposit the forfeited **Earnest Money Deposit on submission of bid**, in the State Government Treasury under the appropriate head (8782-ashremittances and Adjustments between the officers rendering accounts to the same

Accounts Officer-102-P.W.Remittances-1683-Remittances-91028- Remittances into Treasury) after taking the amount as a revenue receipt in their Cash Book under the head 0075-Misc. General Services-00-101 –Unclaimed Deposits-0097-Misc, Receipts-02080-Misc. Deposits and submit the detailed account to DAG(Puri) as a deposit of the Division.

- c) By clicking the submit button, the system will initiate the forfeiture of EMD. The system will not allow the evaluator to edit the initiation after clicking the submit button. Forfeiture option can be carried out in a phased manner like one bidder at a time.

9. Role of the Banks:

- a) Make necessary provision / customizations at their end to enable the provision for online payments /refunds as per this document.
- b) Provide necessary real-time messages to bidders regarding successful or unsuccessful transactions during online payment processes and redirect them to e-Procurement websites with necessary transaction reference details enabling them to submit their bids.
- c) The bank shall ensure transfer of funds from the pooling account to the Government Head/current account of PSUs/ULBs within the next bank working day as per the directions generated from e-Procurement portal.
- d) Banks should provide timely reports and reference details to NIC enabling them to carry out their role as stated below.
- e) Refund of amount to bidders as per the XML file provided by e-Procurement system on the next bank working day from the date of generation of the XML file and also provide a confirmation to NIC on the same.

10. Role of State Procurement Cell:

- a) Communicate requirements of Government departments/ State PSUs/ Autonomous Bodies/ ULBs online payment requirements to National Informatics Centre/the authorized Banks for mapping/customization.
- b) In every working day, the State Procurement Cell shall generate MIS from the e-Procurement portal to ascertain the tender paper cost received in the e-Tendering process separately bank-wise for the Government Department and the PSUs/ULBs. The SPC shall generate bank-wise separate online challans from the Odisha Treasury portal and make the remittance through over-the-counter facility or NEFT/RTGS (as and when this functionality is available in Treasury portal) and issue instruction to the bank for remittance of the receipt to the State Government account.
- c) The State Procurement Cell shall be responsible for providing challan details and MIS in respect of theremittancetowardstenderpapercosttotheTenderinvitingauthoritiesfortheirrecord.
- d) State Procurement Cell shall monitor the progress of e-Tendering by different Government departments /State PSUs/ Autonomous Bodies / ULBs through an MIS. The State Procurement Cell shall monitor and send monthly progress reports to the Government.
- e) The e-Procurement system will generate a consolidated refund & settlement XML file as an end of the day activity.
- f) e-procurement system will provide a web service for payment gateway (PG) provider to pull the encrypted refund and settlement details in XML file against a day.
- g) Similarly, payment gateway (PG) provider will provide a web service to pull the refund and settlement status against a day
- h) e-procurement system will update the status accordingly for reconciliation report.

11. Role of National Informatics Centre:

- a) Customize e-Procurement software and web-pages of Government of Odisha (<https://tendersodisha.gov.in>) to enable the provision for electronic payment.
- b) The NIC, Odisha will modify/ rectify the errors in electronic data relating to the Chart of Account.
- c) NIC will provide an interface to organizations to download the electronic receipt data.
- d) Enable automatic generation of daily XML files from e-Procurement system and ensure delivery of the same to the authorized Banks for enabling automatic refund/settlement of funds.

- e) NIC shall enable the e-Procurement portal to generate MIS as required for the State Procurement Cell in order to make remittance of the tender paper cost to the State Government account using the Odisha Treasury portal.

12. *Role of Cyber Treasury:*

- a) The cost of the tender paper deposited by the SPC using the Odisha Treasury Portal which will be accounted for by the Cyber Treasury and it shall submit the accounts to A.G (O) as per the established process.
- b) The Cyber Treasury will provide MIS as required to the SPC for the purpose of accounting and reconciliation of the electronic remittances made to the State Government account.

13. *Redressal of Public grievances:*

- a) The State Procurement Cell, Odisha, National Informatics Centre, Odisha and the e-FPB will have an effective procedure for dealing with public complaint-for-Receipt related matters. In case, any mistake is detected by any of the stakeholders in reporting of receipt of tender paper cost and EMD, either Suo moto or on being brought to its notice, the State Procurement Cell, Odisha, National Informatics Centre, Odisha unit, Cyber Treasury and the bank will promptly take steps for rectification. The e-Focal Point Branch of the participating Banks, National Informatics Centre, Odisha and the State Procurement Cell, Odisha will notify the contact number and address of the Help Desk for resolution of any dispute regarding e-Receipt.

14. *Applicability and modification of existing rules/orders:*

The modalities prescribed in this Office Memorandum for downloading of tender paper, submission and rejection of bid, acceptance of Bids as well as refund and forfeiture of earnest deposit will be applicable for electronic submission of bids through e-procurement portal. Existing provisions regulating cost of tender paper, earnest money deposit in OPWD Code and OGFR would stand modified to the extent prescribed.

- 15. These arrangements would be made effective after signing of MoU between the designated Banks and the State Procurement Cell, firming up of Banking arrangements and technical integration between designated Bank and e-Procurement Portal.

Back-end Transaction Matrix of Electronic receipt and remittance of Cost of Tender Paper and Earnest Money Deposit on submission of bids.

	Cost of Tender Paper on submission of bids	Earnest Money Deposit on submission of bids
Government Departments	I. The payment towards the cost of Tender Paper, in case Government Departments shall be collected in Separate Pooling accounts opened In Focal Point Branch called e-FPB Of respective designated banks[as Stated in Para2] at Bhubaneswar on T+1_day.	I. In case of tenders of Government Departments, amount towards Earnest Money Deposit on submission of bids shall be collected in a Pooling account opened for this Purpose at Focal Point Branch called e-FPB of respective designated banks at Bhubaneswar and the banks will remit the amount to respective bidders' account Within two working days on Receipt of instruction from TIA Through refund and settlement of e-procurement system
	II. With reference to the Notice Inviting tender/ Bid Identification Number, the amount realized is to be remitted to Government Account under the Head Of Account0075- Misc. General Services-800-Other Receipts-0097-Misc.Receipts-02237-Cost of Tender Paper Through Odisha Treasury Portal after opening of the bid	II. In case Forfeiture of earnest money deposit on submission of bids, the e-Procurement portal will direct The Bank to transfer the EMD Value from the Pooling Account of SPC to the registered account of the tender inviting Authority within two working days of receipt of instruction from TIA.
State PSUs, Statutory Corporations, Autonomous Bodies and Local Bodies.	I In case of State PSUs, Statutory corporations, Autonomous bodies and Local Bodies, etc. the amount towards Cost of Tender Paper , on submission of bids shall be collected in separated pooling accounts opened in local Point Branch called e-FPB of respective designated Banks at Bhubaneswar on T+1 days.	I Amount towards EMD on submission of bids shall be collected in a separate pooling account of Focal Point Branch called e-FPB of respective designated banks at Bhubaneswar and the banks will remit the amount to respective bidders' account on receipt of instruction from TIA through refund and settlement of e-procurement system within two working days from receipt of such instruction.
	II. The Paper cost will be transferred to The respective current accounts of Concerned State PSUs, Statutory Corporation, Autonomous Bodies And Local Bodies, etc. after opening of bid.	II. In case of forfeiture of Earnest Money deposit on submission of bids, the e-Procurement portal will direct the Bank to transfer the EMD value from the Pooling Account of SPC to the registered account of the tender inviting authority within two working days of receipt of instruction from TIA.

DETAILED TENDER CALL NOTICE

1. Sealed **percentage rate** bids are invited in **double cover system** from the Class of eligible contractors registered as vendor of IDCO/the State Government and contractors of equivalent Grade / class registered with Central Government / MES / Railways having registration for Civil, Electrical and P.H. works for execution of Civil / E.I. / P.H. works on production of definite proof from the appropriate authority in prescribed form to be eventually drawn in P.W.D. FORM P-1 for the work **"Construction of Block level Stadium (with Indoor Hall) in Bonai Block under Sundargarh District"** Contractors not registered with Govt. of Odisha can participate in the e-procurement after necessary enrolment in the portal but have to subsequently register themselves with the appropriate registering authority of the state Govt. before award of the work as per prevalent registration norms of the state.
 - a) This tender is of composite nature and consisting of **Civil, P.H & Electrical works.**
 - b) This detailed Tender Call Notice along with the clauses mentioned herein shall form a part of the contract and agreement.
2. The Bid documents are available on official website of Government: <https://www.tendersorissa.gov.in> from **18.00Hrs of dt 11.09.2026 to 17.00 Hrs of dt.28.09.2026.** The last date and time of submission of Bid is as per contract data.
3. The Technical Bid documents (**Cover-I**) will be opened by the assigned officer in the office of the officers inviting the bid at **11.30 Hours dt.29.09.2026** in the presence of the bidders or their authorized representatives who wish to attend. After evaluation of the documents contained in Cover-I, the Cover-II containing price bid/s of the technically responsive bidder/s will be opened. The date, time and place of opening the price bid will be intimated to the eligible qualified bidders through system generated E-mails.
4. The Tender fee of **Rs. 11,800.00** will be submitted online only as per the Instructions available in the e-Procurement portal during the processing of tender by the bidder.
5. The bid is to be submitted in two covers.
 - i) **Cover-I** is to contain scanned **copy of EMD and Tender fee,** Registration Certificate, PAN, GST Registration Certificate, EPF Registration, EPF latest challan, List of similar nature of works, affidavit, and all other documents required as per the relevant clauses of this DTCN.
 - ii) **Cover-II** is to contain the **PRICE BID** duly filled in and signed by the bidder and scanned copy of Additional Performance Security as per the relevant clauses of this DTCN.
6. Furnishing scanned legible copy of Original Registration certificate, GST Registration Certificate, PAN card, EPF Registration, EPF latest Challan, along with the Technical Bid is mandatory otherwise his/ her bid shall be declared as non-responsive and thus liable for rejection.
7.
 - (i) **The Contractors are required to furnish scanned copy of evidence of ownership showing the possession of principal machineries/equipment's as per Annexure-I in Schedule-C for which contractor shall have to secure minimum 80% of marks failing which the tender shall be liable for rejection.**
 - (ii) **In case the contractor proposes to engage machineries and equipment's as asked for in the tender document, owned or hired but deployed outside the State, he/she is required to furnish additional 1% EMD / Bid Security. The entire bid security including the additional bid security shall stand forfeited in case the contractor fails to mobilize the machineries within a period as to be able to**

execute an item of work as per original programme which will be part of the agreement.

- (iii) The contractor intending to hire/lease equipments/machineries are required to furnish proof of ownership from the company/ person providing equipments/ machineries on hire/lease along with contracts/ agreements/lease deed and duration of such contract. The contracts/agreements/lease deed should be on long term basis for a minimum period of 12 (Twelve) months as mentioned in contract data from the last date of receipt of Bid documents.
8. The civil contractor in order to take part in the composite tender should enter into an M.O.U. (Memorandum of Understanding duly notarized) with eligible registered electrical contractor having valid H.T. / L.T. license; for execution of electrical installation and other electrical works and a copy of such M.O.U. should be attached with the tender as per the proforma at Schedule- J which shall form a part of tender. A copy of electrical license should also be enclosed with the tender papers, the original of which need to be furnished during verification. The above M.O.U. is not required in case of the civil contractor having valid registration in H.T. / L.T. electrical license with the same name & style.
9. (i) The contract will be drawn in PWD P-1 contract Form
- The contract will be drawn & signed by Divisional Head, IDCO, Rourkela" Division, Rourkela The Civil/Electrical/PH item of the work will be supervised & measured by Divisional Head, IDCO, Rourkela" Division, Rourkela"& Final payment will be released by the Officer of IDCO executing the agreement.
10. If an individual makes the application, the individual should sign (with DSC) above his full type written name and current address.
11. If the application is made by proprietary firm, it shall be signed (with DSC) by the proprietor & furnish full type written name and the full name of his firm with its current address in a forwarding letter.
12. If the application is made by a firm in partnership, it shall be signed (with DSC) by a partner holding power of attorney for the firm in which case a certified copy of the power of attorney shall accompany the application. A certified copy of the partnership deed and current address of all partners of the firm shall also accompany the application.
13. If the application is made by a limited company or a corporation, it shall be signed (with DSC) by a duly authorized person holding power of attorney for signing the application in which case a certified copy of the power of attorney shall accompany the application. Such limited company or corporation will be required to furnish satisfactory evidence of its existence along with the technical bid.
14. The tender should be strictly in accordance with the provisions as mentioned in the tender schedule. Any change in the wordings will not be accepted.
15. The work is to be completed in all respects within 12 (Twelve) calendar months from the date of issue of work order. Before acceptance of tender, the successful bidder will be required to submit a work programme and milestone basing on the financial achievement so as to complete the work within the stipulated time and in case of failure on the part of the agency to achieve the milestone liquidated damage will be imposed
- (Amendment to Para-3.5.18 Note-VIII of OPWD Code Vol.-I).
16. All tenders received will remain valid for a period of 90 days from the last date prescribed for receipt of tenders and validity of tenders can also be extended if agreed by the tenderers and the Department.

17. The tenderer shall carefully study the tentative drawings and specifications applicable to the contract and all the documents, which will form a part of the agreement to be entered in to, by the accepted tenderer and detailed specifications for Odisha, and other relevant specifications and drawings, which are available. Complaint at a future date that the tenderers have not seen plans and specifications cannot be entertained.
18. The drawings furnished with the tender are tentative and subject to revision or modification as tendered during the execution as per actual necessity and detail test conducted. But the tendered rates quoted by the tenderer will hold good in case of such modification of drawings during the time of execution and shall in no way invalidate the contract and no extra monetary compensation will be entertained. The work shall however be executed as per final approved drawing to be issued by the Engineer-in-Charge as and when required.
19. By admission of a tender for the work, a tenderer will be deemed to have satisfied himself by actual inspection of the site and locality of the work, about the quality and availability of the required quantity of material including the wheat/ rice referred to above, medical aid, labour and food stuff etc., and that rates quoted by him in the tender will be adequate to complete the work according to the specifications attached there to and that he had taken in to account all conditions and difficulties that may be encountered during its progress and to have quoted rates including labour and materials with taxes, octroi, other duties, lead, lifts, loading and unloading, freight for all materials and all other charges necessary for the completion of the work, to the entire satisfaction of the Engineer-in Charge of the work and his authorized subordinates. After acceptance of the contract rate Government will not pay any extra charges for any reason in case the contractor claims later on to have misjudged as regard availability of materials, labour and other factors.

For the purpose of estimate, the approved quarry lead is to be provided judiciously. Engineers in charge would be responsible for ensuring the quality of the materials supplied. The contractors would, however, be responsible for procurement of material from authorized sources and voluntarily disclose the source of procurement for the purpose of billing. Besides, the bidder would be required to submit the details of quarry for procurement while submitting the bids.

(Amendment to Para-3.4.16 (a) (vii) of OPWD Code Vol.-I by substitution).

20. The bid must be accompanied by security of the amount **Rs.13,03,000/-** only along with tender in the form of Fixed Deposit Receipt of Nationalized /Scheduled Bank / KissanVikashPatra / Post Office Savings Bank Account / National Savings Certificate / Postal Office Time Deposit Account duly pledged in favour of the Divisional Head, IDCO, Rourkela" Division, Rourkela" as per the terms and conditions laid down in OGFR and in no other form. Tenders not accompanied with E.M.D. as specified above will not be considered. No adjustment of E.M.D. from one work, to another will be entertained. Bidders desirous to hire machineries or equipment from outside the state or owned but deployed outside the state are required to furnish additional one percent (1%) EMD / Bid Security. Tenders not accompanied with scanned copy of E.M.D. as specified above shall be declared as non-responsive and thus liable for rejection. No adjustment of E.M.D. from one work to another will be entertained. The bid security should remain valid minimum of 45(Forty-five) days beyond the bid validity period.

(N.B.:- Bank Draft / Pay orders or Bankers cheque from any Nationalized banks in favour of the officer inviting the bid shall not be considered as E.M.D)

21. The tender should be accompanied with the Scanned copies of the valid Registration certificate, GST Registration certificate and PAN card **EPF Registration, EPF latest Challan**, which are mandatory, otherwise his/her bid shall be declared as non-responsive and thus liable for rejection.

22. The tender containing extraneous conditions not covered by the tender notice are liable for rejection and quotations should be strictly in accordance with the items mentioned in the Tender Call Notices. Any change in the wording will not be accepted.
23. The department reserves the right of authority to reject any or all tenders received without assigning any reason whatsoever.
24. The earnest money of the L-1 bidder will be retained and will be dealt with as per terms and condition of O.P.W.D. Code. The retention of E.M.D. with the Department will carry no interest.
25. **CGM inviting tender will notify the Divisional Head about the acceptance of tender with a copy to the bidder/ tenderer whose bid has been accepted of the award prior to expiration of the validity period by cable, telex or facsimile confirmed by registered letter. This letter (hereinafter and in the conditions of Contract called the "Letter of Acceptance") will state the sum that the Engineer-in-charge will pay the contractor in consideration of the execution, completion and maintenance of the Works by the contractor as prescribed by the contract (Hereinafter and in the contract called the "Contract Price").**
 The Notification of award will constitute the formation of the contract, subject only to the furnishing of a performance security (Initial Security Deposit) in form of Deposit receipt of Schedule Bank / Kissan Vikash Patra / Post Office Savings Bank Account/National Savings Certificate / Post Office Time Deposit Account duly pledged in favour of the **"Divisional Head, IDCO, Rourkela" Division, Rourkela"& payable at Rourkela "from any Nationalized / Scheduled Bank in India Counter guaranteed by its local branch at Rourkela"** and in no other form, which including the amount already deposited as bid security (earnest money) shall be 2% of the value of the tendered amount (excluding 1% deposited towards hiring of equipments / machineries from outside the state if any) and sign the agreement in the P.W.D. form No. P-1 (Schedule XLV No. 61) for the fulfillment of the contract in the office of the **Divisional Head, IDCO, Rourkela " Division, Rourkela"& payable at Rourkela"** or as directed. The security deposit together with the earnest money and the amount withheld according to the provision of P-1 agreement shall be retained as security for the due fulfillment of this contract and additional performance security in accordance with the provisions of the agreement.
 The agreement will incorporate all agreements between the officer inviting the bid/ Engineer-in Charge and the successful bidder within 15 days following the notification of award along with the Letter of Acceptance. The successful bidder will sign the agreement and deliver it to the Engineer-in Charge. 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 leading thereto & required amount of performance security including additional performance security.
 - b) **Standard P.W.D. Form P-1 with latest amendments. Failure to enter into the required agreement and to make the security deposit as above shall be liable for penal action. No contract (tender) shall be finally accepted until the required amount of initial security money is deposited. The security will be refunded after 12 (Twelve) months of completion of the work and payment of the final bill and will not carry any interest. As concurred by the Law Department & Finance Department In their U.O.R. No 848 dtd.21.05.97 J.O.R.No.202 W.F.D. dtd.06.03.98 & as per works Department Office Memorandum No.5984 dt. 27.04.2021, the EMD will be forfeited & the panel action will be initiated, in case, where tenderers back out from the offer before acceptance of tender by the competent authority.**
26. The contractor should be liable to fully indemnify the Department for payment of compensation under workmen compensation act. VIII of 1923 on account of the workmen employed by the contractor and full amount of compensation paid will be recovered from the contractor.
27. Tenderers are required to liable by fair wages clause as introduced by Govt. of Odisha, Works Department letter No.VII (R&B) 5225, dt.26.2.55 and No.II, M-56/61-28842 (5), dt.27.9.61.

28. The contractor shall bear cost of various incidentals, sundries and contingencies necessitated by work in full within the following or similar category.
- a) Rent, royalties (including additional charges with EMF & DMF as per Lr. no. 3823, dtd. 10.11.2022 of R & DM Deptt. & Lr. No. 1194 dt 02.02.2026 of the Additional Secretary to Govt. of Odisha,Steel & mines Department), cess and other charges of materials, Octroi but **excluding GST**. Ferry tolls, conveyance charges and other cost on account of land buildings including temporary building required by the tenderer for collection of materials, storage, housing of staff or other purpose of the work are to be borne by the contractor at his own cost. No rent will be payable to Govt. for temporary occupation of land owned by govt. at the site of the work for bonafide use of the land for work and all such construction of temporary nature by the contractor shall be done after obtaining written permission from the Engineer-in-Charge of Civil portion of the work and all such construction shall have to be demolished and debris removed and ground made good and cleared after completion of the work at no extra cost.
 - b) Royalty including Additional charges with EMF &DMF will be recovered from each bill as notified by Govt. from time to time unless K Forms are enclosed. Refund of royalty at later date after passing of the bills cannot be entertained as the recovery of royalty is being credited to revenue.
 - c) Labour camps or huts necessary to a suitable scale including conservancy and sanitary arrangements therein to the satisfaction of the local labour laws and health authorities shall have to be provided by the Contractor.
 - d) Arrangement of suitable water supply including pipe water supply where available for the staff and labour as well as for the execution of the work is sole responsibility of the Contractor and no extra cost for carriage of water will be entertained.
 - e) All fees and dues levied by Municipal, Canal or Water Supply Authorities are to be borne by the Contractor.
 - f) Suitable safety equipments and dresses, gloves, life belts etc. for the labour engaged in risky operations are to be supplied by the contractor at his own cost.
 - g) Suitable fencing barriers, signals including paraffin and electric signals where necessary at work and approaches in order in project the public and employees from accident has to be provided by the Contractor at his own cost.
 - h) Compensation including cost of any legal suit for injury to persons or property arising out of execution of the work and also any sum, which may become payable due to operation of the workmen compensation act, shall have to be borne by the contractor.
 - i) The contractor has to arrange adequate lighting arrangements for the work wherever necessary at his own cost.
29. No payment will be made for layout, benchmark, level pillars, profiles and benching and leveling the ground required, which has to be carried out by the contractor at his own cost. The rates to be quoted should be for finished items of work inclusive of carriage of all materials and all incidental items of work.
30. After the work is finished all surplus materials should be removed from the site of work, preliminary work such as vats, mixing platforms, etc. should be dismantled and all materials removed from the site and premises left neat and his should be inclusive in the rates. No extra payment will be made to the Contractor in this account.
31. It should be understood clearly that no claim what-so-ever will be entertained to extra items of works quantity of any item besides estimate amount unless written order is obtained from the competent authority and rate settled before the extra items of work or extra quantity of any items of work is taken up.
32. The tenderers shall have to abide by the C.P.W.D. safety code rules introduced by the Govt.of India, Ministry of Works and Housing & Supply in their standing order No.44150, dt.25.11.57
33. No part of the contract shall be sublet without written permission of the officer inviting the bid or transfer to be made by the power of attorney authorizing others to receive payment on contractor's behalf.

34. Bid documents consisting of plans, specifications, the schedule of quantities and the set of terms and conditions of contract and other necessary documents can be seen in all the offices issuing the documents and office of the under signed during office hours every day except on Sundays and Public Holidays till last date of sale and receipt of tender papers. Interested bidders may obtain further information at the same address. But it must be clearly understood that tenders must be received in order and according to instructions in complete shape. Incomplete tender is liable for rejection.

35. No Relation certificate.

The contractor shall furnish a certificate along with the tender to the effect that he is not related to any officer in the rank of a Deputy Manager & above in IDCO. If the fact subsequently proved to be false, the contract is liable to be rescinded. The earnest money & the total security will be forfeited & he shall be liable of make good to damages the loss or damages resulting for such cancellations. The proforma for no relationship certificate is contained in a separate sheet vide **Schedule-A**.

36. Payment for Variation in Price:-(Vide Works Department Memorandum No.15847

Dt. 19.11.2019)

Contract price shall be adjusted for increase or decrease in rates and price of Labour, materials, Fuels, & Lubricants and Plant & Machineries spare component in accordance with the following principles and procedures as per formula given below:-

36. Price Adjustment

36.1 Contract price shall be adjusted for increase or decrease in rates and price of labour, materials, fuels and lubricants in accordance with the following principles and procedures and as per formula given in following Paras.

(a) The price adjustment shall apply for the work done from the start date given in the contract data up to end of the initial intended completion date or extensions granted by the Engineer and shall not apply to the work carried out beyond the stipulated time for reasons attributable to the contractor.

(b) The price adjustment shall be determined during each month from the formula given in following Paras

(c) Following expressions and meanings are assigned to the work done during each month:

R= Total value of work done during the month. It would include the amount of secured advance granted, if any, during the month, less the amount of secured advance recovered, if any during the month. It will exclude value for works executed for extra items under variations.

36.2 To the extent that full compensation for any rise or fall in costs to the contractor is not covered by the provisions of this or other clauses in the contract, the unit rates and prices included in the contract shall be deemed to include amounts to cover the contingency of such other rise or fall in costs.

The formula (e) for adjustment of prices are:

36 (a) (i): Adjustment of Other Materials Component

Price adjustment for increase or decrease in cost of local materials other than cement, steel, bitumen, pipe and POL procured by the contractor shall be paid in accordance with the following formula:

$$V_M = 0.85 \times P_m / 100 \times R \times (M_1 - M_0) / M_0$$

V_M = Increase or decrease in the cost of work during the month under consideration due to changes in rates for local materials other than cement, steel, bitumen and POL.

- M_0 = The all India wholesale price index (all commodities) on 28 days preceding the date of opening of Bids, as published by the Ministry of Commerce and Industry Government of India, New Delhi.
- M_1 = The all India wholesale price index (all commodities) for the month under consideration as published by the Ministry of Commerce and Industry, Government of India, New Delhi.
- P_m = Percentage of local material component (other than cement, steel, bitumen and POL) of the work.

36 (a) (ii): Adjustment for Cement Component

Price adjustment for increase or decrease in the cost of cement procured by the contractor shall be paid in accordance with the following formula:

- $V_c = 0.85 \times P_c / 100 \times R \times (C_1 - C_0) / C_0$
- V_c = Increase or decrease in the cost of work during the month under consideration due to changes in the rates for cement
- C_0 = The all India wholesale price index for Ordinary Portland Cement (OPC) on 28 days preceding the date of opening of Bids as published by the Ministry of Commerce and Industry, Government of India, New Delhi.
- C_1 = The all India wholesale price index for Ordinary Portland Cement (OPC) for the month under consideration as published by the Ministry of Commerce and Industry, Government of India, New Delhi.
- P_c = Percentage of Cement Component of the work.

36 (a) (iii): Adjustment for Steel Component

(iii) Price adjustment for increase or decrease in the cost of steel procured by the contractor shall be paid in accordance with the following formula:

- $V_s = 0.85 \times P_s / 100 \times R \times (S_1 - S_0) / S_0$
- V_s = Increase or decrease in the cost of work during the month under consideration due to changes in the rates for steel.
- S_0 = The all India wholesale price index for steel (Mild Steel long products) on 28 days preceding the date of opening of Bids as published by the Ministry of Commerce and Industry, Government of India, New Delhi.
- S_1 = The all India wholesale price index for steel (Mild Steel long products) for the month under consideration as published by the Ministry of Commerce and Industry, Government of India, New Delhi.
- P_s = Percentage of steel component of the work.

Note: For the application of this clause, index of (Mild Steel long products) has been chosen to represent steel group.

36 (a) (iv): Adjustment of Bitumen Component

Price adjustment for increase or decrease in the cost of bitumen shall be paid in accordance with the following formula:

- $V_b = 0.85 \times P_b / 100 \times R \times (B_1 - B_0) / B_0$
- V_b = Increase or decrease in the cost of work during the month under consideration due to changes in the rate for bitumen.
- B_0 = The official retail price of bulk bitumen at the IOC / BPCL depot at nearest center on the day 28 days prior to date of opening of Bids.
- B_1 = The official retail price of bulk bitumen at IOC / BPCL depot at nearest center for the 15th day of the month under consideration.
- P_b = Percentage of bitumen component of the work.

36(a)(v): Adjustment towards differential cost of Pipes

Price adjustment for increase or decrease in the cost of pipe shall be paid in accordance with the following formula:

- $V_{pi} = 0.85 \times P_{pi} / 100 \times R \times (P_{i1} - P_{i0}) / P_{i0}$

- V_{pi} = Differential cost of pipe i.e. amount of increase or decrease in rupees to be paid or recovered during the month under consideration.
- P_{pi} = Percentage of pipe component of the work.
- P_{i1} = All India Whole sale price index of pipe for the period under consideration as published by the Ministry of Commerce and Industry, Government of India, New Delhi.
- P_{i0} = All India Whole sale price index of pipe on 28 days preceding the date of opening of Bids as published by the Ministry of Commerce and Industry, Government of India, New Delhi.

36(b): Adjustment of Labour Component

Price adjustment for increase or decrease in the cost due to labour shall be paid in accordance with the following formula:

- V_L = $0.85 \times P_1/100 \times R \times (L_1 - L_0)/L_0$
- V_L = Increase or decrease in the cost of work during the month under consideration due to changes in rates for local labour.
- L_0 = The minimum wages for unskilled labour as Notified by Government of Odisha as prevailed on the last stipulated date of receipt of tender including extension, if any.
- L_1 = The minimum wages for unskilled labour as Notified by Government of Odisha as prevailed on the last date of the Month previous to the one under consideration.
- P_1 = Percentage of labour component of the work.

36 (c): Adjustment of POL (fuel and lubricant) Component

(V) Price adjustment for increase or decrease in cost POL(fuel and lubricant) shall be paid in accordance with the following formula :

- V_f = $0.85 \times P_f/100 \times R \times (F_1 - F_0)/F_0$
- V_f = Increase or decrease in the cost of work during the month under consideration due to changes in the rates for fuel and lubricants.
- F_0 = The official retail price of High Speed Diesel (HSD) at the existing consumer pumps of IOC/BPCL/ HPCL at nearest center on the day 28 days prior to the date of opening of Bids.
- F_1 = The official retail price of HSD at the existing consumer pumps of IOC/ BPCL/ HPCL at nearest center for the 15th day of the month under consideration.
- P_f = Percentage of fuel and lubricants component of the work.

Note : For the application of this clause, the price of High Speed Diesel oil has been chosen to represent fuel and lubricants group.

36 (d): Adjustment for Plant and Machinery Spares Component

(vi) Price adjustment for increase or decrease in the cost of plant and machinery spares procured by the

Contractor shall be paid in accordance with the following formula:

- V_{p-} = $0.85 \times P_{p-}/100 \times R \times (P_1 - P_0)/P_0$
- V_{p-} = Increase or decrease in the cost of work during the month under consideration due to changes in the rates for plant and machinery spares
- P_0 = The all India wholesale price index for manufacture of machinery for mining , quarrying and construction on 28 days preceding the date of opening of Bids as published by the Ministry of Commerce and Industry, , Government of India, New Delhi.
- P_1 = The all India wholesale price index for manufacture of machinery for mining, quarrying and construction for the month under consideration as published by the Ministry of Commerce and Industry, Government of India, New Delhi.
- P_{p-} = Percentage of plant and machinery spares component of the work.

Note: For the application of this clause, index of manufacturing of machinery for mining, quarrying and construction has been chosen to represent t he Plant and machinery Spares group.

Regarding wholesale price Index (WPI) for appropriate commodity for payment of price adjustment, due to change of base year of WPI from 1993-94 to 2004-05 & 2011-12, it is observed that, the commodity 'Bars and Rod', 'Cement', 'Heavy machinery and parts' included in the list of WPI 1993-94 series are not mentioned as such in the WPI 2004-05 & 2011-12 series . Therefore, the following items in the WPI 2004-05 & 2011-12 series shall be considered corresponding to items in WPI 1993-94 series:

SI No.	Item in WPI 1993-94 series	Item in WPI 2004-05 series	Item in WPI 2011-12 series
1.	Cement	Grey cement	Ordinary Port Land Cement
2.	Bars & Rods	Rebars	Mild steel long products
3.	Heavy Machinery & Parts	Construction Machinery	Manufacture of machinery for mining quarrying & construction.

36(e): APPLICATION OF ESCALATION CLAUSE:

The contractor shall for the purpose of availing reimbursement/refund of differential cost of steel, bitumen, cement, pipe, POL and wages, 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 representative of Government and further, shall at the request of the Engineer-in-Charge, furnish documents to be verified in such a manner as the Engineer-in-Charge may require any document and information kept. The contractor shall within a reasonable time of 15 days 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 along with information relating to there to which he may be in a position to supply.

Percentage Table:-

S.L No	Category of Works		% Component (Cost wise)		
			Labour (P ₁)	POL (P _f)	Steel (P _s) + Cement (P _c) + Bitumen (P _b) + Pipes (P _{pi}) + Plant & machinery spare & component (P _p) + Other Materials
1	R & B works (% of Component)	Road Works	5	5	90
		Bridge Works	5	5	90
		Building works	5	5	90
2.	Irrigation works (% of Component)	Structural work	5	5	90
		Earth, Canal & Embankment work	5	5	90
3.	P H Work	Structural work	5	5	90
		Pipeline work	5	5	Pipe – 70% * Machinery +

					Other materials – 20%
		Sewer line	5	5	Pipe – 70% * Machinery + Other materials – 20%

Note:- Further break up may be worked out considering the consumption of Cement, Steel, Bitumen, Pipe and Plant & Machinery spare component in the concerned works and shall be provided in the bid document in shape of “**Schedule of Adjustment Data**” as an “**Appendix to Bid**” (enclose herewith).

Appendix to Bid
Schedule of Adjustment Data

[For all works, adjustment factor for Labour and POL shall be considered @ 5% each, Steel, Cement, Pipes, Other materials and Machinery shall contribute to 90% of Price Adjustment and shall be calculated for each work separately during preparation of estimate, shall be approved by the authority during technical sanction as a “ Schedule of Adjustment Data” and shall form part of the Bid Document]

CI No. 92 of F2/P1 Contracts S.L No	Index Description	Source of Index	Base Value*	Base Date*	Weightage of Item**
92(a)(i)	Other Materials	All India Whole sale price index (all commodities) as published by the Economic Advisor to the Govt. of India, Ministry of Commerce and industry.			66.5%
92(a)(ii)	Cement	Whole sale price index for Cement (Ordinary Portland Cement) as published by the office the Economic Advisor to the Govt. of India, Ministry of Commerce and Industry.			10%
92 (a)(iii)	Steel	Whole sale price Index for Steel (Mild Steel-long Products) as published by the office of the Economic Advisor to the Govt. of India, Ministry of Commerce and Industry.			13%
92(a)(iv)	Bitumen (VG-30)	Official retail price of bulk bitumen at the nearest IOC/HPCL depot			Not Required
92(a)(v)	Pipes	Whole sale price index for the type of Pipe under consideration, as published by the office the Economic Advisor to the Govt. of India, Ministry of Commerce and Industry.			Not Required
92 (b)	Labour	Minimum wage notified by the Labour& Employee’s State Insurance Department of Government of Odisha, India			5 %
92 (c)	POL	Official retail price of HSD at nearest IOCL/HPCL/BPCL Consumer pump depot.			5 %
92 (d)	Plant & Machinery	Whole sale price index for Manufacture of Machinery for Mining, Quarrying and Construction as			0.5 %

		published by the office the Economic Advisor to the Govt. of India, Ministry of Commerce and Industry.			
			Total		100

- .Values to be filled up at the time of Drawl of Contract.
 - Values to be filled up in the Bid Document.
- 37.** For value of work more than Rs.10.00 crore, Secured Advance against material If requested by the Contractor, will be paid against the materials required for execution of the work during the next 3(Three) months and actually brought at site may be made by the Employer only in respect of such materials which confirm to the Specification and are neither dangerous nor hazardous to store nor are perishable or liable to deteriorate or waste with time. The amount of payments shall be least of the following
- a.75% of the current market value (original Purchase Vouchers are to be produced)
 - b.75% of the estimated value during tender
 - c.75% of the Quoted Value
- The Secured Advance so paid shall be recovered in the next three months of releasing the advance through the running account Bills.
- 38.** All items of work as per schedule of quantities of this tender should confirm to Odisha Detailed Standard Specification. I.R.C. & I.S.I. Codes & Bridge code section I,II,III,IV&VII & latest design criteria for pre-stressed concrete bridge specially for Roads & Bridges issued by MoRT&H., Government of India, Compacting shall have to be carried out with help of mechanical vibrators from the range of I.S.:2505, I.S.:2006, I.S.:2514. I.S.:4656.
- 39.** Centering & Shuttering shall be with suitable steel shutters in side of which shall be lined with suitable sheeting and made leak proof and watertight. All joints in formwork shall be properly sealed preferably with P.V.C. joints sealing tapes & compounds
- 40.** Form work including complete false work shall be designed by the Contractor without any extra cost to employer and the Department will have the right to inspect the scaffolding, centering and shuttering made for the work and can reject partly of fully such structures, if found defective in their opinion. Any eventually such as loss of lives or properly due to failure of centering and shuttering shall be the responsibility of the Contractor regarding compensation of all claims thereof.
- 41.** Cement shall be used by bags and weight of one bag of Cement should be 50 (fifty) Kg. net & the Engineer-in-Charge or his representative shall have the right to test the weight & quality from time to time.
- 42.** The tenderers shall make all arrangements for proper storage of materials but no cost for raising shed for store and pay of security guard etc. will be borne by the Department. The department is not responsible for any theft or loss of materials at site. It is contractor's risk. Under any such plea, if the tenderer stops the work he shall have to pay the full penalty as per clauses of the contract.
- 43.** Approach road to site of work for transport of materials to site of work is sole responsibility of the Contractor. Statutory traffic restriction in the town area for Transport of construction material to site of work is to be taken in to consideration before tendering and no consideration for extra time or compensation thereof shall be considered.
- 44.** The contractor should at his own cost arrange necessary tools and plants required for efficient execution of work and the rates quoted should be inclusive of transportation, hire and running charges of such plant and cost of consumables.

45. The contractor shall properly co-ordinate with the execution of P.H. and Electrical works and take care of the safety of workers.
46. Deleted
47. No claim whatsoever will be entertained for supply of machineries. No extension of time will be granted to the contractor under this ground under any circumstances.
48. The tenderer should furnish along with their tender a list of works executed during the last five years duly certified by the concerned Engineer-in-charge/Divisional Head indicating the satisfactory completion of works as per the proforma enclosed in a separate sheet of **Schedule-D**.
49. The tenderer or any of its constituent partners of whose contract for any work has been rescinded or who has abandoned any work in the last five years prior to the date of Bid shall be debarred from qualification. The tenderer is to furnish an affidavit at the time of submission of tender paper about the authentication of tender documents. An affidavit to this effect is to be furnished in **Schedule-F** and information in **Schedule-E**
50. It should be clearly understood that :
 - a) The joints of the bars are to be provided with lapping, welds or bolts nuts as well be directed by the Engineer-in-charge.
 - b) Concrete test specimens 150mm × 150mm × 150mm in size (whether plain or reinforced concrete) for the testing shall be taken for each structural member by a representative of the contractor in the presence of authorised representative of Divisional Head. The contractor shall bear the cost so involved in testing. The test specimen in cube should be carried out in IDCO Laboratory/Any National Laboratory /Lab of Govt. Engineering College & Polytechnic in Orissa. Test should be carried out in accordance with the stipulation in Bridges code section-III.
 - c) Test specimens shall be formed carefully in accordance with the standard method of taking test specimen and no plea shall be entertained later on the grounds that the casting of the test specimen was faulty and that the result of the specimen did not give a correct indication of the actual quality of concrete.
 - d) Plain concrete and reinforced concrete specimens will be tested in **IDCO Laboratory/Any Government Laboratory /Lab of Govt. Engineering College & Polytechnic in Orissa/NABL accredited Laboratory as per direction of Engineer-in-charge**. Cost of testing of all specimens and samples will be borne by the Contractor.
51. The rates quoted should be inclusive of carriage of water required in connection with execution of the work. No claim for carriage of water whatsoever will be entertained.
52. The contractor shall employ one or more Engineering Graduate or Diploma holders as apprentice at his cost if the work as shown in the tender exceeds Rs.2,50,000.00. The apprentices will be selected by the **Chief General Manager (Civil)** 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 not be less than the emolument of personnel of equivalent qualification employed under Government. The number of apprentices to be employed should be fixed by the **Chief General Manager (Civil)** in the manner so that the total expenditure does not exceed one percent of the tendered cost of the work.
53. List of tool & plants in running condition in possession of contractor is to be furnished in a separate sheet of **Schedule-C**.
54. It is the responsibility of the contractor to procure and store explosive required for blasting operation. Department may render necessary possible help for procuring license.

55. For submission of a tender for the work, the tenderer will be deemed to have satisfied himself by actual inspection of the site and locality of the work about the quality and availability of the required quantity of materials, Medical aid, labour and Flood stuff etc. and that the rates quoted by him in the tender will be adequate to complete the work according to the specifications attached thereto and that he had taken in to account all conditions and difficulties that may be encountered during its progress and to have quoted labour rates and materials, Octoroi and other duties lead, lifts, loading and unloading freight for materials and all other charges necessary for the completion of the work to the entire satisfaction of the Engineer-in-charge of the work and his authorized subordinates. After acceptance of the contract rates Government will not pay any extra charges for any reason in case the contractor finds later on to have misjudged the conditions as regards the availability of materials, labour and other factors. The contractor will be responsible for any misuse, loss or damages due to any reasons whatsoever of any departmental material during the execution of work. In case of loss, damage or misuse, recovery at the rate at 5 times the cost of the materials will be deducted from the bills or his other dues.
56. The prevailing percentage of I.T. Department of the gross amount of the bill towards income tax will be deducted from the contractor's bill.
57. Prevailing rate of GST as applicable would be paid extra.
58. **Prevailing rate of cess i.e. @ 1% on estimated cost put to tender as per the Building and Other Constructed Workers (RE&CS) Act. 1996 and Buildings and Other Construction Workers Welfare Cess Act. 1996 (vide resolution No.-12653, dt.15.12.2008 of Labour and Employment Department, Govt. of Odisha) will be deducted from each running bill of the contractor.**
59. It must be clearly understood that under no circumstances any interest is chargeable for the dues or additional dues if any payable for the work executed and final bill pending disposal due to any reason whatsoever.
60. No extra payment will be made for removing spreading and consolidating salvaged metals and materials.
61. Under section 12 of contractors labour (Regulation and Abolition) Act. 1970 the contractor who undertakes execution of work through labour should produce valid license from licensing authorities of labour Department.

62. Performance Security / Additional Performance Security :

62.1 Amendment to Appendix – IX, Clause – 36 of OPWD Code Vol.-II by inclusion. Modification in DTCN Clause No.28 as per Works Department, Govt. of Odisha Office Memorandum No.173 dtd.03.01.2026 and Clarification vide Office Memorandum No.632 dtd.09.01.2026

Amendment of Codal and Contractual Provisions of threshold negative bid caps (14.99 %) introduced in Appendix-IX, Clause-36 of OPWD Code Volume-II is to be applicable as per the Works Department Office Memorandum no.173 dtd.03.01.2026 (Decimal up to two numbers will be taken for all practical purpose) either at the estimated cost put to tender, tender accepting authority will finalize the tender through a transparent lottery system where all bidders/ their authorised representatives, the concerned Superintending Engineer/ Executive Engineer and Accounts Officer. (Amendment to Appendix-IX, Clause-36 of OPWD Code Vol.-II) (by inclusion vide [O.M.No.173 dtd.03.01.2026](#)).

62.2 Additional Performance Security shall be obtained from the bidder when the bid amount is less than the estimated cost put to tender. In such an event, only the successful bidder who has quoted less bid price/rates than the estimated cost put to tender shall have to furnish the exact amount of differential cost i.e. estimated cost put to tender minus the quoted amount as Additional performance security (APS) in shape of Term Deposit Receipt pledged in favor of **Divisional Head, IDCO, Rourkela Division, Rourkela, payable at Rourkela / Bank Guarantee in favor of the Divisional Head, IDCO, Rourkela Division, Rourkela payable at Rourkela from** any Nationalized / Scheduled Bank in India Counter guaranteed by its local branch at Rourkela / Insurance Surety Bond/ e-Bank Guarantee executed on the National e-Governance Services Limited (NeSL) Digital Document Execution Portal within seven days of Issue of Letter of Acceptance (LOA) by the Divisional Head (by e-mail) to the successful bidder otherwise the bid

of the successful bidder shall be cancelled and the Earnest Money Deposit/Bid Security shall be forfeited. Further proceeding for blacklisting shall be initiated against the bidder.

- If the rate quoted by the SC and ST Category Contractors comes to the rate quoted by the L1 bidder (decimal up to two numbers will be taken for all practical purposes) after availing 10% price preference as per Para 2 of Works Department Resolution No. 27748 dated. 11.10.1977, the tender shall be finalized by the tender accepting authority through a transparent lottery system along with other categories of contractors.

The State Govt. is pleased to fix the following rate of Additional Performance Security. vide Office Memorandum No.173 dtd.03.01.2026.

SL. No.	Range of Difference between the estimated cost put to tender & Bid Amount	Additional Performance Security to be deposited by the successful bidder
(i)	below 0% but not below 10%	No Additional Performance Security
(ii)	below 10% but not below 20%	additional performance guarantee/security percentage shall be incremented by 0.1% for every percentage of bid price below 10% of the project cost put to bid starting at 11% with the additional bid performance guarantee being 0.1% and this additional performance guarantee percentage shall be applied on the bid price ;
(iii)	20% or more below	the additional performance guarantee percentage shall be incremented by 0.2% for every percentage of bid price below 20% of the project cost put to bid in addition to 1% of the bid price and this additional performance guarantee percentage shall be applied on the bid price.
(iv)		The additional performance guarantee percentage shall be rounded off to the next lower percentage based on whether the decimal point of the percentage of bid price is below 0.5% or next higher percentage based on whether the decimal point of the percentage of bid price is 0.5% or more.
(v)		The additional performance security shall be treated as part of the performance security.

(vi)		Justification for abnormally low bids shall be scrutinized by the Departmental Technical Committee and recommended to the competent authority of the Administrative Department for the approval of the Additional Performance Security (APS). An abnormally low bid is one in which the Bid price, in combination with other elements of the Bid, appears so low that it raises material concerns as to the capability of the Bidder to perform the contract at the offered price. Procuring Entity may, in such cases, seek written clarifications from the Bidder, including detailed price analyses of its Bid price in relation to scope, schedule, resource mobilization, allocation of risks and responsibilities, and any other requirements of the bid document. If, after evaluating the price analyses, the procuring entity determines that the Bidder has substantially failed to demonstrate its capability to deliver the contract at the offered price, the Procuring Entity may reject the Bid/Proposal. However, it would not be advisable to fix a normative percentage below the estimated cost, which would automatically be considered as an abnormally low bid.
------	--	---

If the contractor fails to complete the work, the amount so furnished as additional performance security will be forfeited in addition to the other penal clauses, if any to be imposed.

62.3. Divisional Head to release the APS after completion of work without waiting for approval of EOT and Deviation.

63. Sample of all material - The contractor shall supply sample of all materials fully before procurement for the work for testing and acceptance as may be requiring by the concerned Engineer-in-Charge.

64. Super class contractor shall employ under himself two Graduate Engineer and two Diploma holders belonging to the State of Odisha. Special class contractor shall employ under him one graduate Engineer and two Diploma Holders belonging to the state of Odisha. Likewise 'A' class contractor shall employ under him one Graduate Engineer or two Diploma Holders belonging to state of Odisha. The contractor shall pay to the Engineering personnel monthly emoluments, which shall not be less than the emoluments of the personnel of equivalent qualification employed under the State Govt. of Odisha. The Chief General Manager (Civil) Odisha may however assist the contractor with names of such unemployed Graduate engineers and Diploma Holders if such help is sought for by the contractor. The names of such Engineering personnel appointed by the Contractors should be intimated to the tender receiving authority along with the tender as to who would be supervising the work. Each bill of the Super Class, Special Class or 'A' Class Contractor shall be accompanied by an employment Roll of the Engineering personnel together with a Certificate of the Graduate Engineer or Diploma Holder so employed by the contractor to the effect that the work executed as per the bill has been supervised by him. (Vide Works Department No. Codes M-22/91-15384 dated 9.7.91). The required certificate is to be furnished in the tender documents vide **Schedule-G**.

65. Engineering personnel of the executing agency as mentioned below should be present at work site at the time of visit of Divisional Head/ Superintending Engineer/ Chief General Manager and above. In case the Project Manager is not available during such visit or

during any review meeting at the Divisional or Head Office level, a lump-sum amount of Rs.30,000.00 shall be deducted from the running bill for each such instance.

66. For effective site supervision, the agency shall deploy the following minimum personnel at site. In the event, any discrepancy found in deployment by Authority, suitable action shall be taken as per clause-65. The CVs of the following personnel shall be submitted along with the Bid for evaluation purpose. CVs not meeting the minimum qualification and eligibility criteria shall be rejected and consequently, the bid shall be liable for rejection. In case of replacement, the bidder shall submit the CV of a substitute personnel possessing qualification and experience for approval of the Authority.

For site supervision, the agency shall deploy the following personnel

Sl No.	Engineering Post	Qualification	Scope
	Project Manager (01)	B Tech Civil with min. 7 years' experience/	Overall Super Vision Work, Coordination with Authority & Contractor. He shall supervise the works properly to ensure qualitative execution & timely completion.
	Site Engineer (01) -Civil	Diploma Civil with min. 5 years' experience	proper supervision of works to ensure qualitative execution. He shall maintain the Quality Control Register and the Site History Book .
	Electrical Engineer	Diploma electrical with 5 years' experience	proper supervision of works to ensure qualitative execution.

- 67.** All reinforced cement work should conform to Odisha Detailed specification and should be of proportion as per Contract Agreement having desired compressive strength (in work test) in 15 Cm cubes at 28days, after mixing and test conducted in accordance with IS 456 and IS 516.
- 68.** Bailing out of water from the foundation, pipeline trenches S. Tanks/ Soak pits/ Sumps/ M.H. etc. either rainwater or sub-soil water if necessary should be borne by the contractor. No payment will be made for benchmarks. Level pillars, profiles and benching and leveling the ground wherever required. The rates quoted should be for finished items of works inclusive of these incidental items of work. It should be understood clearly that no claims whatsoever would be entertained.
- 69.** The tenderer shall have to abide by the C.P.W.D. safety code rules introduced by the Government of India, Ministry of work Housing and Supply in their standing order No-44150 dtd.25.11.57.
- 70.** The Contractor will have to submit to the **Divisional Head, IDCO, Rourkela" Division, Rourkela"** **monthly** return of labour both skilled and unskilled employed by him on the work.

71. All fittings for doors and windows P.H. & Electrical works as supplied by the Contractor should be of best quality and conform to relevant I.S. specification and should be got approved by the Engineer-in-charge of the respective wing before they are used on the work.
72. After completion of the work the contractor shall arrange at his own cost all requisite equipment for testing buildings, if found necessary and bear the entire cost of such test, including the inspection of Electrical Inspectorate.
73. The Tenderer should furnish along with their tender **1. A List of works, which are at present in their hand (Schedule-B) 2. List of T&P (Schedule-C) and 3. List of work executed (Schedule-D)** in the prescribed Performa(s) enclosed herewith in appropriate place of bid document.
74. All reinforced cement concrete works should be finished smooth Extra charges for plastering if required to any R.C.C. structures like roof slab, Columns, Chajjas, fins, parapets, shelves etc. shall not be paid.
75. DELETED.
76. The contractor has to arrange the samples of materials required for execution to be got tested and approved by the Department before taking up the work and during course of execution required from time to time. All such samples will be tested at any of the Departmental Control and Research Laboratories, at the cost of the Contractor with no extra cost to the Department.
77. If there is any damage to the work due to natural calamities like flood or cyclone or any other cause during the course of execution of work or up to 6 months after completion of work or if any, imperfection becomes apparent to the work within 6 months from the date of final certificate of completion of work the contractor shall make good of all such damages at his own cost with no extra cost to the Department. No claims, whatsoever, in this regard will be entertained.
78. The Fly Ash Bricks should be well burnt and of good qualities. The bricks should be approved by the Engineer-in-Charge before use in the work and should conform to the minimum strength and other criteria as per National Building Code.
79. Under Section 1 of contract labour Regulation and Abolition Act 1970 the contractor who undertakes execution of work through labour should produce valid license from the licensing authority of labour Department.
80. Standard co-efficient for linear measurement will be adopted while calculating consumption of steel and no claim whatsoever regarding difference in co-efficient of steel will be entertained. The rates quoted shall be inclusive of any eventuality of difference for co-efficient for linear measurements.
81. Deleted
82. That for the purpose of jurisdiction in the event of disputes if any of the contract would be deemed to have been entered in to within the State of Odisha and it is agreed that neither party to the contract will be competent to bring a suit in regard to the matter by this contract at any place outside the State of Odisha.
83. **SPECIAL CONDITIONS (PART OF THE CONTRACT)**
 - (I) All materials before they are being used in the items of works as per this Schedule of quantities and also the finished items of work where tests are applicable shall have to be tested through the Engineer-in-charge of the respective wing at appropriate Laboratories according to the relevant I.S. specifications of the materials and the said items of works and the cost of all such tests shall have to be borne by the Contractor and the rates of the items of works should be inclusive of cost of such tests.
 - (II) The tests have to be planned & carried out such that the progress of work is not hampered

- (III) The tests are mandatory as per the prescribed frequencies and I.S. specifications. However, these are not exhaustive and the Engineer-in-charge has the right to prescribe other required test if any as will be considered from time to time.
- 84.** In case of ambiguity between clauses of this D.T.C.N. and the P-1 contract form, the relevant Clauses of the P-1 contract form shall prevail over the D.T.C.N. The clauses not covered under P-1 contract form shall be governed by the clauses of the D.T.C.N.
- 85.** It must be definitely understood that the Government does not accept any responsibility for the correctness and completeness of the trial borings shown in the Cross Section.
- 86.** Schedule of quantities is accompanied in Cover-II (Price Bid). It shall be definitely understood that the Government does not accept any responsibility for the correctness or completeness of this schedule and that this schedule is liable for alternation or omissions, deductions or alternations set forth in the conditions of the contract and such omissions, deductions, additions or alternations shall no way invalidate the contract and no extra monetary compensation, will be entertained.
- 87.** In case of any complaint by the labour working about the nonpayment or less payment of his wages as per latest minimum Wages Act, the Engineer-in-Charge will have the right to investigate and if the contractor is found to be in default, he may recover such amount due from the contractor and pay such amount to the labour directly under intimation to the local labour office of the Govt. The contractor shall not employ child labour. The decision of the Engineer-in-Charge is final and binding on the contractor.
- 88.** The contractor should arrange the materials like Steel, Cement, paint and bitumen etc. of approved quality and specification at his own cost for completion of the work with the time schedule. No extension of time will be granted on the application of the contractor due to delay in procurement of materials.
- 89.** The bidder will be responsible for the loss or damage of any departmental materials during transit and in the execution of the work due to reasons what-so-ever and the cost of such materials will be recovered from the bills at stock issue rates or market rates whichever is higher.
- 90.** If the contractor removes Government/ IDCO materials supplied to him from the site of work with a view to dispose of the same dishonestly, he shall be in addition to any other liability civil or criminal arising out of his contract be liable to pay a penalty equivalent to five times of the price of the materials according to the stock issue rate or market rate whichever is higher. The penalty so imposed shall be recovered at any time from any sum that may then or at any time thereafter become due to the contractor or from his security deposit or from the proceeds of sale thereof.
- 91.** The selected contractor may take delivery of Departmental / IDCO Supply according to his need for the work issued by the Engineering- in-charge subject to the availability of the materials. The tenderer shall make all arrangement for proper storages of materials but no cost for raising shed for storage, pay of security guard etc. will be borne by the IDCO. The IDCO is not responsible for considering the theft of materials at site. It is the contractor's risk. Under any such plea if the tenderer stops the work, he shall have to pay the full penalty as per clause of agreement.
- 92.** The IDCO will have the right to supply at any time in the interest of work any IDCO materials to be used in the work and the contractor shall use such materials without any controversy or dispute on that account. The rate of issue of such materials will be at the stock issue rates inclusive of storage charges or rates fixed by the IDCO or current market rate whichever is higher.
- 93.** All the materials which are to be supplied from IDCO STORE will be as per availability of stock and the contractor will have to bear the charges of straightening, cutting, jointing, welding etc. to required sizes in case of M.S. Rods or TOR Steel / M.S Angles, Tees and

Joists etc. After the issue from the IDCO store, the materials may be under the custody of the contractor and the contractor will be responsible for its safety and storage. Cut pieces of steel more than one meter in length will be returned by the contractor at the issuing stores without conveyance charges.

94. Though IDCO issue of cement and steel has indicated, it may not be taken as binding. The contractor must have to arrange by themselves cement, steel, bitumen and every sort of materials from approved manufacturer, get it tested in the approved Laboratory and approved by the Engineering-in-Charge before use. No extension of time or escalation of price on such account shall be entertained in future.
95. TOR rods, plates and structural members will be supplied in quantity, length and size available in the stock. For payment of reinforcement, the steel including plates etc. shall be measured in length of different diameter, size and specification as actually used (including hooks and cranks) in the work correct to an inch or cm. And their weight calculated as per sectional weight prescribed by the Indian Standard Specification or as directed by the Engineer-in-Charge (Wastage of bars and unnecessary lapping will not be considered for measurement and payment).
96. Deleted
97. The contractor is required to pay royalty to Govt. as fixed from time of time and produce such documents in support of their payment to the concerned Divisional Head with their bills, falling which the amount towards royalties of different materials as utilized by them in the work will be recovered from their bills and deposited in the revenue of concerned department.
98. Trial Boring - The foundation level as indicated in the body of the departmental drawing is purely tentative and for the general guidance only. The Department has no responsibility for the suitability of actual strata at the foundation level. The contractor has to conduct his own boring before starting the work and get the samples tested at his own cost to ascertain the S.B.C. and credibility of the strata at founding level while quoting his rates for tender the contractor shall take in to account of the above aspects.
99. Any defects, shrinkage or other faults which may be noticed within 12 (Twelve) months from the completion of the work arising out of defective or improper materials or workmanship timing are upon the direction of the Engineer-in-Charge to be amended and made good by the contractor at his own cost unless the Engineer for reasons to be recorded in writing shall be decided that they ought to be paid for and in case of default Department may recover from the contractor the cost of making good the works. The contractor is also required to maintain the road/ building for 12 (Twelve) months from the date of successful completion of the work.
100. From the commencement of the works to the completion of the same, they are to be under the contractors charge. The contractor is to be held responsible to make good all injuries, damages and repairs occasioned or rendered necessary to the same by fire or other causes and they hold the Govt. of Odisha/IDCO harmless for any claims for injuries to person or structural damage to property happening from any neglect, default, want of proper care or misconduct on the part of the contractor or any one in his employment during the execution of the work. Also no claim shall be entertained for loss due to earthquake, flood, cyclone, epidemic, riot or any other calamity whether natural or incidental damages so caused will have to be made good by the contractor at his own cost.
101. Gradation of ingredients: The coarse and fine aggregate shall meet the grade requirement as per the latest provision of relevant. I.S. Code / I.R.C. code / MoRT&H specifications.
102. Where it will be found necessary by the IDCO the Engineer-in-Charge of the work shall issue an order book to the contractor to be kept at the site of the work with pages serially numbered. Orders regarding the work whenever necessary are to be entered in this book by the IDCO. Officer-in-Charge with their dated signatures and duly noted by the contractor or

his authorized agents with their dated signature. Orders entered in this book and noted by the contractor's agent shall be considered to have been duly given to the contractor for following the instructions of the IDCO. The order Book shall be the property of the IDCO. and shall not be removed from the site of work without written permission of the **Divisional Head** and to be submitted to the Engineer-in charge every month.

103. The contractor should attach the certificate in token of payment deposit with the registration authority as per recent circular of the Government/IDCO relating to his registration.
104. In case of any discrepancy in printing or omissions of statutory specifications or any other part or portion of the approved document during download of the bid document, the decision of the officer inviting the bid will be binding on the bidder.
105. The rates quoted by the contractor shall cover the latest approved rates of Labours, Materials, P.O.L. and Royalties. Arrangement of borrow areas i.e. Land, Approach Road to the building site etc. are the responsibility of the contractor.
106. The rate for each work of concrete items wherever dewatering is imperatively necessary the term dewatering shall mean the execution or operation of the items due to standing water as well as due to percolation of water. The quoted rates will be inclusive of this.
107. The contractor shall make requisition of claim book from the date of commencement of the work from the IDCO and shall maintain in proper IDCO form with pages serially numbered in order to record items of works are not covered by his contract and claimable as extra. Claims shall be entered regularly in this book under the dated signature of the contractor or his duly authorized agents at the end of each month. A certificate should be furnished along with the claim to the effect that he has no other claim beyond this claim up-to-date. If in any month there are no claims to record, a certificate to that effect should be furnished by the contractor in the claim book. Each claim must be defined and should be given as far as possible regarding the quantities as well as the total amount claimed. The claim book must be submitted by the contractor regularly by 10th and 16th days of each month for orders of the Engineer-in-Charge or competent authority. Claims not made in this manner or the claim book not maintained from the commencement of the work is liable to be summarily rejected. The claim book is the property of the IDCO and shall be surrendered by the contractor to the Engineer-in-charge after completion of the work or before recession of the contract by the IDCO whichever is earlier for record.
108. Number of tests as specified in I.R.C. / MoRT&H / I.S.I specification required for the construction of roads / bridges / buildings or any other structural works will be conducted in IDCO Laboratory/Any National Laboratory /Lab of Govt. Engineering College & Polytechnic in Orissa as to be decided by the Engineer-in-charge. Testing charges including expenditure for collection / transportation of samples /specimens etc. will be borne by the contractor. The collection of samples and testing are to be conducted for both prior to execution and during execution as may be directed by the Engineer-in-charge and on both the accounts the cost shall be borne by the contractor.
109. Even qualified criteria are met, the bidders can be disqualified for the following reasons, if enquired by the Department
 - (a) Making a false statement or declaration.
 - (b) Past record of poor performance.
 - (c) Past record of abandoning the work half way/ recession of contract.
 - (d) Past record of in-ordinate delay in completion of the work.
 - (e) Past history of litigation.
110. In case the 1st lowest tenderer or even the next lowest tenderers withdraw in series one by one, thereby facilitating a particular tender for award, then they shall be penalized with

adequate disincentives with forfeiture of EMD unless adequate justification for such back out is furnished. Appropriate action for black listing the tenderers shall also be taken apart from disincentives against the tenderer. The following documents which are not submitted with the Bid, will be deemed to be part of the Bid:

111.

Sl. No	Particulars
1	Notice Inviting tender
2	Instruction to the Bidders
3	Conditions of Contract.
4	Contract data
5	Specifications
6	Drawings

112. Deleted

113. ELIGIBILITY CRITERIA:

To be eligible for tender, applicants shall furnish the followings documents. Non-furnishing of the following particulars shall be treated as ineligible.

a. **EMD: to be paid on-line / BG / FD as per the clause no. 20 Of DTCN**

b. **Tender Fee: to be paid on-line.as per the clause no. 04 Of DTCN**

c. Scanned copy of valid Registration Certificate/IDCO Vendor Registration, GST Registration Certificate, PAN card, EPF Certificate, EPF Latest Challan, along with the tender documents and the L-I bidder has to furnish the Original Registration certificate, GST Registration Certificate and Pan card, EPF Certificate, EPF Latest Challan, for verification within (5) Five days of opening of Cover-II of the tender before Chief General Manger (Civil) Bhubaneswar as per Clause No-1, 5(i) and 21 of DTCN& 15.1 of ITB.

d. License criteria as per Clause No.8 of DTCN and Schedule-J need to be furnished.

e. Evidence of ownerships of machineries/ equipments as per Clause No.7 of DTCN and need to be furnished by the bidder in Schedule-C.

f. Joint Ventures are not accepted.

g. The bidder should have successfully completed similar work of any Central/State of Govt./ Public Sector undertaking during current/ last **Five financial years** ending on the last date of month previous to the one in which tender invited, not less than the followings as noted below.

(i) **01 (One) Similar Completed work costing not less than 80% of work value (i.e Rs. 1042.00 Lakhs excluding GST) during the last five financial years.**

OR,

(ii) **02 (Two) Similar Completed work costing not less than 50% of work value (i.e Rs. 651.00 Lakhs excluding GST) during the last five financial years.**

OR,

(iii) **03 (Three) Similar Completed work costing not less than 40% of work value (i.e Rs. 521.00Lakhs excluding GST) during the last five financial years.**

Following enhancement factors will be used for the cost of works executed and the financial figures to a common base value for works completed in India.

Year before Multiplying factor

One	1.10 (25-26)
Two	1.21 (24-25)
Three	1.33 (23-24)
Four	1.46 (22-23)
Five	1.61 (21-22)

Certificates on the above completed works should be furnished by the bidder duly signed by the concerned Officer not below the rank of Executive Engineer or Divisional Head or Equivalent as per Schedule D indicating the components of the work executed to satisfy that the work completed is similar to the work now tendered. Similar nature of works means Project comprising of “**Construction of RCC frame structure with of Civil, Electrical, PH& completed in all respect under one agreement contract.**”

The bidder must have experience in Sports Infrastructure completed in all respect within Five Financial year (such as Athletic track / Football field / volley ball Court / Kabadi Court / Gym / Indoor Hall etc.) in India in the last 5 years, for any State / Central Govt. Department / PSU. Completion Certificates issued by the client must be furnished. All equipments shall be from the reputed and established manufacturers, conforming to relevant S&Y Department specifications. ”

OR

1. The Bidder shall furnish a Memorandum of Understanding (MoU) with Firm having experience in execution of **Sports related Infrastructure.**
2. The Firm should have successfully completed at least 1 (one) **Sports related Infrastructure** such as **Athletic track / Football field / vally ball Court / Kabadi Court / Gym / Indoor Hall etc.)** in India in the last 5 years, for any State / Central Govt. Department / PSU. Completion Certificates issued by the client must be furnished. **All equipments shall be from the reputed and established manufacturers, conforming to relevant S&Y Department specifications.**
3. The Specialist Firm shall submit an affidavit confirming that none of them as been blacklisted by any State Government, Central Government, PSU, or Sports Authority of India.
4. A copy of Regristation Certificate of Firm must be furnished

h. BID CAPACITY - (Vide Works Department Office Memorandum No.6300 dtd.16.6.2011)

Applicants who meet the minimum qualification criteria will be qualified only if their available bid capacity at the expected time of bidding is more than the total estimated cost of the works. The available bid capacity will be calculated as under.

Assessed Available Bid Capacity = $(A \times N \times 2 - B)$, where

A = Maximum value of works executed in any one year during the last five years (updated to the current price level) rate of inflation may be taken as 10% per year (escalation factor) which will taken into account the completed as well as works in progress.

B = Value of current price level of the existing commitments and ongoing works to be completed during the next years (period of completion of works for which Bids are invited).

N = Number of years prescribed for completion of the work for which the Bids are invited.

If the qualifying work is completed in the 05 (Five) year period specified above, even if it has been started earlier, the same will also be considered as meeting the qualifying requirements.

Note: In case of a Joint Venture the available Bid capacity will be applied for each partner to the extend of his proposed participation in the execution of the works.

The Statement showing the value of existing commitments and ongoing works as well as the stipulated period of completion remaining for each of the works listed should be countersigned by the Divisional Head or Executive Engineer.

- A bidder is liable to be disqualified, even though he meets the qualifying criteria, if he,
- Made misleading or false representations, statements and attachments submitted in proof of the qualification requirements, and/ or
 - Record of poor performance such as abandoning the works, not properly completing the supply order, inordinate delays in completion or supply, litigation history with IDCO, or financial failures etc.
 - If the Tenderer deliberately gives wrong information/ submit fake, false, fabricated, forged documents in his offer. IDCO reserves the right to reject such offer/ tender at any stage or to cancel the contract if awarded and forfeit the Security Deposit and any other money due.

Escalation Factor: Following enhancement factors will be used for the cost of works executed and the financial figures to a common base value for works completed in India.

Year before	Multiplying factor
One	1.10
Two	1.21
Three	1.33
Four	1.46
Five	1.61

(Applicant should indicate actual figures of costs and amounts for the works executed by them without accounting for the above mentioned factors)

In case the financial figures and value of completed works are in foreign currency the above enhanced multiplying factors will be applied. Instead, current market exchange rate(State Bank of India BC selling rate as on the last date of submission of the bid) will be applied for the purpose of conversion of amount in foreign currency into Indian rupees.

The information on Bid Capacity as on the date of this bid is to be furnished as per the format in Schedule-B.

Total value of Civil Engineering construction work performed in the last five years are to be furnished for which certificate from Chartered Accountant is to be furnished.

2021-2022 -----	2023-2024 -----	2025-2026 -----
2022-2023 -----	2024-2025 -----	

- Non submission of required information in schedule B,C, D, E , F, J,& L complete shape shall be treated as non-responsive and the bid shall be summarily rejected.
- The bidders to submit the CVs against the engineering personelles mentioned in the table at SI No. 66 . Non-submission of CVs shall be considered for rejection of the bid.

114. Time Control :- (Vide Works Department Office Memorandum No.24716 dtd.24.12.2005 and No.8310 dtd.17.05.2006)

113.1.1 Progress of work and Re-scheduling programme.

- The Divisional Head shall issue the letter of acceptance to the successful contractor. The issue of the letter of acceptance shall be treated as closure of the Bid process and commencement of the contract.
- Within 15 days of issue of the letter of acceptance, the contractor shall submit to the Divisional Head for approval a Programme showing the general methods, arrangements, and timing for all the activities in the Works along with monthly cash flow forecast.
- To ensure good progress during the execution of the work the contractors shall be bound in all cases in which the time allowed for any work exceeds one month to complete, 1/4th of the whole time allowed under the contract has elapsed, ½ of the

whole of the work before ½ of the whole time allowed under the contract has elapsed, 3/4th of the whole of the work before 3/4th of the whole time allowed under the contract has elapsed.

- iv) If at any time it should appear to the Divisional Head that the actual process of the work does not conform to the programme to which consent has been given the Contractor shall produce, at the request of the Divisional Head, a revised programme showing the modifications to such programme necessary to ensure completion of the works within the time for completion. If the contractor does not submit an updated Programme within this period, the Divisional Head may withhold the amount of 1% of the contract value from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Programme has been submitted.
 - v) An update of the Programme shall be a programme showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work including any changes to the sequence of the activities.
 - vi) The Divisional Head's approval of the Programme shall not alter the Contractor's obligations. The Contractor may revise the Programme and submit it to the Divisional Head again at any time. A revised Programme is to show the effect of Variations and Compensation Events.
- b) Extension of the Completion Date.**
- i) The time allowed for execution of the works as specified in the Contract data shall be the essence of the Contract. The execution of the works shall commence from the 15th day or such time period as mentioned in letter of Award after the date on which the Divisional Head issues written orders to commence the work or from the date of handing over of the site whichever is later. If the Contractor commits default in commencing the execution of the work as aforesaid, Government shall without prejudice to any other right or remedy available in law, be at liberty to forfeit the earnest money & performance guarantee / Security deposit absolutely.
 - ii) The Contractor shall submit the Time & Progress Chart for each milestone Quarter wise indicating each month and get it approved by the IDCO. The Chart shall be prepared in direct relation to the time stated in the Contract documents for completion of items of the works. It shall indicate the forecast of the dates of commencement and completion of various trades of sections of the work and may be amended as necessary by agreement between the Divisional Head and the Contractor within the limitations of time imposed in the contract documents, and further to ensure good progress during the execution of the work, the contractor shall in all cases in which the time allowed for any work, exceeds one month (save for special jobs for which a separate programme has been agreed upon) complete the work as per milestone given in contract data.
 - iii) In case of delay occurred due to any of the reasons mentioned below, the Contractor shall immediately give notice thereof in writing to the Divisional Head but shall nevertheless use constantly his best endeavors to prevent or make good the delay and shall do all that may be reasonably required to the satisfaction of the Divisional Head to proceed with the works.
 - (1) Force majeure, or
 - (2) Abnormally bad weather, or
 - (3) Serious loss or damage by fire, or
 - (4) Civil commotion, local commotion of workmen, strike or lockout affecting any of the trades employed on the work, or.
 - (5) Delay on the part of other contractors or tradesmen engaged by Divisional Head in executing work not forming part of the Contract.
 - (6) In case a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining work and which would cause the Contractor to incur additional cost, or
 - (7) Any other cause, which, in the absolute discretion of the authority mentioned, in Contract data is beyond the Contractors control.
 - iv) Request for reschedule and extension of time, to be eligible for consideration, shall be made by the Contractor in writing within fourteen (14) days of the happening of the

event causing delay. The Contractor may also, if practicable, indicate in such a request the period for which extension is desired.

- v) In any such case a fair and reasonable extension of time for completion of work may be given. Such extension shall be communicated to the Contractor by the Divisional Head in writing, within 3 months of the date of receipt of such request. Non-application by the contractor for extension of time shall not be a bar for giving a fair and reasonable extension by the Divisional Head and this shall be binding on the contractor.

c) Compensation for Delay.

Time is the essence of the contract. If the contractor fails to maintain the required progress in terms of clause-2 of P-1 Contract or to complete the work and clear the site on or before the contract or extended date of completion, he shall, without prejudice to any other right or remedy available under the law to the Chief General Manager (Civil) on account of such breach, pay as agreed compensation the amount calculated at the rates stipulated below as the Chief General Manager (Civil) (whose decision in writing shall be final and binding) may decide on the amount of tendered value of the work for every completed day / month (as applicable) that the progress remains below that specified in Clause-2 of P-1 Contract or that the work remains incomplete. This will also apply to items or group of items for which a separate period of completion has been specified. Compensation @ 1.5% per month of for delay of work, delay to be completed on per Day basis. Provided always that the total amount of compensation for delay to be paid under this condition shall not exceed 10% of the Tendered Value of work or to the Tendered Value of the item or group of items of work for which a separate period of completion is originally given. The amount of compensation may be adjusted or set-off against any sum payable to the Contractor under this or any other contract with the Chief General Manager (Civil). In case, the contractor does not achieve a particular milestone mentioned in contract data, or the rescheduled milestone(s) in terms of Clause-2.5, the amount shown against that milestone shall be withheld, to be adjusted against the compensation levied at the final grant of extension of time. Withholding of this amount on failure to achieve a milestone shall be automatic without any notice to the contractor. However, if the contractor catches up with the progress of work on the subsequent milestone(s), the withheld amount shall be released. In case the contractor fails to make up for the delay in subsequent milestone(s), amount mentioned against each milestone missed subsequently also shall be withheld. However no interest whatsoever shall be payable on such withheld amount.

d) Bonus for early completion

For availing incentive clause in any project which is completed before the stipulated date of completion, subject to other stipulations it is mandatory on the part of the concerned Divisional Head to report the actual date of completion of the project as soon as possible through fax or e-mail so that the report is received within 7 days of such completion by the concerned Chief General Manager & the Administrative Department. The incentive for timely, completion should be on a graduated scale of one percent to 05 percent of the contract value. Assessment of incentives may be worked out for earlier completion of work in all respect in the following scale.

Before 30 % of contract period = 5 % of Contract Value

Before 20 to 30 % of contract period = 4 % of Contract Value

Before 10 to 20 % of contract period = 3 % of Contract Value

Before 5 to 10 % of contract period = 2 % of Contract Value

Before 5% of contract period = 1 % of Contract Value

(Amendment to Para-3.5.5 (V) of Note-III of OPWD Code Vol.-I by inclusion

vide O.M. No.5288 dt.04.05.2016)

e) Management Meetings

- i) Either the Divisional Head or the Contractor may require the other to attend a management meeting. The business of management meetings shall be to review the plans for remaining work and to deal with matters raised in accordance with the early warning procedure.
- ii) The Divisional Head shall record the business of management meetings and is to provide copies of his record to those attending the meeting and to the Employer. The

responsibility of the parties for actions to be taken to be decided by the Divisional Head either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.

Rescission of Contract (Amendment as per letter No.10639 dt.27.05.2005 of Works Department, Odisha):- To rescind the contract (of which rescission notice in writing to the contractor under the hand of the Executive Engineer shall be conclusive evidence), 20% of the value of left over work will be realized from the contractor as penalty.

- 115. Building and other Construction Workers Welfare Cess @ 1% of the estimated cost as per tender notification read with latest corrigendum if any will be proportionately deducted from the contractor's bill at the time of making payment of each bill.
- 116. The tenderers are required to go through each clause of P.W.D. Form P-1 carefully in addition to the clauses mentioned here in before tendering.
- 117. A Contractor may be black listed as per amendment made to Appendix XXXIV to OPWD Code Vol.-II on rules for black listing of Contractors vide letter no.3365 dt.01.03.2007 of Works Department, Odisha.

As per said amendment a Contractor may be blacklisted

- a) Misbehavior/threatening of Departmental & supervisory officers during execution of work/tendering process.
 - b) Involvement in any sort of tender fixing.
 - c) Constant non-achievement of milestones on insufficient and imaginary grounds and non-adherence to quality specifications despite being pointed out.
 - d) Persistent and intentional violation of important conditions of contract.
 - e) Security consideration of the State i.e. any action that jeopardizes the security of the State.
 - f) Submission of false/ fabricated / forged documents for consideration of a tender.
- 118. The safety certificate of the E.I. work will be furnished by the agencies after getting necessary verification from the electrical inspector / equally competent authority responsible for the work prior to Energisation of the building.
 - 119. Percentage rate contract (vide Works Department letter no.8310 dt.17.05.2006) In case of percentage rate tender:-
 - i) The Contractor has to mention percentage excess or less over the estimated cost (In figures as well as words) in the prescribed format appended to the tender document.
 - ii) DELETED
 - iii) Only percentage quoted shall be considered. Percentage quoted by the Contractor should be accurately filled-in figures and words, so that there is no discrepancy.
 - (1) If any discrepancy is found in the percentage quoted in words and figures, then the percentage quoted by the Contractor in words shall be taken as correct
 - (2) If any discrepancy is found in the percentage quoted in percentage excess/ less and the total amount quoted by the Contractor, then percentage will be taken as correct.
 - (3) The percentage quoted in the tender without mentioning excess or less and not supported with the corresponding amount will be treated as excess.
 - (4) The percentage quoted in the tender without mentioning excess / less supported with corresponding amount does not tally with either to percentage excess or less then it will be treated as percentage excess.
 - (5) The percentage quoted in the tender without mentioning excess / less supported with corresponding amount if tallied with the percentage then it will be treated as to which side the amount tallies.
 - (6) The Contractor will write percentage excess/ less up to two decimal points only.

- (7) The tender shall be written legibly and free from erasures, over writings or corrections of figures. Corrections, over writings & interpolations where unavoidable should be made by making out, initialing, dating and rewriting.
- iv) In the contract P1 time is the essence. The contractor is required to maintain a certain rate of progress specify in the contract.
- v) The quantity mentioned can be increased or reduced to the extent of 10% for individual items subject to a maximum of 5% over the estimated cost. If it exceeds the limit stated above prior approval of competent authority is mandatory before making any payment.
- vi) The period of completion is fixed and cannot be altered except in case of exceptional circumstances with due approval of next higher authority.
- vii) Bills for percentage rate tenders shall be prepared at the estimated rates for individual items only and the percentage excess or less shall be added or subtracted from the gross amount of the bill.

120. Mobilisation Advance

For value of work more than Rs.10.00 crore, Mobilization Advance not exceeding 10% of the tender Value may be given if requested by contractor in writing within one month of order to commence the work. Such advance shall be in two installments. The second installments shall be released by the Engineer in charge only after the contractor furnishes proof of the satisfactory utilization of the earlier installment. Before any installment of advance is released the contractor shall execute a Bank Guarantee Bond from schedule bank for an amount equal to 110% of the amount of advance & valid for the contract period. This (Bank Guarantee from schedule Bank for the amount equal to 110% of the balance amount of advance) shall be kept renewed from time to time to cover the balance amount and likely period of complete recovered. The mobilization advance will bear simple interest of 10% per annum and shall be calculated from the date of payment to the date of recovery, both days inclusive on the outstanding amount of advance. Recovery of such sums advance shall be made by deduction from the contractors bill commencing after first 10% of the gross value of the work is executed & paid, on pro-rata **percentage** basis to the gross value of the work billed beyond 10% in such a way that the entire advance is recovered by the time 80% of the gross value of the contract is executed & paid.

120.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 IDCO, Bhubaneswar 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 IDCO, the premium of such further

sum being allowed to the Contractor as an authorized extra. Such policy shall cover the property of the IDCO 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 IDCO within Twenty-one days from the date of signing the contract unless otherwise instructed by IDCO. In default of the Contractor insuring as provided above, IDCO 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 IDCO 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 IDCO (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.

121. Restrictions on Public Procurement from bidders of certain countries.

1. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority.
2. "Bidder" (including the term "tenderer" 'consultant or 'service provider in certain contexts) means any person or firm or company 'including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated herein before ,including any agency branch or office controlled by such person, participating in a procurement process.
3. "Bidder from a country which shares a land border with India" for the purpose of this order means.
 - a. An entity incorporated ,established or registered in such country, or
 - b. A Subsidiary of an entity incorporated ,established or registered in such country; or
 - c. An entity Substantially Controlled through entities incorporated ,established or registered in such country; or
 - d. An entity whose beneficial owner is situated in such country; or
 - e. An Indian (or other) agent of such country; or
 - f. A natural person who is citizen of such a country; or

- g. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above.

The successful bidders shall not be allowed to sub contract works to any contractor from a country which shares a land border with India unless such contractors is registered with Competent Authority.

The bidders are required to submit undertaking to this effect in - From-8

(Total 121 clauses)

**Sd/-
Chief General Manager (Civil)
IDCO, Bhubaneswar**

TECHNICAL SPECIFICATION

GENERAL:

All items of Works will be executed as per the specification mentioned in the respective items/ as per relevant IS codes with latest revision/ as directed by the Engineer-in-charge. The bidders are to submit all the sample of the materials to be used and get it approved before execution of the item of work.

TECHNICAL SPECIFICATION OF CIVIL PORTION OF WORK

Materials of following specification are to be used in work. The Tenderers are expected to possess and be well conversant with the following IS standard and code of practice.

1.	Cement	Only Ordinary Portland Cement and Portland Slag cement are to be used. The grade of Portland Cement is to be decided by the Engineer-in-Charge. 53 grade Ordinary Portland Cement confirming to IS:12669 or Portland Slag Cement confirming to IS:455 is to be used in RCC works. For other work, the grade of Ordinary Portland Cement will be decided by the Engineer-in-Charge. Portland Slag Cement confirming to IS:455 can be used in any type of work.
2.	Steel	I.S. 432 (Plain) and I.S.: 1786 (Tor) :Fe 500
3.	Vibrator	I.S. 7246
4.	Aggregate	I.S. 383, I.S. 515
5.	Water for mixing and curing	Shall be clean, free from injurious amount of oil, salt, acid, vegetable materials and other substances and harmful to concrete in conformity to I.S. 456 and I.S. 2025.
6.	Sand/ Fine Aggregate	I.S. 2116, 383
7.	Binding wire	I.S. 280 (galvanised minimum 1 mm)
8.	Rain water pipe	I.S. 2527
9.	Construction joints	I.S. 3414
10.	Steel Window Frame	I.S. 1038/83
11.	Steel Door Frame	I.S. 4351/75
12.	Fitting & Fixtures for joinery works	Conforming to I.S. 7452/82 strictly conform to I.S. specification and as per direction of Engineer-in-Charge.

Note : For road work (Approach Road) specification as per road and bridges (latest edition) published by I.R.C & M.O.S.T. shall be followed. In case of any doubt and absence of provision, regarding specification I.S. shall be referred (Indian standard).

<u>LIST OF MAKES-CIVIL FINISHES</u>					
SL NO	DESCRIPTION	VENDOR			
1	CEMENT	DALMIA/KONARK/JSW	ULTRATECH	ACC	
2	STEEL	SAIL	TATA TISCON	SHYAM STEEL	
3	VITRIFIED TILE	SOMANY / JOHNSON	KAJARIA	NITCO	OASIS
4	CERAMIC TILE	SOMANY / JOHNSON	KAJARIA	NITCO	OASIS
5	INTORLOCKING CONCRETE BLOCK	ULTRATECH	EUROCON		PAVIT
6	WALL PUTTY	BIRLA	JK WALL PUTTY		DALMIA
7	PLASTIC EMULSION PAINTS	ASIAN	ICI (DULUX)		BERGER
8	WEATHER COAT PAINTS LOW VOC	ASIAN	ICI (DULUX)		BERGER
9	ENAMEL PAINT	ASIAN	ICI (DULUX)		BERGER
10	TEXTURE PAINT	ASIAN	ICI (DULUX)		BERGER
11	EPOXY PAINT	ASIAN	ICI (DULUX)		BERGER
12	WATER PROOFING	SIKA	FOSROC		PIDLITE/ICI/ MYK ARMNET
13	MS/SS SECTION	SAIL	TATA TISCON		
14	UPVC WINDOW/DOOR	FENISTA	DUROPLAST		NCL VEKA LTD
15	FLUSH DOOR	MERINO	CENTURY		SYLVAN
16	LAMINATE	GREEN	CENTURY		MERINO
17	LOCK/HANDLE / HARDWARE	DORMA	HAFFLLE		
18	GLASS	SAINT GOBAIN /	GOLD PLUS		ASAHI
19	EPOXY GROUT	MYK	SIKA		ASIAN
20	POLY CARBONET SHEET	DPI DAY LIGHTING	GE		TATA BLUESCOPE
21	LAMINATED FLUSH DOOR	GUNTIER	MERINO		SONEAR
22	GLASS REINFORCEMENT CONCRETE	UNISTONE	BIRLA		ULTRA TECH
23	PVC FLOORING	CCL	GERFLOR		
24	HPL BOARD	MERINO	GREEN		
25	CEMENT FIBER BOARD	SHERA	EVEREST		BISON
26	EXPANSION JOINT	FOSROC	MYK ARMNET		BASF
27	Bolts, Screws (SS-316)	HILTI	FISCHER		QUIVALENT
28	Tiles Adhesive and grout	FOSROC	ARDEX ENDURA		BASF

ITEM OF WORK

1. Concrete shall be with conformity to I.S.456.
2. Foundation shall be with conformity to I.S.1080.
3. Stone masonry (R.R.) shall be with conformity to I.S.1597 (Part-I)
4. C.R. Masonry shall be with conformity to I.S.1597.
5. Brick masonry shall be with conformity to I.S.2212.
6. Cement plastering shall be with conformity to I.S.9103 & 6925.
7. Mortar shall be with conformity to I.S.2250
8. White and colour washing shall be with conformity to I.S.6278.
9. CC in foundation shall be with conformity to I.S.2571.
10. Anti-Termite Treatment shall be with conformity to I.S.6813. (Part – I & Part – II)
11. Painting to all surfaces shall be with conformity to I.S.2395 (Part – I & Part – II)
12. DPC shall be with conformity to I.S.3067
13. Tarfelt treatment shall be with conformity to I.S.1346
14. Mosaic flooring with conformity to I.S.2114
15. Steel painting shall be with conformity to I.S.1477 (Part – I & Part – II) I.S.1661

TECHNICAL SPECIFICATIONS OF P.H. PORTION OF WORK

(Internal & External PH Engg. Works)

- 1.1 **GENERAL INSTRUCTIONS:** The detailed specifications given herein after are for the items that are required for the works described in the schedule of quantities attached herein, and shall be guidance for proper execution of work to the required standards. It may also be noted that the specifications are of generalized nature and these shall be read in conjunction with the description of item in schedule of quantities and drawings. The work also includes all minor details of construction which are obviously and fairly intended and which may not have been referred to in these documents but are essential for the entire completion in accordance with standard Engineering practice.

Unless specifically otherwise mentioned all the applicable latest codes and standards published by the Indian Standard Institution and all other standards shall govern in all respects of design, workmanship, quality and properties of materials and methods of testing, method of measurements etc. Wherever any reference to any Indian Standard Specification occurs in the documents relating to this contract, the same shall be inclusive of all amendments issued there to or revisions thereof, if any. In case there is no I.S.I specification for the particular work, such work shall be carried out in accordance with the instructions in all respects, and requirements of the Engineer-in-charge. The work shall be carried out in a manner complying in all respects with the requirements of relevant bye-laws of the Municipal Committee/Municipal Corporation/Development Authority/Improvement Trust etc. under the jurisdiction of which the work is to be executed or as directed by the Engineer-in-charge and, unless otherwise mentioned, nothing extra shall be paid on this account.

Samples of various materials, fittings etc proposed to be incorporated in the work shall be submitted by the contractor for approval of the Engineer-in-charge before order for bulk supply is placed.

The contractor shall take instructions from the Engineer-in-charge regarding collection and stacking of materials in any place. No excavated earth or building materials shall be stacked on areas where other buildings, roads, services, compound walls etc are to be constructed.

The contractor shall maintain in perfect condition all works executed till the completion of the entire work allotted to him. Where phased delivery is contemplated, this provision shall apply to each phase.

The contractor shall give a performance test of the entire installation(s) as per standard specifications before the work is finally accepted and nothing extra whatsoever shall be payable to the contractor for the test.

The contractor shall clear the site thoroughly of all debris, surplus excavated materials and rubbish etc. left out of his work and dress the site around the building to the satisfaction of the Engineer-in-charge before the work is considered as complete.

The Chief General Manager (Civil) Idco. shall be the sole deciding authority as to the meaning, interpretations and implications for various provisions of the specifications and his decision in writing shall be final and binding on all concerned.

In case any difference or discrepancy between the specifications and the description in the schedule of quantities, the schedule of quantities shall take precedence. In case of any difference or discrepancy between specifications and drawing, the specifications shall take precedence. In case any difference or discrepancy between the specifications for Civil works and specification for Public Health Engg. Works, specifications for Civil works shall take precedence.

1.2 LIST OF INDIAN STANDARDS

The following IS codes shall be referred in execution of PH Engineering works

Indian Standard	Reaffirmation	Subject
269-1989	Reaffirmed 2004	Specifications for 33 grade Ordinary Portland Cement
4985		PVC pipes for portable water supply
456-2000	--	Code of practice for Plain & Reinforced concrete
458-2003	--	Specifications for Concrete pipes
10124	--	Fabricated PVC fittings for Portable water supply
636-1988	Reaffirmed 2003	Firefighting hose, rubber lined or fabric reinforced rubber lined woven jacketed
638-1979	Reaffirmed 2003	Sheet rubber jointing & rubber insertion jointing
12235		Methods of tests for unplasticized PVC pipes for portable water supplies.
ASTM D-2467		SCH80 uPVC fittings
1068		Electroplated coatings for nickel and chromium on iron steel and brass fittings.
13592		Codes of Practice for uPVC SWR pipes.
771-1979(P-III)	Reaffirmed 2003	Specific requirements of urinals
771-1985(P-III)	Reaffirmed 2000	Specific requirements of urinals
5329		Code of practice for sanitary pipe work above ground for Building.
2556		Various sanitary appliances.
14735		uPVC SWR pipe fittings.
781		Sand cast brass screw down bib taps & stop taps for water services.
774-1984	Reaffirmed 2000	Flushing cistern for water closet & urinals

Indian Standard	Reaffirmation	Subject
775-1970	Reaffirmed 2000	Cast iron brackets and supports for wash basin and sink
5382		Rubber rings
1172 & 5329		Testing of Pipeline and fixtures of Plumbing of Building
781-1984	Reaffirmed 2001	Specifications for cast copper alloy screw down bib taps & stop cocks for water services
1742		Code of Practice for Building drainage.
783-1985	Reaffirmed 2001	Code of practice for laying concrete pipes
784-2001	Reaffirmed 2002	Pre-stressed concrete pipes
884-1985	Reaffirmed 2000	Fire aid hose reel for firefighting (for fixed installation)
901-1988	Reaffirmed 2003	Specification for couplings, double males & double female, instantaneous pattern for fire fighting
902-1992	--	Specification for suction hose couplings for firefighting purpose
903-1993	Reaffirmed 2003	Couplings for fire hose delivery, branch pipe, nozzles specification
904-1983	Reaffirmed 2000	Specification for 2 way & 3-way suction collecting heads for firefighting purposes
905-1980	Reaffirmed 2002	Specification for delivery breechings, dividing and collecting instantaneous pattern for fire fighting
906-1988	Reaffirmed 2000	Specification for revolving branch pipe for fire fighting
907-1984	Reaffirmed 2000	Specification for suction strainer, cylindrical type for fire fighting
908-1975	Reaffirmed 2000	Fire hydrants, stand post type
909-1992	Reaffirmed 2002	Specifications for underground fire hydrants sluice valve type
940-1989	--	Portable fire extinguisher, water type (Gas cartridge)
941-1985	Reaffirmed 2000	Specification for blower and exhaustor for fire fighting
1172-1993	Reaffirmed 2002	Code of basic requirements for water supply, drainage and sanitation

Indian Standard	Reaffirmation	Subject
1200-1979(P-16)	Reaffirmed 2002	Method of measurements for laying of water and sewer lines including appurtenant items
1200-1981(P-19)	Reaffirmed 2002	Method of measurement for water supply, plumbing and drains
2963		Non Ferrous Waste fittings for Wash basin & Sink
3311		Waste coupling and its accessories for its wash basin.
1300-1994	Reaffirmed 2000	Phenolic moulding material specification
5434		Nonferrous alloy Bottle trap
1703-2000		Ball valve (horizontal plunger type) including floats for water supply
1711-1984	Reaffirmed 2000	Self-dosing taps
1726-1991	Reaffirmed 2003	Cast iron manhole covers and frames
1742-1983	Reaffirmed 2002	Code of practice for building drainage
1795-1982	Reaffirmed 2000	Pillar taps for water supply purpose
1979-1985	Reaffirmed 2002	Specification for high test line pipe
2065-1983	Reaffirmed 2001	Code of practice for water supply in buildings
2097-1983	Reaffirmed 2000	Specification for foam making branch pipe

Indian Standard	Reaffirmation	Subject
2104-1981	Reaffirmed 2003	Water meter boxes (domestic type)
2171-1999	--	Specification for portable fire extinguisher, dry powder
2190-1992	Reaffirmed 2002	Code of practice for selection, installation & maintenance of portable first aid fire extinguisher
2267-1995	Reaffirmed 2000	Polystyrene moulding and extension materials
2326-1987	Reaffirmed 2003	Automatic flushing cistern for urinals
2379-1990	Reaffirmed 2000	Color code for identification of pipe lines
2401-1973	Reaffirmed 2003	Code of practice for selection, installation & maintenance of domestic water meters
2470-1985 (P-I)	Reaffirmed 2001	Design criteria and construction
2527-1984	Reaffirmed 2000	Code of practice for fixing rain eater gutters and down pipe for roof drainage
2546-1974	Reaffirmed 2000	Specification for galvanized mild steel fire bucket
2548-1996(P-I)	Reaffirmed 2002	Plastic water closet seats and covers
2548-1996(P-II)	Reaffirmed 2002	Plastic water closet seats and covers
2556 (P I to XV)	--	Specification for vitreous (vitreous china) sanitary appliances
2556-1994 (P-I)	Reaffirmed 2004	General requirements
2556-1994 (P-II)	Reaffirmed 1999	Specific requirements of wash down water closets
2556-2004 (P-III)	--	Specific requirements of squatting pans
2556-2004 (P-IV)	--	Specific requirements of wash basins

Indian Standard	Reaffirmation	Subject
2556-1995 (P-VI)	Reaffirmed 2003	Specific requirements of urinals & partition plates
2556-1995(P-VII)	Reaffirmed 2003	Specific requirements of accessories for sanitary appliances
2556-1995(P-VIII)	Reaffirmed 1998	Specific requirements of pedestal close coupled & wash down and symphonic water closets
2643-1999	--	Type threads where pressure tight joints are not mase on the threads dimension, tolerances and designation
2692-1989	Reaffirmed 2003	Specifications for ferrules for water services
2871-1983	Reaffirmed 2000	Specification for branch pipe, universal, for firefighting purpose
2878-2004	--	Fire extinguisher, carbon dioxide type (portable and trolley mounted) specification
2951 (P I to II)	--	Recommendation for estimate of flow of liquids in closed conduits
2951-1965 (P-I)	Reaffirmed 2003	Head loss in straight pipes due to frictional resistance
2951-1965 (P-II)	Reaffirmed 2003	Head loss in valves & fittings
3076-1985	Reaffirmed 2003	Low density polyethylene pipes for portable water supply
ASTM D-2846		CPVC fittings
3311-1979	Reaffirmed 2003	Water plug & its accessories for sinks and wash basins
3328-1993	Reaffirmed 2003	Quality tolerance for water for swimming pools
3389-1994	Reaffirmed 2000	Urea formaldehyde moulding materials
ASTM D-2467		uPVC fittings SCH 80

Indian Standard	Reaffirmation	Subject
ASTM D - 2564		Solvent cement of uPVC
15778-2007 ASTM D 2846 class 1	--	SDR 11 CPVC pipe of Working Pressure 28.1 kg cm ² at 23 °C & 7 kgcm ² at 82 Degree C.
3597-1998	--	Method of test for concrete pipes
3844-1989	Reaffirmed 2000	Code of practice for installation & maintenance of internal fire hydrants hose reels in premises
3950-1979	Reaffirmed 2003	Specification for surface boxes for sluice valve
3989-1984	Reaffirmed 2000	Centrifugally cast (spun) iron spigot and socket soil, waste and ventilating pipes, fittings & accessories
4038-1986	Reaffirmed 2000	Foot valves for water works purposes
4111 (P I to V)		Code of practice for ancillary structures in sewage system
4111-1986 (P-I)	Reaffirmed 2001	Manholes
4111-1986 (P-II)	Reaffirmed 2001	Flushing tanks
4111-1986 (P-III)	Reaffirmed 2001	Inverted siphon
4111-1986 (P-IV)	Reaffirmed 2001	Pumping stations & pumping mains (rising mains)
4111-1986 (P-V)	Reaffirmed 2004	Tidal out falls
4120-1967	Reaffirmed 2000	Tubs & baths
4127-1983	Reaffirmed 2001	Code of practice for laying of glazed stone ware pipes
4308-2003	--	Dry chemical powder for firefighting B & C class fires specification
4350-1967	Reaffirmed 2001	Specification for concrete porous pipes for under drainage
4733-1972	Reaffirmed 1992	Methods of sampling & test for sewage effluents
4736-1986	Reaffirmed 2001	Specification for hot dip zinc coating on mild steel tubes
4854 (P I to III)		Glossary terms for valves and their parts

Indian Standard	Reaffirmation	Subject
1854-1969 (P-I)	Reaffirmed 1999	Screw down stop, check & gate valves & their parts
4854-1968 (P-II)	Reaffirmed 1999	Plug valves & cocks & their parts
4854-1974 (P-III)	Reaffirmed 1999	Butterfly valves
4927-1992	Reaffirmed 2002	Unlined flax canvass hose for fire fighting
4947-1985	Reaffirmed 2000	Specification for gas cartridge for use in fire extinguishers
4984-1995	Reaffirmed 2002	Specification for HDPE pipes for water supply
4985-2000	--	Specification for unplasticised PVC pipes for potable water supplies
5290-1993	Reaffirmed 2003	Specification for landing valves
5312 (P-I)	--	Swing check type reflux (non return) valve
5312-1984 (P-I)	Reaffirmed 2000	Reflux (non-return) valves single door pattern
5329-1983	Reaffirmed 2001	Code of practice for sanitary pipe work above ground for building
5330-1984	Reaffirmed 2000	Criteria for design for anchor blocks for pen stocks with expansions joints
5382-1985	Reaffirmed 2003	Specification for rubber sealing rings for water, gas & sewer mains
5455-1969	Reaffirmed 2003	Cast iron steps for manholes
5600-2002	--	Specification for sewage and drainage pumps
5611-1987	Reaffirmed 2002	Code of practice for waste stabilization ponds (facultative type)
5714-1981	Reaffirmed 2002	Specifications for hydrant stand pipe for fire fighting
5822-1994	Reaffirmed 2004	Code of practice for laying of welded steel pipes for water supply
5961-1970	Reaffirmed 2003	Specifications for cast iron grating for drainage purpose
6234-2003	--	Portable fire extinguisher water type (stored pressure) specification
6279-1971	Reaffirmed 2001	Equipment for grit removal

Indian Standard	Reaffirmation	Subject
6280-1971	Reaffirmed 2001	Sewage screens
6295-1986	Reaffirmed 2001	Code of practice for water supply & drainage in high altitude &/or subzero region
6392-1971	Reaffirmed 1998	Steel pipe flanges
6411-1985	Reaffirmed 2000	Specification for gel coated glass fiber reinforced polyester resin bath tubs
6494-1988	Reaffirmed 2000	Code of practice for water proofing of underground water tanks
7231-1994	Reaffirmed 2004	Specifications for plastic flushing cisterns for w.c.& urinals
7558-1974	Reaffirmed 2001	Code of practice for domestic hot water installation
7634 (P I to III)		Code of practice for plastic pipe work for potable water supplies
7634-1975 (P-I)	Reaffirmed 2002	Choice of materials & general recommendations
7634-1975 (P-III)	--	Laying & jointing unplasticised PVC pipes
7740-1985	Reaffirmed 2001	Code of practice for road gullies
7834 (P I to VIII)		Injection moulded PVC socket fittings with solvent cement joints for water supplies
7834-1987 (P-I)	Reaffirmed 2003	General requirements
7834-1987 (P-II)	Reaffirmed 2003	Specific requirements for 45 elbows

Indian Standard	Reaffirmation	Subject
7834-1987 (P-III)	Reaffirmed 2003	Specific requirements for 90 elbows
7834-1987 (P-IV)	Reaffirmed 2003	Specific requirements for 90 tees
7834-1987 (P-V)	Reaffirmed 2003	Specific requirements for 45 tees
7834-1987 (P-VI)	Reaffirmed 2003	Specific requirements for sockets
7834-1987 (P-VII)	Reaffirmed 2003	Specific requirements for unions
7834-1987 (P-VIII)	Reaffirmed 2003	Specific requirements for caps
8008 (P I to VII)		Injection moulded HDPE fittings for potable water supplies
8008-2003 (P-I)	--	General requirements for fittings
8008-2003 (P-II)	Reaffirmed 1997	Specific requirements for 90 bends
8008-2003 (P-III)	--	Specific requirements for 90 tees
8008-2003 (P-IV)	--	Specific requirements for reducers
8008-2003 (P-V)	--	Specific requirements for ferrule reducers
8008-2003 (P-VI)	--	Specific requirements for pipe ends
8090-1976	Reaffirmed 2000	Coupling, branch pipe, nozzle used in hose reel tubing for fire fighting

Indian Standard	Reaffirmation	Subject
8413 (P-I)		Requirements for biological treatment equipment
8413-1977 (P-I)	Reaffirmed 2001	Trickling filter
8835-1978	Reaffirmed 1999	Guideline for planning and design of surface drains
8931-1993	Reaffirmed 2003	Specifications for copper alloys fancy single taps, combination tap assembly & stop valves for water services
9140-1996	Reaffirmed 2002	Method of sampling of vitreous & fire clay sanitary appliances
9338-1984	Reaffirmed 2000	Specification for cast iron screw down stop valves and stop & check valves for water works purpose
9668-1990	Reaffirmed 2000	Code of practice for provision and maintenance of water supplies for fire fighting
9739-1981	Reaffirmed 2003	Specifications for pressure reducing valves for domestic water supply system
9758-1981	Reaffirmed 2003	Flush valves and fittings for water closets & urinals
9762-1994	Reaffirmed 2004	Specifications for polyethylene floats for float valves
10221-1982	Reaffirmed 1997	Code of practice for coating and wrapping of underground MS steel pipeline
11108-1984	Reaffirmed 2000	Specification for portable fire extinguisher halon 1211 type
11606-1986	Reaffirmed 2000	Method of sampling of cast iron pipes and fittings
12183-1987(P-I)	Reaffirmed 2004	Code of practice for plumbing in multi storied buildings (for water supply)
12231-1987	Reaffirmed 2003	UPVC pipes for section & delivery lines of agricultural pumps

Indian Standard	Reaffirmation	Subject
12235-1986	Reaffirmed 1998	Method of test for UPVC pipe for potable water supply
12288-1987	Reaffirmed 2002	Code of practice for use and laying of ductile iron pipes
12469-1988	Reaffirmed 2002	Specifications for pumps
12592-2002	--	Precast concrete frame & cover (SFRC frame & cover)
12701-1996	Reaffirmed 2002	Specifications for rotational moulded polyethylene water storage tanks
12709-1994	Reaffirmed 2004	Glass fiber reinforce plastic (GRP) pipes, joints & fittings for use for potable water supply specification
12820-1989	Reaffirmed 1999	Dimensional requirements of rubber gaskets for mechanical joints & push in joints for use with cast iron pipes & fittings for carrying water, gas & sewage
13095-1991	Reaffirmed 2003	Butterfly valves for general purpose
13382-2004	--	Cast iron specials for mechanical & push on flexible joints for pressure pipelines for water, gas & sewage
13592-1992	Reaffirmed 2002	Specifications for PVC soil, waste & rain water (SWR) including ventilation pipes
13593-1992	Reaffirmed 2002	UPVC pipes fittings for use with section and delivery lines for agricultural pumps specification
13916-1994	Reaffirmed 2004	Code of practice for installation of GRP piping system
13983-1994	Reaffirmed 2004	Specifications for stainless steel kitchen sinks & drain boards for domestic purpose
14333-1996	Reaffirmed 2001	Specifications for HDPE pipes for sewerage system
14402-1996	Reaffirmed 2001	GRP pipes, joints & fittings specification
14735-1999	Reaffirmed 2004	UPVC injection moulded fittings for UPVC SWR pipes specification
14845-2000	Reaffirmed 2004	Resilient seated cast iron air relief valves for water works purposes specification
14846-2000		Specifications for sluice valve for water works purpose (50 to 1200mm size)
15265-2003		Specifications for flexible PVC pipes or polymer reinforcement thermoplastic hoses for suction and delivery lines for agricultural pumps

Indian Standard	Reaffirmation	Subject
15328-2003		UPVC non pressure pipes for use in underground drainage and sewerage system specification
15450-2004		Polyethylene/aluminum/polyethylene composite pressure pipes for hot and cold water supplies specification

1.3 MINIMUM WEIGHT OF MOST COMMONLY USED SANITARY APPLIANCES & WATER FITTINGS:

The minimum unit weight of each fitting shall not be less than as given in the following table and tolerance for weight shall be as per relevant IS codes.

SI	Description of items	Nominal size / thickness	IS code	Minimum unit weight
1	Brass non fancy type bib tap please see table under relevant item for other sizes	15mm	781-1984	400 Grams
2	C.P brass fancy type bib tap	15mm	8931-1993	550 Grams
3	Brass non fancy types stop cock internally threaded	15mm	781-1984	330 Grams
4	Brass non fancy types stop cock externally threaded	15mm	781-1984	400 Grams
5	C.P brass fancy types stop cock	15mm	8931-1993	550 Grams
6	C.P brass concealed typed stop cock	15mm	8931-1993	750 Grams
7	C.P brass fancy pillar tap	15mm	1795-1982	650 Grams
8	C.P brass waste coupling	32mm	3311-1979	200 Grams
9	C.P brass waste coupling	40mm	3311-1979	250 Grams
10	C.I Nahani trap 165mm inlet	75mm outlet	1729-2002 /3989-1984	6.5 kg
11	C.I floor trap 100mm inlet	75mm outlet	1729-2002 /3989-1984	4.8 kg
12	C.I Nahani trap with 20mm water seal	65mm outlet	Non ISI	4.5 kg
13	Cast iron surface box for sluice valve rectangular shape		3950-1979	33 kg

3.0 SANITARY INSTALLATION

3.1 INDIAN WATER CLOSET

3.1.01 GENERAL: The item pertains for providing white or color glazed vitreous chinaware Indian water closet of size and color as specified in the schedule including fixing.

3.1.02 MATERIAL: Squatting pan (Orissa Pattern) is of white or color glazed vitreous china conforming to IS 2556 part III 2004. Pan shall have flushing rim and are inlet of self- draining type. It shall have weep holes at the following inlet to the pan. The flushing inlet shall be in front unless otherwise specified. The inside of the bottom of the pan shall have sufficient slope from the front to the outlet and surface shall be uniform and smooth to enable easy quick disposal while flushing. The exterior surface of the outlet below the flange shall be an unglazed surface which shall have groove at right angle to the axis of the outlet. In all the cases pan shall have be provided with 110mm P trap uPVC SWpipe(IS 14735.)

3.1.03 FIXING: The water closet pan shall be placed in position as shown in the drawing. The uPVC SW “P” trap shall be fixed on the floor with C.M.1:3,placing around the” P“ trap. Then IWC shall be supported on loose brick & then P.C.C.1:4:8 using hard Granite metal 4cm Nominal size shall be placed under the IWC & shall be perfectly compacted surround the below the IWC, complete or as directed by the Engineer-in-charge. The pan shall be fixed slightly lower than the floor level. If the pan or trap is damaged during handling or fixing, it shall be replaced by the contractor at his own cost. The pan, trap and uPVC,SW pipe shall be jointed with help of thermoplastic rubber co-moulded on high strength polyolefin EN 681-2 D.M. seal&lipring for P or S trap. The gap between WC and floor shall be finished with white/matching cement as directed.

3.1.04 PROTECTION AND FINAL CLEANING: The IWC shall be covered with husk and sand till all the civil and electrical works are completed and shall be removed and cleaned on completion of civil and electrical works prior to testing and handing over. However, the contractor should ensure that the outlet is plugged with gunny bags or similar materials to avoid the pipe getting blocked.

3.2 EXTENDED WALL MOUNTED EUROPEAN WATER CLOSET

3.2.01 GENERAL: The item pertains for providing white or color glazed vitreous chinaware European or Anglo Indian water closet with seat and cover of size and color as specified in the schedule including fixing.

3.2.02 MATERIAL: European type water closet shall be wash down pattern unless otherwise specified. Water closet shall be vitreous china conforming to IS 2556 (P-I & II). The closet shall be of one piece construction and shall have minimum two hole of 6.5mm diameter for fixing closet to floor. Closet shall have integral flushing rims of self -draining type. Each water closet shall have an integral trap with either P or S outlet with and trap shall be uniform and smooth in order to enable an efficient flush. Plastic seat and cover shall be of same color or as specified, they shall have conformity to IS 2548 part I & II.

3.2.03 FIXING: The water closet pan shall be placed in position as shown in the drawing. If the pan trap is damaged during handling or fixing, it shall be replaced by the contractor at his own cost. The pan,uPVC soil pipe shall be jointed of thermoplastic rubber co-moulded on high strength polyolefin EN 681-2 D.M. sea l&lip ringfor P or S trap. The gap between WC and floor shall be finished with white / matching cement and sand as directed. Seat and cover shall be fixed to the pan by two corrosion resistance hinge with 65mm shank and threaded to within 25 mm from of flange. Seat shall be fixed in level by providing the washers of rubber with nonferrous or stainless steel washer to bolt.

3.3 WASH BASIN WITH HALF PEDESTAL

3.3.01 GENERAL: The item pertains for providing color or white glazed vitreous chinaware wash basin with half pedestal of size and color as specified in the schedule including fixing.

3.3.02 MATERIAL: Wash basins shall be of vitreous china conforming to IS 2556 (P-IV) or flat back or angle back as specified shall be of one piece construction including combined overflow, basin shall be provided with single or double tap holes of size 28mm square or 30mm rounded. Each basin shall have circular waste hole or 5 sqcm slot type overflow. Pedestals for wash basin shall be exactly same

glazing that of basin. Pedestal shall be capable of supporting the basin and completely recessed at the back to accommodate supply and waste pipes and fittings. The basin shall be supported on pair of CI cantilever brackets conforming to IS 775. Use of MS angle or tee section as bracket is not permitted.

3.3.03 FIXING: The wash basin shall be fixed in position as indicated in the drawing. Basin shall be supported on a pair of CI brackets which is embedded in cement concrete (1:2:4) block 100x75x150mm.& rack bolts also. Oval shape or

round shape wash basins are required to be fixed in RCC platform with stone tapping either fully sunk in stone top or flush with stone topping. The wall plaster on seat shall be cut to rest over the top edge of the basin so as not to leave any gap for water seepage through between wall plaster & skirting of basin. The gap between basin and wall shall be finished with white matching cement.

3.4 URINAL

3.4.01 GENERAL: The item pertains for providing color or white glazed vitreous chinaware urinal in single and size as specified in the schedule with necessary fittings and appliances including fixing.

3.4.02 MATERIAL

3.4.02.1 Bowl type (with flushing rim): Urinal basin shall be flat back or corner wall type lipped in front. The vitreous china conforming to IS 2556 (P-VI). Urinal shall have an integral flushing rim and inlet or supply horn for connecting flush pipe. Flushing rim and inlet shall be of the self draining type. At bottom of basin and outlet horn for connecting outlet shall be provided. The inside surface of the urinal shall be uniform and smooth throughout to ensure efficient flushing.

3.4.02.2 CP Brass flush pipe: The flushing arrangement to urinals for single shall be of CP brass with CP brass spreader of 15mm dia conforming to IS 407.

3.4.03 FIXING

3.4.03.1 CP Brass flushing arrangement: The flushing arrangement to urinal in single or range shall be of CP brass from 25mm dia to 15mm dia and CP brass spreader of 15mm size to each urinal including the cost of CP brass elbow, tees, coupling, crosses, clamps, clips, union CP brass check nut and screws etc.

3.5 FROST GLASS URINAL PARTITION.

3.5.01 GENERAL: The item pertains for providing Frost glass partition of size and color as specified in the schedule including fixing.

3.5.02 MATERIAL: The partition shall be Frost glass .Frosted glass is produced when a piece of clear glass is etched with acid or sandblasted.The result is a piece of glass that is opaque but still translucent. The blurred glass allows light to pass through it but it prevents you from seeing what is on the other side. The beautiful frosty or cloudy surface adds an element of elegance and beauty to space.

3.5.03 FIXING: Partition shall be fixed vertically in position as indicated in the drawing at proper height 600 mm from FFL. The size of Frost glass shall be 800 mm x 400 mm as per IS : 2064.

3.6 DIVISION PLATE / PARTITION PLATE

3.6.01 GENERAL: The item pertains for providing white or color glazed vitreous chinaware division plate of size and color as specified in the schedule of size 800 x 400 mm including fixing.

3.6.02 MATERIAL: Division plate shall be white or color glazed of size as specified in the schedule and shall conform to IS 2556 (P-VI).

3.6.03 FIXING: Division plate shall be fixed vertically in position at proper height 600 mm from FFLwith expandable anchor fasteners, CP brass screws, wooden plugs etc.

3.7 HALF ROUND CHANNEL

3.7.01 GENERAL: The item pertains for providing color or white glazed vitreous chinaware half round channel of size and color as specified in the schedule including laying and fixing.

3.7.02 MATERIAL: The half round channel shall be of white or color glazed vitreous chinaware of size as mentioned in the schedule with or without dead end and shall conform to IS 2556 (P-VII)

3.7.03 FIXING: The channel shall be laid to the correct alignment to required slope. It shall be fixed on 80 mm thick bed of 1:2:4 cement concrete. The channel shall be used in standard length. Pieces are not allowed except where it is necessary to make up exact length. The joint and gap shall be finished with white / matching color cement.

uPVC SW FLOOR TRAP WITH STAINLESS STEEL HINGED GRATING.

3.8.01 GENERAL: The item pertains for providing uPVC SWR floor trap with stainless steel hinged grating of size as specified in the schedule including fixing.

3.8.02 MATERIAL: The trap shall be uPVC SWR of IS:14735 or as specified in the schedule with hinged shaped grating of stainless steel as specified.

3.8.03 FIXING: The uPVC SWR trap shall be laid to the correct alignment and to required slope. The trap shall be fixed on 80 mm thick bed of 1:2:4 cement concrete with DM Seal.

3.9 FLAP TYPE TOILET PAPER HOLDER

3.9.01 GENERAL: The item includes providing CP on Brass flap type toilet paper holder of size 150 mm as mentioned in the schedule including fixing.

3.9.02 MATERIAL: The toilet paper roll holder shall be of CP brass as specified and of size 150 mm and design as approved by the Engineer-in-charge. Toilet paper roll holder shall conform as per IS standard and should have ISI mark.

3.9.03 FIXING: Toilet paper roll holder shall be fixed in position by means of CP brass covers and raw plug embedded in the wall. Flap type toilet paper roll holder shall be fixed into the wall with PVC inserter and steel Screw by means of drilling machine.

3.10 PVC WATER INLET CONNECTIONS

3.10.01 GENERAL: The item pertains to providing color or white PVC water inlet connection for cistern and wash basins.

3.10.02 MATERIALS: PVC water inlet connection shall conform to IS specification and shall be of standard pattern with nylon insulation of minimum 450mm long with CP brass check nut at both the end and shall be able to withstand the testing pressure of 1 MPa (10kg/sqcm) & it shall be 15mmx450 mm braided hose connection pipe with both side nuts and rubber washers etc complete as per direction of Engineer in-charge.

3.10.03 FIXING: The PVC water inlet connection shall be fixed in position as indicated in the drawing or as directed by the Engineer-in-charge.

3.11 CP SOAP DISH HOLDER

3.11.01 GENERAL: The item includes providing CP soap dish holder of size as mentioned in the schedule including fixing.

3.11.02 MATERIAL: Soap dish shall be of CP on brass specified and of size, design are approved by the Engineer-in-charge. Soap dish shall conform to relevant IS standard and should have ISI certification mark.

3.11.03 FIXING: Soap dish shall be fixed in position by means of CP brass covers and raw plug embedded in the wall. It shall be fixed with PVC inserter and steel screws.

3.12 BEVELLED EDGE GLASS MIRROR

3.12.01 GENERAL: The item providing bevelled or plain edges mirror with or without frame of size as mentioned in the schedule including fixing.

3.12.02 MATERIAL: The mirror shall be of superior sheet glass with edges rounded off or beveled, size 600x450mm unless specified in the schedule. It shall be free from flaws, specks or bubbles and thickness plated and should not be less than 50mm. The back of mirror shall be uniformly silver plated and should be free from silvering defects. Silvering shall now have a protective uniform covering of red lid paint, where beveled edge mirror is not available. Fancy looking mirrors with PVC beading/border or aluminum beading or stainless steel beading/border based on manufacturers specification, provided nothing extra shall be paid on this account. The backing of mirror shall be provided with 6mm thick marine plywood or environmentally friendly material other than asbestos sheet.

3.12.03 FIXING: Mirror shall be fixed in position with 6mm thick marine plywood backing. It shall be fixed by means of 4 nos CP brass screws & caps over rubber washers and raw plug or as per manufacturers specification unless specified otherwise the longer side shall be fixed horizontally.

3.13 GLASS SHELF

3.13.01 GENERAL: The item includes providing glass shelf of size 600 mm long as mentioned in the schedule including fixing.

3.13.02 MATERIAL: Glass shelf shall consist of an assembly of glass shelf frame of size 600x125mm or as specified in the schedule. It shall be with a pair of CP brass brackets fixed to the wall with CP screws and CP brass rails all round with guard bar of 6mm diameter fixed to the glass shelf frame with 5 numbers CP brass brackets. The glass shall not be less than 5mm thick. PVC stainless steel shelf or as per manufacturer's specification and size as specified in the schedule of work shall be provided.

3.13.03 FIXING: The complete accessories shall be fixed to proper line and level as indicated in drawing with 40mm long CP brass screws, wooden raw plug, drilling hole and making good the wall to original condition after fixing the glass shelf.

3.14 CP TOWEL RING

3.14.01 GENERAL: The item includes providing CP towel ring of size as mentioned in the schedule including fixing.

3.14.02 MATERIAL: Towel rail shall be of CP brass with two CP brass bracket coated with chromium plating of thickness not less than grade No 2 of IS 4827. The size of rail shall be 600mm x 20mm dia unless otherwise specified in the schedule. Towel ring of CP brass with one CP brass bracket with thickness not less than grade no 2 of IS 4827. The diameter of the ring shall be 175mm unless otherwise specified in the schedule.

3.14.03 FIXING: The towel ring shall be fixed to proper line and level as indicated in drawing with CP brass screws, wooden rawal plug, drilling hole etc and making good the wall to original condition after fixing the towel ring.

3.15 BIB TAP, STOP COCK & ANGLE STOP COCKS

3.15.01 GENERAL: The item pertains to provide chromium plated brass bib tap and stop cock and angle stop cocks, free flanges (if joined to concealed pipe) including fixing.

3.15.02 MATERIAL: Bib cock (bib tap) is drawn off tap with a horizontal inlet and free out let and a stop cock is a valve with a suitable means of connections for insertion in a pipe line for controlling or stopping the flow. These shall be of size 15mm or as specified and shall be of screw down type. The closing device shall work by means of disc carrying a renewable nonmetallic washer with shuts against the water pressure on a seating right angle to the axis of the threaded spindle which operates it. The handle shall be crutch, butterfly or fancy design type securely fixed to the spindle. The tap shall open anti clock wise direction. Brass bib taps and stop cocks and angle stop cocks shall conform to IS 781. They shall be polished bright. The minimum finished weight of different sizes of bib tap and stop cock shall be as per table given below. They shall be sound and free from taps, blow whole and fitting. Internal & external surface shall be clean, smooth and free from sand and neatly dressed. Taps shall be nickel chromium plated and thickness of coating shall not be less than service grade no 2 of IS 4827 and plating shall be capable of taking high polish which shall not be easily tarnished.

Minimum finished mass of bib taps & stop valves as per IS 781-1984

Size	Minimum finished mass			
	Bib taps	Stop valves		
		Internally threaded	Externally threaded	Mixed end
1	2	3	4	5
Mm	Kg	Kg	Kg	Kg
8	0.25	0.22	0.25	0.235
10	0.33	0.33	0.35	0.325
15	0.40	0.33	0.40	0.365
20	0.75	0.675	0.75	0.710
25	1.25	1.18	1.30	1.250
32		1.68	1.80	1.750
40		2.09	2.25	2.170
50		3.70	3.85	3.750

Every tap complete with its component shall withstand an internally applied hydraulic pressure of 2 MPa (20kg/sqcm) maintained for a period of 2 minutes during the period it shall neither leak nor sweat. Leaky joint shall be remade to make it leak proof without any extra cost from contractor.

3.15.03 FIXING: Bib tap stop cock shall be fixed to the pipe line with CP brass specials if required or as ordered by Engineer-in-charge. Jointing shall be done with teflon tape etc. A few turns of teflon tape shall be taken over the threaded ends to obtain complete water tightness.

3.16 AUTO CLOSING PILLAR COCK

3.16.01 GENERAL: The item pertains to provide chromium plated brass pillar tap including fixing.

3.16.02 MATERIAL: The pillar tap shall be 15mm nominal size or as specified in the schedule. Fancy type pillar tap shall be of CP brass approved quality and shall conform to IS 8931. Non fancy pillar tap shall be chromium plated brass and shall conform to IS 1795. Casting of pillar tap shall be sound and free from laps, blow hole and pitting. External and internal surface shall be clean, smooth and free from sand and be neatly dressed. All the parts fitted to pillar tap shall be axial, parallel and cylindrical with surfaces smoothly finished. The minimum of finish weight of pillar tap shall not be less than 650 grams (body weight 250 gms, washer plate loose valve 150 gms and back nut 40 gms. Thickness of CP coating shall not be less than service grade no 2 of IS 4827 and plating should be capable of taking high polish which shall not easily tarnish or scale.

3.16.03 TESTING: The testing pressure on completion of the work the piping system can be pressurized to 125% of its designed working pressure i.e. 28.1kg/cm² for SDR11 CPVC Pipe 20mm nominal dia, 25mm nominal dia & 32mm nominal dia respectively. However care must be taken to ensure the pressure does not exceed the working pressure of the lowest rated component in the system. The pressure test should not exceed one hour. Any leaking joints or pipe must be cut and replaced and the line recharged and retested using the same procedure. Without any additional requirement of make-up-water the test pressure should not fall more than 0.02 MPa (0.2Kg/sqcm) at the end of one hour test duration.

3.16.04 FIXING: Pillar tap shall be fixed to the pipe line as indicated in the drawing with necessary special as required or as ordered by Engineer-in-charge. Jointing shall be done with Teflon tap. A few turns of teflon tap shall be taken over the threaded ends to obtain complete with tightness.

3.17 AUTO CLOSING FLUSH COCK

3.17.01 GENERAL: The item pertains to provide chromium plated Auto closing flush cock with necessary accessories including fixing to concealed pipes with help of Teflon tape. (Free flanges if jointed to concealed pipes)

3.17.02 MATERIAL: The auto closing flush cock shall be nominal diameter as specified in the schedule of quantities. It shall be of CP brass approved and heavy quality and shall conform to IS. The auto closing flush cock shall have working pressure of 0.15 to 0.5 MPa. The valve shall be tested to a hydraulic pressure of 2 MPa for 2 minutes.

3.17.03 FIXING: Auto closing flush cock shall be fixed to the pipe line as indicated in the drawing with necessary special as required or as ordered by Engineer-in-charge. Jointing shall be done with Teflon tape. A few turns of Teflon tape shall be taken over the threaded ends to obtain complete with tightness. Leaky joint shall be remade to make it leak proof.

3.18 WASTE COUPLING

3.18.01 GENERAL: The item pertains to provide chromium plated brass waste coupling i.e half thread and full thread for wash basin and urinal including fixing.

3.18.02 MATERIAL: Waste coupling shall conform to IS 3311. Waste fitting shall be of CP with thickness of CP coating not less than service grade no 2 of IS 4827 which is capable of receiving polish and will not easily scale off. The fitting shall conform in all respect to IS 2963 and shall sound, free from laps, blow holes and fittings and other manufacturing. External and internal surface shall be clean and smooth. They shall be neatly dressed. The waste fitting for wash basin shall be of nominal size of 32mm and for urinal shall be nominal size 40mm.

3.18.03 FIXING: Waste coupling shall be fixed to wash basin or urinal as ordered with necessary specials. Jointing shall be done with Teflon tape. A few turns of Teflon tape shall be taken over the threaded ends to obtain complete with tightness. Leaky joint shall be remade to make it leak proof.

3.19 BOTTLE TRAP

3.19.01 GENERAL: The item pertains to provide chromium plated brass bottle trap including fixing.

3.19.02 MATERIAL: Bottle trap shall be of CP with thickness of CP coating not less than service grade no 2 of IS 4827 which is capable of receiving polish and will not easily scale off. The fitting shall conform in all respect of IS 2963 and shall be sound, free from laps, blow hole and pitting and other manufacturing defects. External and internal surface shall be clean and smooth. They shall be neatly dressed and be truly machined so that not smoothly moves on the body. The bottle trap for wash basin shall be of nominal size of 32mm and for sink shall be nominal size 40mm.

3.19.03 FIXING: Bottle trap shall be fixed to wash basin, sink or urinal as indicated in the drawing with necessary specials or as ordered by the Engineer-in-charge. Jointing shall be done with white zinc, spun yarn etc. A few turns of fine hemp yarn dipped in linseed oil shall be taken over the threaded ends to obtain complete with tightness. Leaky joint shall be remade to make it leak proof.

3.20 COAT HOOK

3.20.01 GENERAL: The item pertains to provide chromium plated brass coat & hat hook including fixing.

3.20.02 MATERIAL: Coat hook shall be of three way type of approved and heavy quality. Coat & hat hook shall be CP coating shall not be less than service grade no 2 of IS 4827.

3.20.03 FIXING: The coat hook shall be fixed to proper line & level as indicated in drawing with CP brass screws.

3.21 FLUSHING CISTERN

3.21.01 GENERAL: the item pertains to provide white or color PVC flushing cistern with all inside symphonic fitting including fixing.

3.21.02 MATERIAL: The flushing cistern shall be automatic or manually of rates high level or low level as specified for water closets and urinals.

Cistern shall be of PVC for automatic flushing cistern and plastic (IS 7231). Cistern shall be mosquito proof. All working parts shall be designed to operate smoothly and efficiently. The cistern shall have removable covers which shall fit closely on it and be screwed against top displacement where operating mechanism is attached to the cover. This may be made in two sections, but the section supporting the mechanism shall be securely fitted or screwed to the body. The outlet fitting of the cistern shall be securely connected to the cistern. The nominal internal diameter of the cistern outlet shall not be less than 32 mm and 38 mm for high level and low level respectively. Length of outlet cistern shall be 37+/-2 mm ball valve shall be screwed type 15 mm in diameter and shall confirm of IS 1703. The flat shall be made of polyethylene as specified in IS 9762. A high-level cistern is intended to operate with minimum height of 125 cm and a low- level cistern with maximum height of 30 cm between the top of the pan and under side of the cistern In case of low level cistern handle shall be of CP brass, in case of plastic cistern, operation of cistern shall be through push button at the top for dual system and beyond plastic handle. The discharge rate of the cistern as per IS 774 shall be 10+/- 5 liters 6 second and 5+/- 5 litres in 3 second for cistern capacity 10 litres and 5 litres respectively. Flush pipe shall be of class B GI pipe of 32 +/- mm diameter for high level. Polyethylene flush pipe shall be low density confirming to IS 3076 or high density confirming to IS 4984 of UPVC pipe confirming to IS 4965 of 40 mm outer diameter. Over flow pipe shall not be less than +/- 5 mm B diameter

3.21.03 FIXING: The chinaware flushing cistern shall be placed over a pair of CI brackets CP Brass flush pipe shall be fixed to cistern and WC pan using check nut, spun yam, cement mortar etc. The cast iron flushing cistern shall be placed over a pair of CI or GI or PVC flush pipe of specified diameter shall be fixed to cistern and WC pan by using check nut, while zinc. Spun yam, cement mortar etc. The PVC flushing cistern shall be placed or fixed as recommended by the manufacturer, PVC flush pipe of specified diameter shall be fixed to cistern and WC pan by suing check nut, white zinc, spun yam, cement mortar etc.

3.22 BRACKET

3.22.01 GENERAL: The item pertains to provide a pair of bracket for wash basin, flushing cistern etc. including fixing.

3.22.02 FIXING: Brackets shall be imbedded into or fixing to the wall with plugs, screws, nails etc. hole shall be made in the wall, if they are not left for fixing the brackets and shall be made good after fixing, the gap shall be filled with 1:2 cement mortal and finishing shall be done with white/matching color cement.

4.0 WATER SUPPLY SYSTEM

4.1 Unplasticized Poly Vinyl Chloride , lead free (uPVC),SCH-80 Plastic PIPING WORK as per ASTM D 1785& Fittings asper ASTM D 2467 (exposed and External)

4.1.01 GENERAL: the item includes provision of uPVC ASTM D-1785, pipes SCH-80 with uPVC fitting of ASTM D-2467 specified nominal bore and class as mentioned in the schedule including laying, fixing, the uPVC pipes and fittings shall run on the surface of the walls or ceilings unless otherwise specified.

The system shall be highly resilient, tough and durable with high tensile strength and high impact strength. It shall be free from problems caused by scale formation, rusting, weathering and chemical action, and lasting for a life time. The PVC piping system shall be virtually immune to attack by bacteria, fungi and other microorganisms or insects.

The system shall be non-conductive and immune to galvanic and electrolytic corrosion. The PVC piping system shall be corrosion resistant to a great extent, so much that they can be buried in alkaline or acidic soils or installed in over-the-ground environments, with no paint or special coating.

The PVC piping system shall be inert to most chemicals and can resist attacks from most chemicals at moderate temperatures.

The interior walls of the pipes and fittings shall have a mirror smooth finish ensuring high flow rates and low frictional losses.

The PVC piping system shall be free from rusting, pitting or scale formation so that there is no particle deposition and the inner bore of the pipe remains undiminished throughout the life of the system.

Jointing shall be done with the special solvent which ensures 100% leak proof joints.

The system shall be UV stabilized which eliminates the adverse effect of sunlight and weather. The system can, therefore, be safely used for outdoor installations.

The PVC pipes shall be relatively more flexible and shall have adequate tensile strength and even burst strength to withstand the operating pressures encountered in most service conditions, with the acceptable range of temperature for the system. External shocks or impacts that could cause failure more rigid materials can be absorbed by the system, with little or no damage.

Pipes shall be self-extinguishing and shall not support combustion. This eliminates the need for fire resistant coating.

4.1.02 MATERIAL: The pipes and fittings shall be of, SCH-80 as specified in the schedule they shall conform to ASTM-D 1785 & ASTM-D2467. All the pipes and fitting shall have ASTM certification mark. The specified nominal bore of the pipe shall refer to inside approximate bore according to the wall thickness i.e. 7.01mm & 7.62mm of nominal pipe size 65mm & 80mm, corresponding to outside fixed diameter 73.02mm & 88.90mm with tolerance ± 0.18 & ± 0.20 respectively. The pipe and fitting shall be smooth, sound free, free from any imperfections and neatly dressed. The pipe and fitting shall be able to withstand a hydrostatic working pressure of (29.53 kg/cm²) for SCH 80 -65mm nominal size & test pressure of (26.01 kg/cm²) for SCH 80- 80mm at 23° C & during testing the piping systems should be slowly filled with water, taking care to prevent surge and air entrapment. The velocity should not exceed one foot per second. The piping system can be pressurized to 125% of its designed working pressure. However care must be taken to ensure the pressure does not exceed the working pressure of the lowest rated component in the system. The pressure test should not exceed one hour. Any leaking joints or pipe must be cut and replaced and the line recharged and retested using the same procedure.

4.1.03 EXAMINING: Before laying the pipe line, it shall be first examined for damages and cracks, no cracked or damaged pipe and fittings shall be used in the work and they shall be removed from the site by the contractor at his own cost and charge.

4.1.04 CLEANING: All the pipes and fittings shall be thoroughly cleaned with brush and washed if necessary to remove any accumulated stone, soil or dirt inside and outside surfaces

4.1.05 LAYING: The plumbing contractor shall set the layout of the plumbing approved by the engineer in charge as may be required by the byelaws pipes shall be laid in plumb and in straight and parallel lines. When unavoidable, pipes may be buried for short distances provided additional protection is given against damage and where so required joints are not buried. Where directed by the engineer in charge, Under the floors the pipe shall be laid in layer of sand filling as done under concrete floors.

Incase laying in trenches the pipes shall be carefully laid straight to the correct alignment in gradients as indicated in the drawing. All the pipes shall be used in standard length as far as possible. Cut length may be used only where it is necessary to make up exact length. The entire length of pipe shall be evenly supported on bed of the trench throughout. Care shall be taken to prevent any sand, earth or other materials from entering into the pipes during laying. At the end of the day's work the open end shall be suitable plugged

4.1.06 FIXING: The entire pipe line shall be fixed in position as shown in the drawing or as directed by the Engineer in charge. All pipes shall be fixed truly vertical and horizontal unless unavoidable. The pipe line shall be supported with U type anchor straps not less than 2mm thick and steel screws & pvc inserter grips not less than 40 mm long, wooden gut ties etc. keeping the pipe about 15mm clear of the wall.

Spacing between clamps for fixing internal piping shall be as given below

Pipe Dia	For Horizontal Runs	For Vertical Runs
20 mm	762 mm	762 mm
25 mm	914.40 mm	914.40 mm
32 mm	1066.80 mm	1066.80 mm
40 mm	1066.80 mm	1066.80 mm
50 mm	1066.80 mm	1066.80 mm
65mm	1219.20 mm	1219.20mm
80mm	1219.20mm	1219.20mm

No joints shall be located inside the wall if the pipe is required to be cut, the ends of the cut end shall be filled smooth and any obstruction in bore shall be entirely eliminated, down take line shall be provided with union soc with EPDM O-Ring seal of every floor for easy maintenance. Die cast union shall not be permitted in the shaft.

4.1.07. TRENCHES: The trench bottom shall be carefully examined for the presence of hard objects such as flints, rock projection or tree roots etc. Pipe shall be embedded in sand or soft soil, free from rock and gravel, back till 150mm above the pipe shall also be of fine sand or soft soil. Pipe shall not be painted. The width of trench shall not be less than outside diameter of pipe plus 300 mm in case of gravel soils. Pipe shall be laid at least 900 mm below the ground level (measured from the surface of the ground to the top of pipe)

Crossing Road or Drain: Where the line crosses a road or a drain, it shall be through CI or R.C.C. pipe.

Supports for Valve and Hydrant: Valve and hydrant tees shall be supported that the torque applied in operating a valve is not transmitted to the pipe line.

Inspection and Testing Solvent welded pipe shall not be pressure tested until at least 24 hours after the last solvent cemented joint has been done.

All control valves shall be positioned open for duration of the test and open end closed with water tight fittings. The testing pressure on completion of the work shall not be less than one and a half times the working pressure of the pipes..

Pressure shall be applied either by hand pump or power driven pump. Pressure gauges shall be correctly positioned and closely observed to ensure that at no time are the test pressure exceeded. The systems shall be slowly and carefully filled with water to avoid surge pressure or water hammer. Air vents shall be open at all high points so that air may be expelled from the system during filling.

When the system has been fully charged with water and air displaced from the line air vent shall be closed and the line initially inspected for seepage at joints and firmness of supports under load, Pressure may then be applied until the required test pressure is reached.

Without any additional requirement of make-up-water the test pressure should not fall more than 0.2 kg/sq.cm. at the end of one hour test duration.

4.1.08 MAKING JOINT: The jointing of pipes and fittings generally shall be done with approved make cement solvent of ASTM D2564 including making surface rough. The pipe shall be cut to desired length. Care shall be taken that profile or cut surfaces shall not be changed and the fibrous material shall be removed with scraper or knife.

4.1.09 DETACHABLE JOINT: Detachable joints shall be made where pipes of deferent materials have to be jointed or as specified in the schedule. The flanges are first pushed over the pipe ends and jointing shall be made by cement solvent.

4.1.10 DEWATERING: In case of underground pipes the contract rate shall include bailing or pumping out all the water till completion of work if accumulated during the progress of work either from seepage springs, rain or any other cause.

4.1.11 TESTING: Solvent welded pipe shall not be pressure tested until at least 24 hrs after the last solvent cemented joint has been done. All control valves shall be positioned open for the duration of the test and open end closed with water tight fittings. The testing pressure on completion of the work the piping system can be pressurized to 125% of its designed working pressure ie. 29.53kg/cm^2 & 26.01kg/cm^2 for 65mm nominal dia & 80mm nominal dia respectively. However care must be taken to ensure the pressure does not exceed the working pressure of the lowest rated component in the system. The pressure test should not exceed one hour .Any leaking joints or pipe must be cut and replaced and the line recharged and retested using the same procedure.

Pressure gauges shall be correctly positioned and closely observed to ensure that at no time are the test pressure exceeded.

The systems shall be slowly and carefully filled with water to avoid surge pressure or water hammer. Air vents shall be open at all high points so that air may be expelled from the system during filling.

When the system has been fully charged with water and air displaced from the line air vent shall be closed and the line initially inspected for seepage at joints and firmness of supports under load. Pressure is reached. Without any additional requirement of make-up-water the test pressure should not fall more than 0.02 MPa (0.2Kg/sqcm) at the end of one hour test duration.

4.2 CPVC PIPING WORK (concealed)

4.2.01 GENERAL: The item includes supplying of CPVC pipes with fittings of specified diameter including laying, fixing, cutting, joining, painting etc. for vent, over flow, waste water pipe line etc.

4.2.02 MATERIAL: The pipes & fittings shall conform to IS 15778-2007, as per ASTM- D2846 class-1 of SDR-11 ,CPVC pipes and fittings shall be free from cracks, flows and defects and shall be able to withstand a pressure 28.1kg/cm^2 at 23°C & 7kg/cm^2 at 82°C as mentioned in the schedule of quantities & the material is also certified by NSF for its safe use with portable water and thus completely safe for drinking water.

4.2.03 EXAMINING: Before laying the pipe line, it shall be first examined for damages and cracks, no cracked or damaged pipe and fittings shall be used in the work and they shall be removed from the site by the contractor at his own cost and charge.

4.2.04 CHASES: Chases of size 75mm x 75 mm shall be cut in the wall, floor, slab wherever required or as directed by chases cutting machine. After testing the pipe line the chases shall be filled with cement mortal 1:3 and surface made good to its original condition.

4.2.05 LAYING: The plumbing contractor shall set the layout of the plumbing approved by the Engineer in charge. The entire pipe line shall be fixed in position as shown in the drawing or as directed by the Engineer in charge as may be required by the bye laws. All pipes and fittings, which are to be concealed, shall be properly embedded in the wall, flooring etc. Pipes shall be laid in plumb and in straight and parallel lines, after being treated, no molding or plaster design or any ornamental plaster work shall be done over the walls or flooring or ceiling where concealed pipes have been laid.

4.2.06 MAKING JOINT: The jointing of pipes and fittings generally shall be done with approved make cement solvent of ASTM F493 including making surface rough. The pipe shall be cut to desired length. Care shall be taken that profile or cut surfaces shall not be changed and the fibrous material shall be removed with scraper or knife.

4.2.07 TESTING: Solvent welded pipe shall not be pressure tested until at least 24 hrs after the last solvent cemented joint has been done. All control valves shall be positioned open for the duration of the test and open end closed with water tight fittings. The testing pressure on completion of the work the piping system can be pressurized to 125% of its designed working pressure ie. 28.1kg/cm^2 for SDR11 CPVC Pipe 20mm nominal dia, 25mm nominal dia & 32mm nominal

diarrespectively. However care must be taken to ensure the pressure does not exceed the working pressure of the lowest rated component in the system. The pressure test should not exceed one hour .Any leaking joints or pipe must be cut and replaced and the line recharged and retested using the same procedure.

Pressure gauges shall be correctly positioned and closely observed to ensure that at no time are the test pressure exceeded.

The systems shall be slowly and carefully filled with water to avoid surge pressure or water hammer. Air vents shall be open at all high points so that air may be expelled from the system during filling.

When the system has been fully charged with water and air displaced from the line air vent shall be closed and the line initially inspected for seepage at joints and firmness of supports under load. Pressure is reached. Without any additional requirement of make-up-water the test pressure should not fall more than 0.02 MPa (0.2Kg/sqcm) at the end of one hour test duration.

4.3 BALL VALVES WITH CTS SOCKET (COPPER TUBE SIZE) ASTM D 2846 & ASTM D 2467

BALLVALVE SOC

4.3.01 GENERAL:All thermoplastic ball valves shall be Utility sealed unit type constructed from PVC Type I Cell Classification 12454 or CPVC Type IV Cell Classification 23447. All O-rings shall be EPDM. All valves shall have Safe-T-Shear® stem and double stop Polypropylene handle. All valves shall be listed by NSF® for use in potable water service. All valves shall be pressure rated at 28.1 kg/cm²for water at 23°C, as manufactured by Spears® Manufacturing Company .

4.3.02 MATARIAL: CPVC fittings ASTMD2846 &uPVC fittings ASTMD-2467 Ball valve Body- PVC, Seat- EPDM, Ball-PVC, Stem-PVC,O Ring-EPDM, Handle- ABS,Bolt- Zinc plated steel, Cap-ABS.

Diameter in mm	BALL VALVE (Kg)CPVC	BALL VALVE (Kg)uPVC
20	0.122	
25	0.168	
32	0.285	
40	0.426	
65	1.079	1.05
80	2.03	

4.3.03 FIXING: The valve shall be fixed in position in the pipeline as shown in the drawing or as directed with necessary solvent cement joint.

4.3.04 MAKING JOINT: The jointing of pipes and fittings generally shall be done with approved make cement solvent of ASTM D2564 for uPVC ball valve and ASTM F493 for CPVC ball valve, including making surface rough. The pipe shall be cut to desired length. Care shall be taken that profile or cut surfaces shall not be changed and the fibrous material shall be removed with scraper or knife.

4.3.05 TESTING: The joints shall be tested to a hydraulic pressure be pressurized to 125%rated working pressure along with the testing of pipe line.

a) Hydrostatic Tests

Hydrostatic Tests: The portions of the line shall be tested by subjecting to pressure test as the laying progresses before the entire line is completed. In this way any error of workmanship will be found immediately and can be corrected at a minimum cost. Usually the length of the section to be tested shall not exceed 500m.

Where any section of a main is provided with concrete thrust blocks or anchorages, the pressure test shall not be made until at least five days have elapsed after the concrete is cast. If rapid hardening cement has been used in these blocks or anchorages, test shall not be made until atleast two days have elapsed.

Prior to testing, enough back fill shall be placed over the pipe line excluding the joints to resist upward thrust. All thrust blocks forming part of the finished line shall have been sufficiently cured and no temporary bracing shall be used.

The section of the line to be tested shall be filled with water manually or by a low pressure pump. Air shall be vented from all high spots in the before making the pressure strength test because entrapped air gets compressed and causes difficulty in raising the required pressure for the pressure strength test.

The test pressure shall be gradually raised at the rate of approximately one Kg./sq. cm./min. The duration of the test period if not specified shall be sufficient to make a careful check on the pipe line section.

5 UPVC SWR PIPING WORK

5.1.01 GENERAL: The item includes supplying of UPVC soil waste and rain water (SWR) and ventilation pipes with fittings of specified diameter including laying, fixing, cutting, jointing painting if required etc.

5.1.02 MATERIAL: The pipe shall be conforming to IS 13592, Type-B, UPVC SWR and fittings conforming to IS 14735 shall be free from cracks, flaws and defects and shall be able to with stand a pressure as mentioned in the schedule of work. Rubber sealing rings DMSeal, conforming to IS 5382 with lubricant for sliding socket joints as mentioned in the schedule of work.

5.1.03 EXAMINING: Before laying the pipe line, it shall be first examined for damages and cracks no cracked or damaged pipe and fittings shall be used in the work and they shall be removed from the site by the contractor at his own cost and charge.

5.1.04 CLEANING: All the pipes and fittings shall be thoroughly cleaned with brush and washed if necessary to remove any accumulated stone solid or dirt side and outside surfaces.

5.1.05 LAYING: The pipe shall be carefully laid straight to the correct alignment in gradients as indicated in the drawing. All the pipes shall be used in standard length as far as possible. Cut length may be used only where it is necessary to make up exact length. The entire length of pipe shall be evenly supported on bed of the trench throughout. Care shall be taken to prevent any sand, earth or other materials from entering into the pipe during laying. At the end of days work the open end shall be suitably plugged.

5.1.06 FIXING: The pipe line shall be fixed in position as shown in the drawing or as directed by the Engineer in charge. The pipe shall be fixed with GI clamps not less than 2.0 mm thick of with suitable UPVC clamps/clips. The damp/clips shall be fixed into the wall with GI nails not less than 40mm long and wooden gutties keeping the pipe about 15mm clear of the wall.

5.1.07 MAKING JOINT: The jointing of pipes and fitting generally shall be done with approved make cement solvent including making surface rough or rubber sealingDMSeal with lubricant for sliding socket joints. The pipe shall be out to desired length. Care shall be taken that that profile or cut surfaces shall not be changed and the fibrous material shall be removed with scraper or knife.

5.1.08 DETACHABLE JOINT: Detachable joints shall be made where pipes of different materials have to be joined or as specified in the schedule. The flanges are first pushed over the pipe ends and jointing shall be made by cement solvent.

5.1.09 PAINTING: In case of underground piping, the pipe line shall be painted with two coats of approved oil paint of matching color over a coat of primer.

5.1.10 DEWATERING: In case of underground pipes, the contract rate shall include bailing out all the water till completion or work if accumulated during the progress of work either from seepage, springs, rain or any other cause.

5.1.11 TESTING: The joints shall be tested by either smoke test for vertical stacks or 2.5m head of water at the highest point of the section under test for horizontal drainage pipes. Smoke shall be pumped into the pipes at the lowest end from a smoke machine which consists of a below and burner. The material 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 leak at any point of the drain. The water head test shall be carried out by suitably plugging the lower end of the drain and the ends of the connection if any and filling the system with water.

6 uPVC PIPING WORK

6.1.01 GENERAL: The item includes supplying of uPVC pipes with fittings of specialized diameter including laying, fixing, cutting; jointing & painting etc for vent, over flow, waste water pipe line etc.

6.1.02 MATERIAL: The pipes and fittings shall conform to series IV of IS 4985, uPVC pipes and fittings shall be free from cracks, flaws and defects and shall be able to withstand pressure as mentioned in the schedule.

6.1.03 EXAMINING: Before laying the pipe line, it shall be first examined for damages and cracks no cracked or damaged pipe and fittings shall be used in the work and they shall be removed from the site by the contractor at his own cost and charge.

6.1.04 CLEANING: All the pipe and fittings shall be thoroughly cleaned with brush and washed if necessary to remove any accumulated stone soil ordinates and outside surfaces.

6.1.05 LAYING: The plumbing contractor shall set the layout of the plumbing approved by the engineer in charge as may be required by the byelaws pipes shall be laid in plumb and in straight and parallel lines. When unavoidable, pipes may be buried for short distances provided additional protection is given against damage and where so required joints are not buried. where directed by the engineer in charge, Under the floors the pipe shall be laid in layer of sand filling as done under concrete floors.

Incase laying in trenches the pipes shall be carefully laid straight to the correct alignment in gradients as indicated in the drawing. All the pipes shall be used in standard length as far as possible. Cut length may be used only where it is necessary to make up exact length. The entire length of pipe shall be evenly supported on bed of the trench throughout. Care shall be taken to prevent any sand, earth or other materials from entering into the pipes during laying. At the end of the day's work the open end shall be suitable plugged

6.1.06 FIXING: The entire pipe line shall be fixed in position as shown in the drawing or as directed by the Engineer in charge. All pipes shall by fixed truly vertical and horizontal unless unavoidable. The pipe line shall be supported with U type anchor straps not less than 2mm thick and steel screws &pvc inserter grips not less than 40 mm long, wooden gut ties etc. keeping the pipe about 15mm clear of the wall.

6.1.08 MAKING JOINT: The jointing of pipes and fittings generally shall be done with approved make cement solvent including making surface rough. The pipe shall be cut to desired length. Care shall be taken that profile or cut surfaces shall not be changed and the fibrous material shall be removed with scraper or knife.

6.1.09 FIXING: The entire pipe line shall be fixed in position as shown in the drawing or as directed by the Engineer in charge. All pipes shall by fixed truly vertical and horizontal unless unavoidable. The pipe line shall be supported with U type anchor straps not less than 2mm thick and steel screws&pvc inserter grips not less than 40 mm long, wooden gut ties etc. keeping the pipe about 15mm clear of the wall.

6.1.10 DETACHABLE JOINT: Detachable joints shall be made where pipes of different materials have to be jointed or as specified in the schedule. The flanges are first pushed over the pipe ends and jointing shall be made by cement solvent.

6.1.11 TESTING: Solvent welded pipe shall not be pressure tested until at least 24 hrs after the last solvent cemented joint has been done. All control valves shall be positioned open for the duration of the test and open end closed with water tight fittings. The testing pressure on completion of the work the piping system can be pressurized to 125% of its designed working pressureie The systems shall be slowly and carefully filled with water to avoid surge pressure or water hammer. Air vents shall be open at all high points so that air may be expelled from the system during filling.

When the system has been fully charged with water and air displaced from the line air vent shall be closed and the line initially inspected for seepage at joints and firmness of supports under load. Pressure is reached. Without any additional requirement of make-up-water the test pressure should not fall more than 0.02 MPa (0.2Kg/sqcm) at the end of one hour test duration.

7 GULLY TRAP

7.1.01 GENERAL: The term includes provision of uPVC square gully trap with including construction of Gully Trap Chamber.

7.1.02 MATERIAL: The Gully Trap shall be of uPVC square type with 110 mm diameter outlet. Brick work, plastering, concreting shall be as per general specification under section- II.

7.1.03 CONSTRUCTION:

1. Internal dimension of the Gully trap chamber shall be (300x300x500)mm as specified in the schedule.
2. Foundation of 1:5:10 concrete shall be 100 mm thick, and shall have 100mm offset.

3. Brick masonry shall be of 250 mm thick in cement mortar 1:5 and masonry shall be plastered with 12mm thick plaster in 1: 3 cement mortars inside and outside surface with smooth finish.

7.1.04 RCC SLAB: RCC slab of 80mm thick cement concrete 1:2:4 shall be fixed with the cement mortar 1:3 at the top of Gully trap chamber,

7.1.05 DEWATERING: The contract rate shall include bailing or pumping out all the water till completion or work if accumulated during the progress of work either from seepage, springs rain or any other cause.

8 FLOOR TRAP

8.1.01 GENERAL: The item includes supplying uPVC floor trap with CP brass / stainless steel grating specified diameter with fittings and fixtures including fixing and jointing with the pipe line.

8.1.02 MATERIAL: 110 mm nominal outlet dia uPVC trap, IS14735 with an effective water seal of 50mm. Outlet dia floor 110mm top grating shall be of CP brass or stainless steel of heavy quality size and shape to suit the trap.

8.1.03 FIXING: uPVC floor trap with the bend and pipe piece shall be fixed in position over the bed of 1:2:4 cement concrete. The jointing trap and pipe shall be DMseal. The grating shall be fixed over the floor trap flush with the floor level and the gap finished with matching cement.

9 RAIN WATER GRATING

9.1.01 GENERAL: The item includes supplying of stainless grating of specified diameter including fixing and painting.

9.1.01 MATERIAL: The rain water grating shall be stainless with closed grained without any casting defects. The thickness should be uniform throughout, one shaped stainless grating

9.1.03 FIXING: Stainless rain water grating shall be fixed in position with 1:1 cement mortar.

10. RCC PIPES AND MANHOLE HOLES

10.1. Laying of RCC S/S pipes of class NP₃ / NP₂ in Sewerage System

RCC (Spun) non-pressure pipes of class NP₃ / NP₂ shall be socket and spigot end confirming to IS-458/ 2003 with ISI Mark.

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. Notwithstanding (a) and (b) above, the width of trench should not be less than 75 cm for depth exceeding 90 cm.

Dewatering of trenches if required shall be done by the contractor without any extra claim.

The laying , jointing , testing and commissioning of the R.C.C. pipe in sewer shall be strictly as per P.H. specification and approved by EIC.

Excavation and preparation of trench shall be as per latest IS specification.

Usage of anchor and thrust blocks shall be as per relevant IS-Specification.

Rubber gasket SBR/EPDM used with push on joints or mechanical joints shall conform to IS-5382 /1985 bearing ISI mark.

Back filling shall be as per relevant IS-specification

Flushing and disinfection of mains before commissioning shall be as per relevant IS specification.

No extra payment shall be made to the contractor on account of breakage of specials etc. during transportation, loading and unloading. The contractor shall replace those materials at his own cost. Similarly, any damage of

RCC pipes/ PVC pipes due to mishandling by the contractor during transportation, loading and unloading shall have to be taken care of /replaced by the contractor.

Pipe & fittings if found to be defective during lowering shall have to be replaced immediately by the contractor at his own cost and no claim whatsoever shall be entertained on account of this.

Blasting for excavation shall be permitted only after the approval of competent authority is obtained by the contractor.

Thrust blocks shall be provided in the pipe line at required places by the contractor as per requirement in consultation with Engineer-in-charge and as per drawing approved by IDCO.

No section shall be accepted unless it withstands the test pressure. The contractor shall made all arrangement including labour, pumps , pressure gauge and equipmentsetc. for testing of the pipe line as per relevant IS specification.

The SBR / EPDM gasket shall conform to relevant IS: 5382 /1985 and shall be from reputed manufacturers with ISI mark on the body of the materials.

To avoid any complication during jointing & installation of the pipes and to ensure dimensional compatibility, the rubber gaskets are also be supplied by the pipe manufacture. Pipe manufacturer who does not produce gasket or fittings themselves, may procure and supply the same from their approved vendors so that the pipe suppliers will be responsible for quality of the related item as well as the dimensional compatibility required for the leak tightness of the pipe joints.

The tenderer shall clearly state the name of the manufacturers/make of all the materials in his offer.

10.2 SPECIFICATION FOR LAYING OF RCC S/S PIPES OF CLASS NP₃ / NP₂ IN SEWERS.

1. Excavation in trench:

- a. Depth of trench- It should be sufficient to provide a minimum cover of 90 cm of more according to the required gradient and alignment.
- b. Width of trench- (i) For all diameters up to an average depth of 120 cm outside diameter of pipe + 30 cm and (ii) for all diameters for depth above 120 cm outside diameter of pipe + 40 cm.

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

2. Cement concrete pedestal:

RCC pipe will lay over the Cement concrete (1:2:4) pedestal of size not less than 600mmx250mmx450mm ht. including earth work excavation in all kinds of soil, back filling, PCC (1:3:6) with 40mm & down size h.g.c.b. metal with necessary form work required for the work. There are 2 (two) nos. (minimum) of pedestal will be constructed for each pipe length. The location of pedestal will be placed as per site requirement & direction of EIC.

Bed concrete

- 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 mtr under the road surface.
 - iv. When the superimposed load exceeds 1600 kg per mtr length of pipes.

3. Laying:

The RCC pipes shall be laid with sockets facing up the gradient on desired bedding to proper gradient (IS: 4127-1967)

4. Jointing:

The RCC S/S pipes shall be push on joint with Rubber Gasket.

10.4 SPECIFICATION FOR CONSTRUCTION OF MANHOLE CHAMBERS:-

1. All manhole chambers shall be constructed with RCC M25 as per relevant IS specification and as per details outlined below.
The roof slab of all chambers shall be of RCC (M25) with reinforcement not less than 90 Kg. /cum with thickness not less than 150mm. The roof slab shall be cast-in-situ.
1. The base slab, side wall & roof slab of chamber shall be not less than 150mm, 150mm & 125mm respectively having crushing strength 250Kg/cm² at 28 days conforming to IS456/200 & IS-3370.
3. The foundation and floor (continuation of foundation) of the manhole chamber shall be C.C.(1:3:6) of thickness not less than 100mm. There shall be a foundation offset of minimum 150mm on outside of base slab.
4. Both outside & inside wall plaster of the walls shall be in cement mortar 1:3 and cement punning only on inner wall and floor surface of proper plumb and smooth.
5. The manhole cover of the chamber shall be pre-cast factory made with frame as per IS-12592/2002 (SFRC Heavy duty) for clear opening of 560mm with 2 nos. of lifting hook on the cover slab.
6. Benching (1:2:4) with 12 mm size h.g.c.b. chips. The benching should have a fall towards the invert of about 1:10.
7. Manhole cover: - The size of man hole cover shall be such that there shall be a clear opening of at least 500 mm in diameter.
8. Size of manhole- The minimum internal sizes of different manholes should be as follows:
 - a. **Inner size of Rectangular Manhole:-**
 - i. 900mmx900mm x 450mm Depth
 - ii. 1200mmx900mmx900mm Depth

9. **Spacing of manholes :**

The maximum spacing of manholes in any sewer line should be as per site condition.

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.

DEWATERING: The contract rate shall include baiting or pumping out all the water if accumulated during the progress of the work either from rain, seepage, springs or any other cause.

10 **Precast Concrete Frame And Cover For Manholes**

10.1.01 GENERAL: The item includes supply LD/MD/HD/EHD factory made precast steel fiber reinforced concrete (SFRC) frame and cover as specified in schedule including fixing and placing.

10.2.02 MATERIAL: The precast frame and cover shall be of steel fiber reinforced concrete (SFRC) conforming to IS 12592 and shall be of approved make. The frame and cover shall be of LD/MD/HD/EHD grade, size and thickness as mentioned in the description of the item. The defective frame and cover shall be replaced by the contractor at his own cost and charges.

10.3.03 FIXING: Frame shall be fixed in cement concrete 1:2:4 for bearing course & capping on the top of masonry wall of chamber or manhole and finishing shall be done in 1:2 cement plaster finished smooth with neat cement.

11 **Polypropylene Step Iron / Rungs:**

11.1.01 GENERAL: The item includes supplying of Polypropylene steps including fixing in two parallel lines of 300 mm spacing in vertical wall with center to center 375 mm staggered.

11.2.02 MATERIAL: The steps shall be of Polypropylene step iron and minimum 150mm wide.

11.3.03 FIXING: The steps shall be fixed in RCC wall with 1:2:3 cement concrete with 75mm cement concrete cover at all around the step. The first step shall be 450 mm below from top surface of structure and next shall be fixed 300mm centre to centre in two rows at 375mm distance or as shown in the drawing.

10.5 SPECIFICATION FOR CONSTRUCTION OF INSPECTION CHAMBERS:-

1. All inspection chambers shall be constructed with brick masonry (Fly Ash) as per relevant IS specification and as per details out lined below.
2. The roof slab of all chambers shall be of RCC (M20) with reinforcement not less than 90 Kg. /cum with thickness not less than 125mm. The roof slab shall be cast-in-situ.
3. All side walls of chamber shall be not less than 250mm thick brick masonry wall having crushing strength not less than 75Kg/cm².
4. The foundation and floor (continuation of foundation) of the inspection chamber shall be C.C.(1:3:6) of thickness not less than 100mm. There shall be a foundation offset of minimum 150mm on outside of base slab.
5. Both outside & Inside wall plaster of the walls shall be in cement mortar 1:3 and cement punning only on Inner wall and floor surface of proper plumb and smooth.
6. The cover of the chamber shall be pre-cast factory made with frame as per IS-12592/2002 (SFRC Medium duty) for clear opening of 500mm with 2 nos. of lifting hook on the cover slab.
7. Benching (1:2:4) with 12 mm size h.g.c.b. chips. The benching should have a fall towards the invert of about 1:10.
8. Chamber Cover: - The size of cover shall be such that there shall be a clear opening of at least 500 mm in diameter.
9. Size of inspection chamber- The minimum internal sizes of different inspection chamber should be as follows:
 - a. **Inner size of Rectangular Inspection Chamber:-**
 - iii. 900mmx800mm x 450mm Depth (Avg.)

10. Construction of Inspection Chamber :

The spacing of the chamber in sewer line should be as per site condition.

Chambers 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.

11. SPECIFICATION FOR CONSTRUCTION OF RCC SEPTIC TANK:-

1. The number & capacity of Septic Tank are given in BOQ except safe bearing capacity of the soil, Ground levels, sub-soil water levels which to be ascertaining by the agency. The Septic Tank will construct as per IS: 2470 (Part-I)-1985. The septic tank will construct on item basis as per BOQ, however detail drawing and structural designed will be submitted & should be approved by IDCO before execution.
2. Any loose pocket patch below foundation shall be cleared and filled with P.C.C 1:3:6.
3. If the soil or subsoil water contains sulphate, the same shall be submitted and appropriate measures taken as per relevant spec. / codal requirements as specified by the Engineer-in-charge.
4. Foundation conc. In 1:3:6 mix (P.C.C) shall have coarse aggregate h.g.c.b. of size not more than 40mm.
5. RCC to be of grade M-30.
6. No concrete shall be cast at a temp. above 39°C or below 10°C unless special precautions relevant are codes are taken.
7. In two-way slabs place short span bars in bottom layer web reinforcement and anchorages.
8. Follow CPWD rules I.S- 456-2000 & IS- 13920 as to stirrups, columns ties and anchorages details of steel etc. must be carried out accordingly, unless otherwise shown.

9. Clear cover for main reinforcement is as follows:-
 - a. In footing : 50mm
 - b. In columns : 50mm
 - c. In beams : 45mm
 - d. In slabs : 45mm
10. All steel reinforcement shall be of high yield strength TMT bars confirming to IS: 1786 with min. yield stress 0.2% proof stress of 415 N per Sq.mm (Grade Fe 415)
11. Provide normal laps of 50 dia in Grade M-25 Mix.
12. Distance of 1st stirrup from edge column line/beam shall be 50mm max.
13. All bricks in the masonry shall have characteristic compressive strength of 7.5N/sq mm unless otherwise specified and laid in 1:4 cement coarse sand.
14. All center line dimensions should be taken off Arch. Drawings.
15. Not more than 1/3 rd of total col. Bars shall be lapped at any section of column laps shall be staggered and avoided at the places of max. Stress a lap shall be considered staggered if the center to center distance of the lap is not less than 1.3 times the development length as mentioned elsewhere in these notes.
16. Lap in column should be provided in the middle half between two braces.
17. Lap should not be provided
 - a. Within a joint
 - b. Within a distance of 2d from joint face
 - c. Within a quarter length of the member from the joint face
18. Not more than 50% of bars shall be spliced at one section.
19. Wherever necessary horizontal bars shall be left in the column for lintels and other similar members.
20. The disposition of hooks of similar col. ties shall be vertically staggered and placed on opposite faces for alternate ties.
21. Only stirrups of column are to be continued through beam column junction.
22. During casting of beam if the work is stopped for duration longer than initial setting time of cement, then such discontinuity shall be threaded as construction joints.
23. Construction joint shall be made vertical by proper template with slots for accommodating reinforcement bars. The joint shall be treated in accordance with C.P.W.D specification.
24. Construction joint shall be planned at or near mid span but not outside the middle third of the span provided the beam does not carry any concentrated load. In case beam carries concentrated load due to the reaction of the secondary beam, the construction joint in the main beam shall be off-set by a distance equal to twice the width of the secondary beam.
25. Construction joints shall not be provided in cantilever beams shall be cast monolithically with interior beam.
26. Drilling the holes of dia not less than 16 mm on inner wall and floor surface, spacing not less than 600mm C/C, grouting the holes by pressure grouting equipment's using polymer modified cement.
27. Any vibratory equipment, if placed on the structure must be mounted on properly designed vibration isolators and seismic snobbery so as not to transmit any dynamic forces on the structure nor dismount in an earthquake.
28. Where there are two or more rows of reinforcement bar, the reinforcement bars shall be vertically in line and minimum vertical distance. Between the reinforcement bars shall be 15mm or 2/3 of the nominal size of the aggregate or the max. size of bar whichever is more.
29. The stirrups and column bars at splices shall be bent at a slope not steeper than 1.6 (max) to avoid extension bars.
30. The specification of the approved drawing should be strictly followed.

31. Excavation of foundation including dressing and leveling the bed in all kinds of soil/rock up to the required depth as per design including dewatering shoring and shuttering if necessary depositing the excavated materials 50 meters clear of site as per direction of Engineer-in-charge.
32. Cement concrete grade M-10 as per design of suitable thickness under R.C.C foundation with 40mm of downgraded size crusher broken hard granite metal as per relevant B.I.S.
33. Reinforced cement concrete grade M-25 as per design in all members of the supporting structures.
34. Reinforced cement concrete grade M-25 in all members in contact with water and members subject to condensation like roof slab etc.
35. The supporting structure may be either on a group of columns connected by rigid braces or a load bearing shaft subject to fulfillment of a architectural and economic requirements as indicated at Clause -2.4 IV or B.I.S.- 3370.Part-II, 1965.
36. In case of roof slab having no slope, necessary protection measures shall be provided as pr clause 6.1 and 6.4 of B.I.S- 3370 (Part-II) 1965.
37. The Septic tank shall be ventilated by providing 110mmx1.80m ht. vent pipe with terminal guard- 2 nos. The opening of the ventilator shall be protected with mosquito proof wire net made of Stainless steel will be fixed on roof of the tank with C.C. Pedestal at suitable location as per direction of EIC.
38. SFRC (Medium Duty) man-hole covers with frame of clear opening size 500mm dia. Frame and cover-2 (Two) nos. will be fixed at suitable place in the roof of the tank & 1 (One) no. each for inlet and outlet chambers.
39. Providing, fitting & fixing of polypropylene steel reinforced manhole steps of approved quality & size in two parallel line of 300mm spacing in vertical walls with center to center 375mm (staggered) will be fixed in two locations inside septic tank & inlet and outlet chambers.
40. Providing, fitting & fixing of stone ware salt glazed Tee of size 150mm both inlet & outlet of the tank.
41. Cavity of the tank should be filled with excavated & selected earth, laying in layers not exceeding 23cm thick well watered& rammed etc. as per direction of EIC.
42. All R.C.C works shall be finished smooth, inside surface of walls and floors of the tank which shall be rendered with 12mm thick C.P. (1:3) with punning. All exposed surface of the concrete and plaster over masonry shall be given two or more coats of weather coat paint over a coat of primer of approved shade. All iron works of the tank shall be painted with two or more coats of approved anticorrosive paint (Epoxy) over a coat of primer of approved shade. All masonry works shall be plastered with 12mm thick C.P. in (1:4) cement mortar.

12. SPECIFICATION FOR CONSTRUCTION OF SOAK PIT:-

1. The number & size of Soak pit are given in BOQ except safe bearing capacity of the soil, Ground levels, sub- soil water levels which to be ascertaining by the agency. The Soak pit will construct as per approved PH specification & detail drawing and designed should be submitted & approved by IDCO before execution.
2. Foundation conc. In 1:3:6 mix (P.C.C) shall have coarse aggregate h.g.c.b. of size not more than 40mm.
3. RCC to be of grade M-20.
4. No concrete shall be cast at a temp. above 39°C or below 10°C unless special precautions relevant are codes are taken.
5. All steel reinforcement shall be of high yield strength TMT bars confirming to IS: 1786 with minefield stress 0.2% proof stress of 415 N per Sq.mm (Grade Fe 415)
6. Provide normal laps of 50mm dia in Grade M-20 Mix.
7. Distance of 1st stirrup from edge column line/beam shall be 50mm max.
8. All bricks in the masonry shall have characteristic compressive strength of 7.5N/sq mm unless otherwise specified and laid in 1:4 cement coarse sand.
9. All center line dimensions should be taken off Arch. Drawings.

10. Dry brick work of wall thickness 250mm will construct from invert level up to bottom & brick work in cement mortar (1:4) of wall thickness 250mm including Cement Plaster 1:4 of outer surface & cement plaster with punning on inner surface will be constructed from invert level to above G.L.
11. Both inner & outer peripheral cavity (width-450mm) of the Pit should be filled with 40mm & down size Hard granite hand broken graded metal from invert level up to bottom & rest outer cavity of the pit should be filled with excavated & selected earth, laying in layers not exceeding 23cm thick well watered& rammed etc. as per direction of EIC.
12. Providing, fitting & fixing of precast man hole cover with frame (SFRC medium duty) of clear opening 500mm dia on the roof slab of the pit at suitable location as per direction of EIC.

13 TERRACE WATER TANK

Water tanks at terrace shall be of RCC made over a staging on terrace slab.

14 GENERAL SPECIFICATIONS FOR WATER TANK

16.1.01 TESTING OF WATER TANK AND SEPTIC TANK: After construction of tank, it shall be tested for leak proofness. The tank shall be first filled with water up to the top of wall. The water level should not drop more than 50mm within 48 hours. If the drop of water level is found more than 50mm the defective and leakage point shall be rectified to the full satisfaction of the Engineer in charge.

16.1.02 CLEANING OF WATER TANK: The cleaning of the tank shall be done by manually or by hydrodynamic mechanism with low or high pressure as directed. Potable water approved disinfectant etc. shall be used for cleaning of water tank before use.

15 RCC CORE CUTTER & ITS APPLICATION

18.1.01 GENERAL: The RCC roof slab shall be cut with help of powerful drilling system for rig-based coring in diameters upto 200 mm with help of diamond drilling equipments.

Rig-based wet drilling in concrete for pipe penetrations in plumbing, heating and air conditioning installations stitch drilling for cable trays and ventilation ducts. Drilling blind holes for large-diameter anchors, reinforcing bars and the installations of railings and barriers. RCC roof slab can be drilled maximum depth upto 450 mm for passing the SWR pipes P traps, etc complete as per direction of Engineer in-charge.

16 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.

16.1 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.

16.2 CUTTING CHASE IN MASONRY WALLS INCLUDING MAKING GOOD TO THEM .

Making Grooves : Grooves are made in the walls for housing CPVC,uPVC.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.

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.chase on wall should be done by electric function carbide cutter with adequate depth as per specification shall be straight horizontally vertically as per direction of engineer in-charge.

Filling Grooves:

After CPVC,uPVC.pipes are fixed in grooves, the grooves shall be filled with cement concrete 1:2:4or 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.

17 HANDICAPPED TOILET

20.1.01 GENERAL: The fixtures such as white glazed vitreous china water closet (European Patter) P or S type with cistern, seat cover wash hand basin of size 460x360 mm with one pair basin bolt one number hinged rail 760 mm long and four numbers grab rail 600 mm long each along with PVC wall inserter and brass screw for handicapped toilet shall be aligned and fixed as per IS codal Specification for each of the above mentioned fixtures for easy accessible of handicapped personnel etc as per direction of Engineer in-charge.

18 HEALTH FAUCET

21.1.01 GENERAL: The fixtures with one meter long easy flex tube in Chrome Finish and wall hook along with one end adjustable CP on brass revolving nut with washer for suitable to angular stop cock outlet thread and other end of the chrome finish flex tube shall be provided with faucet sprayer and it shall be fixed as per direction of Engineer in-charge.

19 CP ON BRASS SPREADER

22.1.01 GENERAL: The fixtures CP on brass spreader shall be fixed on the top of the flat back urinal with help of brass or steel screw and the inlet of the CP brass on spreader shall be joined to the Brass tube both side nut and washer of auto closing flush cock etc after direction of Engineer in-charge.

20 CP EXTENSION PIECE

23.1.01 GENERAL: The fixtures CP on Brass extension Piece of 15 mmx50 mm long shall be provided to the concealed CPVC pipe elbow to angle stop cock,bib cock, flush cock for adjustment of gap of plastering of wall etc compete as per direction of Engineer in charge.

21 INBUILT RO PURIFIER WITH CHILLER

24.1.01 GENERAL: The fixtures chiller cum water dispenser with inbuilt RO purifier. It is ABS front cover and stainless steel body with elegant looks. Purification by RO+UF+TDS controller for commercial offices.A complete water Chilling capacity upto 25 ltr/hr& Purification capacity 20 ltr.

22 ANCHORING ARRANGEMENT FOR HANGING SWR PIPELINES WITH FITTINGS

25.1.01 GENERAL: For anchoring the hanging lines of SWR pipes and fittings such as P trap,bends,tees,elbows,offsets under the roof slab Flush anchor 12mm dia x 50 mm long ,anchor rod with both side thread 12mm x 1000mm long, anchor clamp and ring shall be fixed to the roof slab for fastening/hanging to maintain the gradient for free flow of sewerageetc all complete as per direction of Engineer in -charge.

23 SINKING OF BORE WELL.

23..1.01 GENERAL: Vertical Electro-sensitivity sounding test (V.E.S) shall be Performed to obtain adequate pervious zone as per the direction of Engineer in-charge.

23..1.02 TECHNICAL SPECIFICATION: Drilling of perfectly vertical borehole 250mm x 150mm dia upto 100mtr depth below ground level through consolidated and unconsolidated rock with DTH/combo drilling rig(1200 cfm/300 Psi) as required to suite the site condition with lowering of 200mm dia PVC schedule 80 pipes as per ASTM D-1785/2004 or housing/Casing treated with Socket with or without well screen as per the necessary for soft,medium,hard and boulder

formation. PVC casing pipe if required to prevent collapse of overburden shall be provided by the contractor including lowering and withdrawing after the completion of tube well and development of tube well by the help of air & measurement of Discharge and drawdown of the tube well. The tube well should be covered to Prevent from dropping Foreign materials by Trespassers etc complete as per direction of Engineer in-charge.

24 BORE WELL (200mm/150mm dia).

24.1.0 GENERAL: Labour for drilling a perfectly vertical bore hole of specified dia (200mmx150mm) for a specified depth of 40 mtrs below the ground level through consolidated and unconsolidated rock with down the hole hammer drilling rigs or combination drilling rigs including use of own rigs with its accessories, T&P and consumables etc for lowering of 200mm dia PVC pipes for housing as per the direction of Engineer in charge etc complete as per direction of Engineer in-charge.

24.1.02 GENERAL: Lowering of 200mm dia PVC casing with or without slotted pipes as per the necessity from ground level and fitted and fixed up in perfectly vertical position, including cutting and threading pipe and slotted pipe and supplying and fixing all the jointing materials, T&P, etc complete as per direction of Engineer in-charge.

24.1.03 GENERAL: Cleaning and developing the bore well using compressor continuously worked till clear and adequate discharge is obtained from the bore well including supply and use of all necessary equipment and cost of all laboursetc complete as per direction of Engineer in-charge.

25 GRAVITY SEWERAGE.

25.1.01 GENERAL: For gravity sewerage disposal earthwork shall be executed in all kinds of soil within 50mtr initial lead & 1.5mtr initial lift including dressing, levelling& breaking clods to maximum 5cm to 7cm & laying in layers not exceeding 0.3mtr depth & as per specification & Direction of Department.

25.1.02 Foundation trenches and plinth shall be filled with excavated & selected earth, Laying in layers not exceeding 23cm thick well watered& rammed etc complete including labour, T&P lead & lift cost & conveyance, loading, unloading etc. complete as per Specification & direction of Engineer in-charge.

25.1.03 Centrifugally cast (spun) RCC non pressure pipes of class NP2 with socket & spigot ends conforming to IS :458 with ISI mark shall be provided in standard length and required diameter i.e 200 mm Nominal bore and 250 mm nominal bore RCC S/S pipes suitable for push on joints including lowering the pipes in to trenches to required depth below G.L with proper alignment & gradient, testing ,commissioning (de-watering) if required including rubber gasket as per IS-5382/1985 with ISI mark with all taxes and duties etc all complete as per Specification & direction of Engineer in-charge.

25.1.04 Cement Concrete Pedestal shall be casted of C.C 1:2:4 with 12mm size hard granite crusher broken chips (hgcb) as shown in drawing for support of the RCC NP2 pipe of Nominal dia i.e 200 mm & 250 mm RCC NP2 Pipe.

26 CENTRIFUGAL PUMPS & APPURTENANCES

26.1.01 GENERAL: Supply installation, testing and commissioning of Centrifugal Pump sets with delivery Piping arrangements for both drinking water & Flushing water application.

26.1.02 Centrifugal pump set (split casing) and capacity of each pump with total head 45 mtr and discharge 15m³/hr shall be provided as per Engineer in-charge .

26.1.03 Induction motor of TEFC (Totally Enclosed, Fan Cooled) of three phase 50 Hz shall be coupled with a common base and electrical control panel suitable for the pump set shall be provided as per Engineer in-charge.

26.1.04 Base concrete shall be provided on the floor with grouting of Base bolt for fixing the pump and motor of required size over the base plate . The pump and motor shall be aligned properly, to run without vibration.

26.1.05 Butterfly valve, Non return valve (Pressure rating PN1.0) ,threaded or flanged short piece along with Piping arrangement shall be provided for both side suction and delivery of pumps .

26.1.06 In case of negative suction flanged end foot valve with strainer shall be provided

26.1.07 TECHNICAL SPECIFICATION OF PUMP SETS

Location of Project: Clear Water Pump House

(A) Specification of pump set:

i) Pump:

- | | | |
|-----|---------------------------|---|
| 1. | Type of pump set | : Horizontal Split casing Centrifugal Pump |
| 2. | Pump model | : To be furnished by the bidder |
| 3. | Make | : WILO MATHER+PLATT/KIRLOSKAR BROTHERS/WPIL |
| 4. | No. of pump | : 2 (two) (one working and one standby) |
| 5. | Discharge | : 20.00 m ³ /hr. |
| 6. | Head | : 25.00 meter |
| 7. | Efficiency | : Should not be less than – 60% |
| 8. | Nominal speed (Full Load) | : To be furnished by the bidder |
| 9. | Pump suction and delivery | : To be specified by the bidder |
| 10. | Nozzle dia | |
| 11. | NPS Hr | : To be specified by the bidder |
| 12. | Service | : Pump clear water from UGR |
| 13. | RPM | : To be furnished by the bidder |
| 14. | Specific gravity | : 1.00 |
| 15. | Ambient Temperature | : 35° C |
| 16. | Duty | : Continuous |
| 17. | Recommended motor K.W | : to be furnished by the Bidder |
| 18. | Performance test | : As per IS- 5120 |

Material construction of Pump :

- | | | |
|----|-------------------------|--|
| 1. | Pump casing | : C.I. (IS:210 Gr FG260) |
| 2. | Impeller | : CI-FG-210, |
| 3. | Shaft | : SS 410 |
| 4. | Shaft sleeve | : SS 410 |
| 5. | Casing wearing | : CI-FG-210 |
| 6. | Gland | : CI confirming to IS-210/1978 of latest version |
| 7. | Foundation bolts & nuts | : Carbon steel |

The materials for construction of pump casing, impeller, pump shaft, shaft sleeve, base plate, casing ring have to meet the related IS- specification.

The duty parameters of pump set shall be on the best efficiency point of the performance curve of pump with clear indication to the above & the rated head, capacity, power input, NPSHr etc. must be enclosed. NPSHr should be as per IS-5120. No negative tolerance is acceptable. This is to make sure that no cavitation's take place during operation of the pump. The grease nipple should be provided on both the points for future lubrication.

The pump should be supplied with accessories such as, common base plate, fabricated from MS channel, suitable cement concrete pump foundation and vibration damping arrangement with casting foot mounting all required, set of coupling with coupling bolts & nuts, rubber bush, companion pipe flanges, coupling guard, required nos of foundation bolts and nuts 100mm dia pressure gauge (0-7Kg/Cm²) with control ball valves- 2 nos., 100mm dia vacuum gauge-2 nos. and any other materials required for the same. Since the area is quite prone to corrosion, rubber base paint or epoxy base anticorrosive paint to the pump should be preferred.

The characteristic curve of pump should be continuously raising type with decrease in flow and shutoff head shall be at least 120% of the total discharge head at design point and should operate between 70% to 150% of total discharge.

The bidder should furnish the following details & drawing for scrutiny along with offer.

- (i) Make, MOC, model, size, capacity etc. including complete billing of materials.
- (ii) Performance curve indicating range of impeller dia meter, discharge Vs Head, power input (K.W), Break horse power & Torque speed curve. Single line curve should also be furnished.

Pump shall be proven type, no new pump shall be acceptable. Pump manufacturers should have proven experience of supplying such pump for clear water application. For future maintenance of pump the bidders should supply a set of tools with box.

ii) Motor:

1.	Type	: Non-flame proof squirrel cage horizontal Induction motor (suitable for above pump)
2.	Recommended rating	: To be furnished by bidder
3.	Duty	: Continuous
4.	Voltage rating	: 415 V + 10%
5.	Frequency	: 50 Hz + 3%
6.	Mounting	: Horizontal
7.	Enclosure	: TEFC
8.	Synchronous speed	: To be furnished by bidder
9.	Insulation	: 'F' Class
10.	Protection	: IP-55
11.	RPM	: To be furnished by bidder
12.	Phase	: 3 (Three)
13.	Rated output in KW	: To be specified by the bidder
14.	Winding connection	: -do-
15.	Full load current	: -do-
16.	Starting current	: -do-
17.	No load current	: -do-
18.	Efficiency at:-	
	(i) 100% load with power factor	: -do-
	(ii) 75% load with power factor	: -do-
	(iii) 50% load with power factor	: -do-

The motor shall be horizontal shaft foot mounted TEFC, 3 phase squirrel cage induction motor. This should be manufactured as per the environment code of IP-55 as per IS-Specification. The dimensions, performance, output, protection and mounting should be as per IS- 1231 or 2223, 25, 123, 4961 & 2253 respectively.

The motor shall operate on a wide voltage from 320 to 440 Volt at the rated duty at frequency of 50 Hz + 3%. The supply voltage may be assumed as sinusoidal. The insulation system of motor should be Class 'F' and designed to operate with continuous running duty (S.I) suitable for 3 equally spaced cold starts per hour or at least one hot restart under the rated share of the overload eventualities as per the CEPHEEO manual on "water supply and treatment". The motor should also have common base plate with the respective pump to which it will be directly coupled. The pump and motor should be properly aligned to prevent wear and tear of coupling and facilitate easy operation and maintenance. The motor should have a moderate speed of 1440 to 1500 RPM having clockwise rotation when viewed from the drive end as per IS- 12065. The roller coupling assembly with the pump should constitute metallic ball & roller bearing mounted directly into the bore of end shields and properly lubricated. Grease nipple should be provided (both side) for future lubrication. Since the area is quite prone to corrosion, rubber base paint or epoxy base paint to motor should be preferred. The motor should be provided with space heater as per required specification. The motor should have in-built thermostats. The input, output & efficiency characteristics curve of motor proposed should also be furnished along with tender.

**26.08 SPECIFICATION OF DELIVERY AND SUCTION PIPE LINE,
R.C.C. FOUNDATION, VALVES AND SPECIALS ETC.**

Specification for valves.

SI No.	Specification of valves	Qty.	Make	Remarks
1.	Suitable dia. double flanged Ductile Iron sluice valves (Rising spindle) with manual operation and hand wheel of PN-1.0 conforming to IS- 14846/2000 with ISI mark.	2 (Two)	IVC/KBL/Zoloto	Will be fixed at pump delivery line of approved size.
2.	Suitable dia. double flanged Ductile Iron non-return valve with by-pass arrangement, single door (Swing type), and mounting on horizontal pipe line of pressure rating PN-1.0 conforming to IS-5312/1984 (Part-I) with ISI mark	2 + 1 = 3 (Three)	IVC/KBL/Zoloto	Will be fixed at pump delivery line of approved size & 1(One) no. of 100 mm dia will be fixed with common delivery line.
3.	Suitable Ductile Iron, foot valve with strainer and flange type end connection as per IS- 4038/1967 with ISI mark.	2 (Two)	IVC/KBL/Zoloto	Will be fixed with suction pipe end of approved size.
4.	Suitable dia. double flanged Ductile Iron butterfly valve wafer type (Wafer long) quarter turn worm gear box (manual) with hand wheel operation of PN-1.6 conforming to BS- 5155.	2 (Two)	IVC/KBL/Zoloto	Will be fixed with suction pipe line of approved size.

Technical specification and materials construction:

(A) Ductile Iron double flange sluice valve:

i.	Body, wedge (door) dome, bonnet gland, thrust bridge, valve stem cap/hand wheel	D.I IS-210 Gr. FG 200/260
ii.	Seat & door face ring wedge nut	S.S as per IS- 1570, IS-6603
iii.	Spindle	S.S as per IS-6603 Gr. 12 Cr-12
iv.	Gland packing	Graphite asbestos /greased hemp
v.	Gasket	Rubber IS- 638 type-B
vi.	Fasteners	Carbon steel
vii.	Hydrostatic test pressure (i) Body (ii) Seat leakage	15 Kg/Cm ² 10 Kg/Cm ²
viii.	Operation	Anti-clock wise
ix.	Flanges	Faced and drilled as per IS- 1538/1969
x.	Body painting	Epoxy coated

(B) **Ductile Iron Double flange Non-return valve:**

i.	Body, door & cover	D.I. IS-210 Gr. FG 200
ii.	Turning shaft/hinge pin	SS AISI- 410
iii.	Body seat, door face rings bearing block	SS AISI –410
iv.	Flow direction clearly embossed on valve body	
v.	Plug	SS AISI – 410
vi.	Fasteners	Carbon steel
vii.	Hydrostatic test pressure (iii) Body (iv) Seat leakage	15 Kg/Cm ² 10 Kg/Cm ²
viii.	Flanges	Faced and drilled as per IS- 1538/ 1969
ix.	Body painting	Epoxy coated

(C) **Ductile Iron foot valve:**

i.	Body, Disc, flap and lift guide	Ductile Iron conforming to IS-210/ Gr. FG 200
ii.	Ring	SS AISI 410
iii.	End connection	Flanged type
iv.	Strainer	Cast iron conforming to IS-210/ Gr. FG 200
v.	Flanges	Faced and drilled to IS- 1538/1969
vi.	Body painting	Epoxy coated

26.09 Specification of delivery and suction pipe line with specials, construction of RCC foundation etc.

Suction and delivery piping shall be provided for both the pumps and shall be of M.S. pipe (heavy duty) with required fittings suitable for drinking water application, pipe & fittings conforming to relevant IS- Specification with ISI mark. All M.S. Pipes & fittings Should be painted with 2 (two) or more coats of epoxy paint of approved shade.

The thickness of all MS flanges shall be of 12mm conforming to IS- 6392/1971. The wall thickness of the specials like Bend, taper, offset etc. wherever used should be 8mm wall thickness.

The pipe line shall be so laid that there shall be independent suction for two pumps and a common delivery including fixing of valves, specials, expansion joints, flange joints with required and approved sizes of jointing materials like nuts & bolts (made out of carbon steel), rubber gasket (made out of nitrile rubber of 6mm thick), paints etc. The delivery pipe line should extend up to 10.00 mtr beyond the common delivery point of pumps with flange end. Required no. of pipe supports should be provided both for suction and delivery pipe line of both the pumps. The pipe supports should be made out of concrete (1:1½:3) pedestal of required height and approved design including grouting the same on the floor. Besides above, the scope of work comprises construction of required size and shape of RCC (M-25) pump foundation as per IS- specification, cutting holes in the 250mm thick Brick/ R.C.C wall and making good the damages and alignment of the pump sets inside pump house. Necessary earth work, back filling, de-watering (if required) shall also be taken up to complete the work in all respect.

26.10 Specification of Control Panel:

The control panel should be fully automatic & shall be provided with IP-65 ingress protection suitable for operation of 2 (two) no.s centrifugal pump sets each of 5 HP (approx.) (One working & one standby).

The panel board shall be floor mounted type and fabricated with 2mm thick CRCA sheet. The board shall be painted with 2 coats of approved enamel industrial gray paint on exterior surface, 2 coats of white enamel paint on interior surface over 2 coats of zinc chromate primer. The board should be dust and vermin proof and of double door type having interlocking with the switchgear i.e., the door can be opened only after the switch is 'OFF' position. Ventilation louvers with fine wire mesh should be provided. The panel board should be provided with punch holes on the Top plate for glanding of incoming and outgoing cables. The board should be provided with at least 2 nos. of earthing stud with hexagonal G.I. nuts and bolts. One no. enameled danger board and nomenclature plate should be fixed on the front of the panel board. Each detachable hinged door shall be earthed with 2.5 sqmm. PVC insulated multi stranded copper conductor wire of green colour. Adequate clearance shall be provided from the gland up to the spreader link of the MCCB (preferably 500 mm) for easy termination of 3.5 C × 35 sqmm. Armored aluminum XLPE insulated cable.

The panel shall be incorporated with the following components;

Incoming:-

1 no. 100A, (1 th 80 A) 3 Pole MCCB.

Bus bar:-

4 nos. 100 A, 25 x 3 mm Electrolytic Copper strips.

Outgoing:-

A. 2 nos. 16 A (11 – 16 A) 3P MPCB.

DOL 3 Phase starter suitable for 2 nos. centrifugal Pump sets.

1 no. 32 A 4P MCB

Instrument:-

A. 1 no. Voltmeter (0 – 500 V) digital multi function meter.

1 no. Ammeter (0 – 30 A) digital

Panel Complete duly factory wired.

Approved Makes:

Volt meter/ammeter	: AE/ IMP/ MECO
Selector Switch	: KAYCEE/ SLAZER
Contactors	: L&T/ SIEMENS/ BCH/ Telemacharique
CT	: Kappa
Starter	: L&T/ BCH/ Telemacharique/ SIEMENS
MCCB/MCB	: Legrand / L&T/ Schneider/ SIEMENS/ ABB/ Anchor/Panasonic/HAGER

Note: General arrangement drawing & SLD of the control panel should be submitted for approval before execution.

27.0 Under Ground Reservoir (UGR)

27.1 TECHNICAL SPECIFICATION

1. Any loose pocket patch below foundation shall be cleared and filled with P.C.C 1:3:6.
2. If the soil or subsoil water contains sulphate, the same shall be submitted and appropriate measures taken as per relevant spec. / codal requirements as specified by the Engineer-in-charge.
3. Foundation conc. In 1:3:6 mix (P.C.C) shall have coarse aggregate h.g.c.b. of size not more than 40mm.
4. RCC to be of grade M-30.
5. No concrete shall be cast at a temp. above 39°C or below 10°C unless special precautions relevant are codes are taken.
6. In two-way slabs place short span bars in bottom layer web reinforcement and anchorages.
7. Follow CPWD rules I.S- 456-2000 & IS- 13920 as to stirrups, columns ties and anchorages details of steel etc. must be carried out accordingly, unless otherwise shown.

8. Clear cover for main reinforcement is as follows:-
 - a. In footing : 50mm
 - b. In columns : 50mm
 - c. In beams : 45mm
 - d. In slabs : 45mm
9. All steel reinforcement shall be of high yield strength TMT bars confirming to IS: 1786 with min yield stress 0.2% proof stress of 415 N per Sq.mm (Grade Fe 415)
10. Provide normal laps of 50 dia in Grade M-30 Mix.
11. Distance of 1st stirrup from edge column line/beam shall be 50mm max.
12. All bricks in the masonry shall have characteristic compressive strength of 7.5N/sq mm unless otherwise specified and laid in 1:4 cement coarse sand.
13. All center line dimensions should be taken off Arch. Drawings.
14. Not more than 1/3 rd of total col. Bars shall be lapped at any section of column laps shall be staggered and avoided at the places of max. Stress a lap shall be considered staggered if the centre to centre distance of the lap is not less than 1.3 times the development length as mentioned elsewhere in these notes.
15. Lap in column should be provided in the middle half between two braces.
16. Lap should not be provided
 - a. Within a joint
 - b. Within a distance of 2d from joint face
 - c. Within a quarter length of the member from the joint face
17. Not more than 50% of bars shall be spliced at one section.
18. Wherever necessary horizontal bars shall be left in the column for lintels and other similar members.
19. The disposition of hooks of similar col. ties shall be vertically staggered and placed on opposite faces for alternate ties.
20. Only stirrups of column are to be continued through beam column junction.
21. During casting of beam if the work is stopped for duration longer than initial setting time of cement, then such discontinuity shall be threaded as construction joints.
22. Construction joint shall be made vertical by proper template with slots for accommodating reinforcement bars. The joint shall be treated in accordance with C.P.W.D specification.
23. Construction joint shall be planned at or near mid span but not outside the middle third of the span provided the beam does not carry any concentrated load. In case beam carries concentrated load due to the reaction of the secondary beam, the construction joint in the main beam shall be off-set by a distance equal to twice the width of the secondary beam.
24. Construction joints shall not be provided in cantilever beams shall be cast monolithically with interior beam.
25. Drilling the holes of dia not less than 16 mm on inner wall and floor surface, spacing not less than 600mm C/C, grouting the holes by pressure grouting equipments using polymer modified cement.
26. Any vibratory equipment, if placed on the structure must be mounted on properly designed vibration isolators and seismic snobbery so as not to transmit any dynamic forces on the structure nor dismount in an earthquake.
27. Where there are two or more rows of reinforcement bar, the reinforcement bars shall be vertically in line and minimum vertical distance. Between the reinforcement bars shall be 15mm or 2/3 of the nominal size of the aggregate or the max. size of bar whichever is more.

28. The stirrups and column bars at splices shall be bent at a slope not steeper than 1.6 (max) to avoid extension bars.
29. The specification of the approved drawing should be strictly followed.
30. Excavation of foundation including dressing and leveling the bed in all kinds of soil/rock up to the required depth as per design including dewatering shoring and shuttering if necessary depositing the excavated materials 50 meters clear of site as per direction of Engineer-in-charge.
31. Cement concrete grade M-10 as per design of suitable thickness under R.C.C foundation with 40mm of downgraded size crusher broken hard granite metal as per relevant B.I.S.
32. Reinforced cement concrete grade M-30 as per design in all members of the supporting structures.
33. Reinforced cement concrete grade M-30 in all members in contact with water and members subject to condensation like roof slab etc.
34. The supporting structure may be either on a group of columns connected by rigid braces or a load bearing shaft subject to fulfillment of architectural and economic requirements as indicated at Clause –2.4 IV or B.I.S.- 3370.Part-II, 1965.
35. In case of roof slab having no slope, necessary protection measures shall be provided as per clause 6.1 and 6.4 of B.I.S- 3370 (Part-II) 1965.
36. The water tank shall be ventilated by providing ventilating windows/pipe on the roof. The opening of the ventilator shall be protected with mosquito proof wire net made of Stainless steel. Adequate ventilation area shall be provided in relation to the area of water face and aesthetic requirements.
37. The riser height and trade width of the stair case should be of 150 mm and 250 mm respectively or as per site condition/ direction of E.I.C.

The following appurtenances shall be provided

38. C.I. / M.S. lockable hinge type man-hole covers with frame of clear opening size 500mm dia and weight not less than 50 kg/ each. Frame and cover fixed at suitable place in the roof of the tank.
39. All R.C.C works shall be finished smooth, inside surface of walls and floors of the tank which shall be rendered with 12mm thick C.P. (1:3) with punning & apply 2 (two) or more coats with epoxy base water proofing food grade material over cement punning and external surface shall be with 12mm thick C.P. (1:4).

All exposed surface of the concrete and plaster over masonry shall be given two or more coats of weather coat paint over a coat of primer of approved shade. All iron works of the reservoir shall be painted with two or more coats of approved anticorrosive paint (Epoxy) over a coat of primer of approved shade. All masonry works shall be plastered with 12mm thick C.P. in (1:4) cement mortar.

27.2 GENERAL REQUIREMENTS FOR CONSTRUCTION OF R.C.C. UNDER GROUND RESERVOIR

- 1.0 The number & capacity of underground reservoir are given in BOQ except safe bearing capacity of the soil, Ground levels, sub- soil water levels which to be ascertaining by the agency. The under ground reservoir will construct as per approved design and should be got vetted by the execution agency, at its own cost, from any Govt. institute. The total height of UGR will as such, i.e. 2/3 height will above proposed ground level and 1/3 height will under the ground will be preferred.

2.0 Detail Specification of R.C.C. Under Ground Reservoir :

2.1 Excavation of foundation including dressing and leveling the bed in all kinds of soil/rock up to the required depth as per design including dewatering shoring and shuttering if necessary depositing the excavated materials 50 meters clear of site as per direction of Engineer-in-charge.

2.2 Cement concrete grade M-10 as per design of suitable thickness under R.C.C foundation with 40mm of downgraded size crusher broken hard granite metal as per relevant B.I.S.

2.3. Reinforced Cement concrete grade M-30 in all members in contact with water and members subject to consideration like roof slab etc.

2.4 In case of roof slab having no slope, necessary protection measures shall be provided as per clause 6.1 and 6.4 of B.I.S-3370 (Part II) 1965.

2.5 The water tank shall be provided with suitable ventilating arrangement with copper wire / stainless steel wire mosquito proof net of approve size and design.

2.6 The following appurtenances shall be provided.

2.6.1 One set of electronic water level indicator with remote indication with high level and low level alarm system shall be provided in reservoir to indicate the depth of water in meters and equivalent quantity of water in kiloliters. The instruments shall work with A.C. Power 230 volts back up with D.C. power supply.

2.6.2 C.I. lockable hinge type man-hole covers (water tight) of clear opening size 560 mm dia each 50 Kg. wt. with frame and cover fixed at suitable place on the roof slab of the tank. Minimum 1 (one) number shall be provided.

2.6.3 There shall be a suction chamber inside the UGR of minimum size 3.00m x1.5 m x 0.5 m depth, below the floor level of UGR, which will be placed at suitable location inside the reservoir as per site condition & direction of EIC.

2.6.4 There shall be 2 (two) nos. stainless steel Ladder made out of 50 mm dia pipe of Grade-410 with required anchors for the reservoir to facilitate access to both the reservoir and also 1 no. stainless steel ladder to facilitate access to roof of the reservoir at locations decided by the Engineer-in-charge. The stainless steel ladder with both side hand rail shall be made out of 40 mm dia S.S. pipe & riggers made out of 32 mm dia stainless steel pipe of 375 mm centre to centre both inner and outside the reservoir.

2.6.5 The tenderer has to be supply including erection, laying hoisting, fittings and fixing of C.I./ M.S pipes, specials and control valves of various size as detailed below including concrete bedding in RCC floor as well as wall of the Under Ground reservoir at ground level where ever necessary excavation of pipe line trenches, providing necessary support and staging, including supply of all jointing materials required for flange joint, lead joints or welding joints etc,. The required quantity of double flanged pipes, specials and valves with ISI mark will be supplied by the contractor's cost as per site condition and direction of EIC which should be included in the tender. The C.I. double flange pipes should be "B" class and wall thickness of M.S. pipes should be of 8mm.

For Feeder Line: 80mm dia puddle collar -2 nos.

80mm dia Bell month bend- 2nos.

80mm x 90⁰dia double flanged bend- 2 nos.

80mm dia double flanged pipe- 2nos of suitable height (minimum 1.00 M below ground level) and extended up to 5 mtr. each from the outer edge of the UGR.

80mm dia duck foot bend- 2 nos.

80mm dia D.I sluice valve of PN-1.0 with hand wheel confirming to IS-14846/2000 with RCC M-25 valve chamber of inner size 1.00m X1.00m and height as per site condition and direction of EIC.

For Suction line: 80mm dia CI puddle collar-2nos.
200mm dia CI puddle collar-2nos

Over Flow: 100mm dia puddle collar-1 no.
100mm x 90⁰dia Double flanged bend-1 no.
100mm dia M.S. grating-1 no.

100mm x 90° duck foot bend-1 no.

100mm dia double flange pipe of suitable length from over flow point to over flow chamber-1 set

2.6.6.a. The wall thickness of M.S pipes shall be Heavy duty and thickness of M.S. flange not less than the 20mm or as per the IS specification. Cast Iron pipes shall be of class “B” double flanged pipes and all specials and valves shall be C.I. / M.S. double flanged.

2.6.6.b. All R.C.C works shall be finished smooth and no plastering will be allowed except inside surface of walls and floors which shall be rendered with 20mm thick C.P. (1:3) with approved water proofing compound including cement punning with 2 coats of Epoxy Paint for skirting. Water Bar shall be provided where necessary. All exposed faces of the concrete and plaster over masonry shall be given two coats of weather coat paint with primer of approved shade, with printing and writing of wall sign board consisting capacity of UGR, completion and commissioning date etc,. All iron works shall be painted with two coats of approved anti-corrosive paint (Epoxy) over a coat of primer. All masonry works shall be plastered with 12mm thick C.P. in (1.4) cement mortar. The overflow pipes shall be with required fittings shall be connected to the overflow chamber extended up to nearest drain or 5.00mtr. from the overflow chamber. Construction of 2 nos RCC over flow chamber of inner size 900mmx 900mm & depth as per site condition with cement plaster and punning. The outer cavity of UGR should be filled with sand There shall be 1000 mm width plinth protection with 250 mm thick Fly ash brick work in cement mortar 1:4 of minimum 300 mm height from proposed ground level and 450 mm below the existing ground level with necessary earth work in all kinds of soil / rock & back filling, P.C.C.1:3:6 with 40 mm size h.g.c.b. metal of 100 mm thick , 12 mm thick cement plaster both inner and outer of wall, filling the cavity with sand & top portion (i.e. from outer wall of UGR to Inner wall of plinth protection) with P.C.C. 1:3:6 of 100 mm thick & 40 mm thick cement concrete 1:2:4 over P.C.C. & making smooth etc. all complete as per direction of E.I.C.

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

- | | | |
|-----|---------------------------|---|
| 1) | Cement | : as per 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) | Construction Joint | : IS: 3414/1968 |

NOTE;

- 1) In case of any doubt and absence of provision regarding specification I.S (Indian Standard) shall be referred. The latest version of the BIS code shall be followed.

Reference Text Books:

1. Concrete reservoir and tanks by G.P manning concrete publication Ltd., London.

2. Water towers Bunkers and silos by G.P manning concrete publications Ltd., London
3. Plain and reinforced concrete Vol. I and Vol. II by Jai Krishna and O.P Jain.
4. Reinforced concrete design by Mallick and Rangaswami
5. Design of R.C.C structures by P. Dayartanam
6. Any other Indian or Foreign publication in reputed journals by reputed authors.

28 PIPE COLOUR CODE

Sl no.	Pipe Lines	Ground / Base colour	First colour Band	Second colour Band
1	Drinking Water (All cold water line after filter)	Sea green	French Blue	Single red
2	Treated water(soft water)	Sea green	Light orange	
3	Domestic Hot water	Sea green	Light Grey	
4	Drainage	Black		

29 MOCKUP AND TRIAL ASSEMBLY .

The installation of the sanitary fixtures and fittings shall be as per the shop drawings approved by the Engineer-in-Charge. The tenderer shall have to assemble at least one set of each type of sanitary fixtures and fittings in order to determine precisely the required supply and disposal connections. Relevant instructions from manufacturers shall follow as applicable. This trial assembly shall be developed to determine the location of puncture holes, holding devices etc, which will be required for final installation of all sanitary fixtures and fittings. The above assembly shall be subjected to final approval by the Engineer-in-Charge. The fixtures in the trial assembly can be used for final installation without any additional payment for fixing or dismantling of the fixtures.

TECHNICAL SPECIFICATION OF INTERNAL ELECTRIFICATION WORKS

The details of internal wiring, the position of fittings, fans, switches and plug sockets etc. are indicated in the layout drawings. The position of light fittings, fans, switchboards etc. indicated in these drawings are only for the guidance of the supplier and the actual position of these shall be mutually decided between the supplier and the purchaser. The supplier shall submit the purchaser of his consideration and approval all runs of wiring and the exact position of all the points and the switch boxes first marked on the points buildings.

All internal wiring shall be done in conformity to the latest Indian standard specification/Rules, code of practice adopted by CPWD and other standard practices prevalent in the part of the country. For the purpose of the specification the terminology used shall be as defined in IS:732 and IS:1356 of the definition of points wiring. The installation shall be carried out in conformity to all requirements of IE Act, 1910 and IE Rules 1956.

- a) Ceiling rose in (in case of ceiling and exhaust fan).
- b) Ceiling rose or connector (in case of pendants except stiff pendant points)
- c) Bank plate (in case of stiff pendant).
- d) Socket outlet (in case of socket outlet points)
- e) Lamps holder (in case of wall Bracket, batten holder bulk head fitting and similar other fittings)
- f) Call bell / buzzer (in case words 'via' the switch shall be read 'via' the ceiling rose / socket outlet for bell push, where no ceiling rose / socket outlet its provided.

The following shall be deemed to be included in the point wiring

- a) Switch and ceiling rose are required
- b) In case of wall brackets, bulk head fittings, cables as required up to the lamp holders]
- c) Bushed conduit for porcelain tubing where cables pass through walls.
- d) All wood or metal blocks, boards and boxes, R.J. Boxes sunks or surface type including those required for fan regulator but excluding those under the distribution board and main control switch.
- e) Earth wire from 3 pin socket point to the common earth including connection to the earth dolley.
- f) Earth wire of 16SWG/14 SWG/I.G. wire for loop earthling of the fixture
- g) All fixing accessories such as clips, nails, screw, plug, rawl plug, wooden plug, round blocks etc. as required
- h) Joint for junction boxes and connecting the same as required
- i) Connections to ceiling rose or connection socket outlet, lamp holders, switch, fan regulators etc

The point wiring in case of fan and light points shall mean the distance between the control switch and ceiling rose, connect or back plate, socket outlet or lamp holder depending upon the fittings measured along the runs of wiring irrespective of the number of wires in run. In the case of socket outlet points, the length shall mean the distance between the socket outlet and the tapping point of live wire on the nearest switchboard or junction box, as the case may be.

In the case of exclusive socket outlet circuits wired on 'Joint Box' system of wiring, any junction provided for extending the wiring beyond the point referred to, shall be treated as the nearest tapping point. In case of call bell / buzzer points the length shall mean the distance between the call bell and the ceiling rose / socket outlet or the bell push (when the ceiling rose / socket outlet is not used).

Sub main shall include the earth wire of adequate size main distribution Board up to sub distribution board B.B. such wiring has been classified on the basis of length. For the internal lighting, either surface conduct wiring system or recessed conduit or batten wiring system shall be provided as specific in the bill of quantities and working drawings.

LED LIGHTS

- 1. LED light distribution pattern, illuminance, Luminousfles, chromaticity, color temperature, color rendering Index to applicable standard Lm79 & Lm80.
- 2. LED lights should be as per standards IEC EN 60598 and IEC61547.
- 3. LED luminaries should in function in a temperature raise -30°C + 60°C under 95% relative humidity condition to simulate adverse operating environment.
- 4. The LED produces should meet safety standards as per EN60598, EMCIEMI standard as per EN611547/EN 55015 and EN61000-3-2 and 61000-3-3 for Harmonics.
- 5. The electronic driver should work in the short circuit and open circuit conditions and should work in the voltage range 90V to 3000 volts.

6. LED lighting fixtures should be manufactured with LEDs of only reputed makes such as Cree, Samsung, Lumileds and other equivalent.
7. The officer-in-charge has reserve the right to inspect and tested the quality in Govt. laboratory to ensure technical qualifications to meet the requirements.
8. LED lights no toxic materials U V and IR spectrum protects insect life.
9. It should be manufacture with dia-cast aluminum with required colour as per manufacture for released months.
10. The LED lights Should function 90 to 380V, 50/60 Hz, PF-Z0.9 (230V AC), Copper temp-3000K/4000K/ 6000K/ operation temperature - 20°C + 50°C in-gross protection-IP 20, lifespan 30000hrs.

Conduit wiring

For recessed conduit wiring system the conduit shall be placed in the ceiling / columns etc. before the casting of the slab or column. The conduit pipes shall be properly positioned and fixed so that it will not be displaced at the time of concreting. The junction boxes provided shall be so arranged that its cover will be flushed with the finished surface of the ceiling or column.

For placing the conduits in the walls, chases of ample dimension shall be made neatly to fix the conduit in a desired manner. The conduit pipe shall be fixed by means of staple or saddles not more than 600mm apart. Fixing of standard bends or elbows shall be avoided and all curves maintained by bending the conduit itself with a long radius will permit easy drawing of the conductors. Suitable inspection boxes shall be provided to permit periodical inspection and removal or replacement of wires if necessary. There shall be mounted flush with the wall with holes in the cover of the box.

The switch or regulator box shall be made of metal on all sides except on the front where backlight sheet or Perspex cover painted to match the colours of the wall shall be used in case of surface wiring system. For recessed wiring system, these boxes shall be made flush with the conduit of each conduit or section shall be completed before conductors are drawn in. The entire system of conduit after installation shall be tested for mechanical strength and electrical continuity throughout the earthing of the entire installation shall be carried out in accordance with I.E. Rules and standards. The number of wires drawn in the conduits shall not exceed the numbers those specified in Indian standard specification No.732.

Main and Sub distribution Boards:

The position of main boards for lighting and sub distribution board for different buildings are approximate and the exact location shall be given to the successful tenderer at the time of installation. The scope of this specification includes installation of the panel boards and distribution boards and making necessary connections. The installation of the boards shall be done strictly in accordance with the details supplied with the specifications; the instructions supplied by the switchgear manufacturer, Indian standard specifications and I.E. rules. The supplier shall submit the details of installations to the purchaser for his consideration and approval, prior to installation.

When the switchboards are wall / column mounted top, they shall, be mounted on a suitable angle iron framework. All the metal supports etc. shall be protected against corrosion. The mounting height for such switchboards shall be such that it can be conveniently operated.

Earthing

Earthing shall generally be carried out in accordance with the requirements of Indian Electricity Rules and the relevant rules and regulations of electrical supply authorities. The complete earthing work for the installation covered by this specifications shall also be provided taking into account Indian Standard Specification No.IS:732 and IS:3043. The earthing system adopted shall also have adequate mechanical strength.

The work shall include earthing of non-current carrying metallic parts of all the equipment, light fittings, conduit pipes, cable and cable supports and earth strips (the design to be approved by the purchaser) and all the inter connection between the earthing system to a value mutually agreed upon\ between the purchasers and the supplier.

Installation, testing and Commissioning:

The supplier shall be responsible for the installation testing the commissioning of all the equipment and materials supplied by him against this specification. This shall also include the provision of miscellaneous wiring and supports and earthing in compliance with Indian Electricity rules and to the full satisfaction of the Government Electrical Inspector. All small items such as clamps, bolts, nuts, racks, supports, miscellaneous wiring etc. required to make the installation complete, shall constitute the part of major items specified in the bill of quantities and the tenderer should quote for each item taking these into consideration.

The responsibility of the supplier shall include receiving all the equipment and materials at site, storage for required period, handling the same at the site of erection, final execution , erections, revisions of equipment, if any, testing and commissioning and handing over the installation complete in all respect to the entire satisfaction of the

purchaser's authorized representative. The supplier shall make good of all the damaged equipment and materials during this period at his own expense. The supplier shall submit sample of each and every equipment and materials for the final approval of the purchaser's representatives immediately after the acceptance of offer. All the equipments and materials shall be supplied exactly as per to the approved samples. If at any stage the purchaser brings to the notice of the supplier any discrepancy or defect the supplier shall replace the same at his own expense.

The supplier shall render all reasonable assistance to the purchaser in getting the installation approved by the Government Electrical Inspector prior to the energisation and supply necessary drawings, test certificates and both for tests carried out at the factory and site as well as the tests which the inspector may demand. In case any addition of alternations are required, to be made in the installation or in the equipment as per the directive of the Government Electrical Inspector / Local Authorities, the same will have to be carried out by the supplier, at his own expense.

The position of light fittings, main board, switches, sockets and routes of pipes and cables shown in the drawings are only indicative. The actual position of these shall be decided at site at the time of execution jointly by the supplier and the purchaser's authorized representative. The position of light fittings, pipes and board if required, to be changed / shifted due to the change in the building design etc by the purchaser's authorized representative, the same shall be carried out at no extra cost.

All the materials supplied to the contractor according to the Contract condition will be subject to inspection and approval of the officer or his representative from time to time. The contractor will provide all facilities of such inspections free of cost. At the time of inspection, the owner or his representative will have full liberty to reject any such materials, which does not conform to the specification / requirement. No claim for any rejected materials will be entertained by the owner. The contractor will remove all rejected materials from site at his own cost. No surplus materials procured by the contractor will be accepted by the owner. The contractor will be responsible to get the Electric installations cleared by the Electrical Inspector of Odisha Government. Only the inspection fee will be reimbursed by Department on production of challan copy.

Installation and Maintenance Tools:

The supplier along with the tender shall furnish a complete list of tools, appliances and accessories required for the installations of switch gear, light fittings, pipes cables and wires.

Drawings:

All drawings, test certificates, instructions manuals etc. shall be in English Language and all dimensions and weights shall be in metric units.

The tenderer shall submit with the tender general arrangement drawings for the installations work, typical methods and cabling and cables supports pipe work and pipe supports, typical methods of earthing and fixing of light fittings earthing etc. as offered by him in the tender.

The contractor shall submit for the purchaser's approval all layout, the general arrangement drawings as well as the typical details of all types of installation work in three sets before commencing the manufacture and the site installations work well in advance so that the site work shall not suffer.

After obtaining approval of the above drawings the contractor shall supply three sets of the following drawings:

- (a) The arrangement and support of conduit pipe
- (b) The position of light fittings, switches / plug socket and switch boards
- (c) Earthing installations
- (d) Layout plan showing the entire cable network

On completion of work, the successful tenderer shall supply one set of tracing in transparent linen and five sets of prints of all drawings incorporating all the changes / modifications affected during the execution of the contract. All wiring diagrams shall indicate clearly, the switch board, the runs of main and sub main wiring and the position of all the points with their controls. All the circuits shall be clearly indicated and numbered in accordance with IS:375. The technical literatures and operating instructions and the maintenance manuals shall also be supplied in triplicate to the purchasers after the completion of the installations work.

Test:

Manufactures standard tests in accordance with Indian Standard and other standards, adopted shall be carried out on all the equipment and accessories covered by this specification so as to ensure efficient and satisfactory performances of all the components and also the equipment as a whole under working conditions at site. The tenderer shall submit a complete list of all such tests. If the purchaser, if so desired for special tests, to be carried out, under certain conditions the same shall be made by the successful tenderer at his own expenses. All equipment shall be tested

at site before the commissioning in accordance with the adopted standard and Indian Electricity Rules. Voltage test shall be carried out on each circuit on completion of wiring and cabling.

Technical Data:

The tenderers shall submit with their tender all such technical data, which are required for complete evaluation of the equipment offered. The suppliers shall give complete technical information of the equipment as detailed in Annexure and relevant Indian standards. The tenderer should supply such details of all equipment and materials offered specially with regard to the following.

- a) Fuse switch board and distribution boards
- b) Light fittings
- c) Conduits and the accessories for them
- d) Switches / plug sockets
- e) Cable and wires

The tender shall give along with his tender the following details:

- a) Complete details of earthing electrodes, earthing station and earthing conductors
- b) Details of conduit supports
- c) Details of all the equipment and accessories to be supplied

Exception to Specifications:

The object of this specification is to have all tenderers quote for equivalent materials and workmanship. It is, however, understood the certain manufacturers may not be able to offer as specified in every case, where the tenderer may find it necessary to deviate from the exact letter and not the intent of the specification, he must specifically state what these deviations may be at the time he submits the tender. All deviations must be grouped in one statement. No deviations other than those included in the tender will be permitted.

PVC insulated Cables and Wires:

For 415V Distribution system, cables of voltage grade not less than 1000V shall be used. These cables shall be heavy-duty class, PVC insulated and PVC sheathed with aluminium/ copper conductors. The wires used in the lighting installation shall be PVC insulated and PVC sheathed copper / aluminium wire in case of conduits wiring and of 660V grade. Wires of different colours shall be made use of for quick identification of phase wire / neutral wire etc. All cable of wires shall comply with the requirements regarding the manufacture and testing etc as specified in India Standard Specification IS: 1554 and IS:694.

The length of cables indicated in the bill of quantities and drawings are only indicative and the Successful tenderer will be paid for the exact length of cables laid at site. No joint shall be allowed in a run of cables, which can be covered by a possible drum length of cables.

Fuse switch / switch fuse shall be metalclad dust and vermin proof suitable for use under climatic conditions prevailing at site. Switch fuse / fuse switch units shall comply in general to IS:1567/4064 with regard to design and constructional / features.

The 'ON' and 'OFF' position of the switch handles shall be distinctly indicated and interlocks shall be provided to ensure that the switch cover cannot be opened unless the switch is in the 'OFF' position. Means shall, however, be provided for releasing the interlock to permit closing of switch with cover open for testing purposes. Designs with normal conventional position of switch handles, i.e. with switch handle up in the 'ON' position and down in the 'OFF' position shall be preferred. All live parts inside the switch shall be properly surrounded and inter phase barrier shall be provided.

Switch fuse / fuse switch units, distribution boards shall be provided with necessary metal frame work so that they can be mounted on wall / columns structure etc. as desired. The panel boards, shall be wall mounted type or floor mounted type as specified in the bill of quantities or drawings. Necessary supporting metal frame of approved design shall be provided for all panel boards

The arrangements of work boards shall be such that the operational handle of the top mounted switches are within the convenient of operators (about 1.2 M from the finished floor level) and proper space shall be provided for the termination of the cable in the switches provided below the bus-bars.

The bus-bars within the bus-bar chamber shall be liberally spaced for taking the riser connection. The bus bars with aluminium conductors shall be provided and PVC sleeves of different colour shall be mounted on them for easy identification, Clamped joints for taking the riser connections, instead of bolted type shall be preferred.

Two bolted type earthing terminals shall be provided on the switch boards. All individual switches shall be connected with suitable size earth wire to the main earthing terminals of the switchboard. Hanger Board and shock treatment / charts shall be supplied wherever required. At the incoming side of each pen phase, 3-neon type indicating lamps should be provided at the main board.

Switches and Plug Sockets

Switches provided for control of light points shall conform to IS:1087 and shall be rated for 5A/15A 250V

Ceiling Fans and Exhaust Fans:

Ceiling fans shall conform to Indian standard specification IS: 374-1960. The fans shall be supplied with all standard accessories like regulator and capacitors etc.

The performances rating of the propeller fans shall in accordance with stipulations of IS:2312. All fans shall be robust in design and construction and shall be supplied complete with wall brackets / clamps etc.

Incandescent Fittings:

The incandescent fittings shall be supplied strictly as per the details given in the enclosed annexure and bill of quantities, deviation if any regarding design, construction of materials should be specified clearly. All the metal parts used in construction of the fittings shall have no effect due to dust / fumes / gases likely to exist in the atmosphere. All the bolts, clamps, nuts and guard wire etc shall be galvanized. The wall fittings shall be provided with necessary hooks / clamps / supports etc for fixing the light fittings on wall / ceiling etc as detailed in the bill of quantities and the working drawings. Light fittings shall be suitable for connection with 19mm dia. Conduit pipe as required. If fittings are to be connected through PVC cables, glands of adequate size and capacity shall be provided. The lamp holders provided in the fittings shall confirm to IS:1528.

WIRING SYSTEM

All power wiring shall be carried out with 650/1100 volts grade FRLS PVC insulated, COPPER armoured, overall, PVC sheathed aluminum conductor cables. Cables shall be sized for starting current and by applying proper de-rating factor. All control wiring shall be carried out by using 650/1100 volts FRLS insulated copper conductor wires in wire trays or in conduit. Minimum size of control wiring shall be 1.5 sq.mm. FRLS insulated copper conductor wires. Minimum size of conductor for power wiring shall be 4 sq.mm. 650/1100 volts grade PVC insulated aluminum conductor wires in conduit.

C O D E S

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

- a) Indian Boiler Act, 1923 and Rules and Regulations made there under
- b) Indian Electricity Act, 1923 and Rules and Regulations made there under
- c) Indian Factories Act, 1948 and Rules and Regulations made there under
- d) The minimum wages Act
- e) The Women's Compensation Act
- f) The Payment of Wages Act
- g) The Fatal Accident Act
- h) The Industrial Employment Act
- i) The Employment provident Fund Act
- j) Indian Explosive Act 1984 the Rules and Regulations made there under
- k) Indian Petroleum Act 1934, and Rules and Regulations made there under
- l) A.S.M.E. Test Codes
- m) AIRE Test, Codes
- n) American Society of Materials Testing Codes
- o) Standards of the Indian Standards Institution

- | | | |
|----|--|---------------------------|
| 1) | Low Tension Circuit Breakers : | IS 2516-1955 Part I Sec.1 |
| 2) | Switchgear Bus Bars | IS 375-1963 |
| 3) | HRC fuse links | IS 2208-1962 |
| 4) | Distribution fuse boards | IS2675-1966 |
| 5) | Enclosure for Low Voltage switchgear | IS214701962 |
| 6) | PVC Cables | IS1554-1975 |
| 7) | Tabular fluorescent lamps for Cameral lighting service | IS2418-1963 |

8)	Tungsten Filament Lamps for cameral service	IS415-1963
9)	Ceiling Fans	IS274-1966
10)	Flood lights	IS1947-1961
11)	Wall Glass flame-proof electric light fittings	IS2206-1962 (Part 1)
12)	Water Tight Electric Light Fittings	IS3553-1956
13)	Steel Boxes for Enclosure of Electrical Accessories	IS5133-1969
14)	Fittings for Rigid Steel conduit	IS2667-1979
15)	Rigid steel circuits for electrical wiring	IS3837-1966
16)	Accessories for Rigid Steel Conduits for Electrical Wiring	IS3837-1966
17)	Switch Socket Outlets	IS3837-1966
18)	PVC Wiring	IS694-1977
19)	Switches for domestic and similar purpose	IS3854-1966
20)	PVC wiring	IS694-1977
21)	Call Bell and Buzzers	IS2268-1966
22)	Straight through joint boxes and leads sleeves or paper insulated cables-	EID-0032-1964
23)	Earthing	IS3043-1966
24)	Electrical Wiring installations	IS732-1963
25)	Switchgear	IS3072-1965 (Part I)
26)	Lighting protection	IS2309 –1969
27)	Public Address system	IS1882-1962
28)	Low Tension switch use units	IS4064-1978
29)	Code of Practice for Automatic FIRE ALAM system	IS2189-1970
30)	Specification for Heat Sensitive Fire Detectors	IS2175-1977
31)	Guide for Safety procedure in Electric work	IS5216-1969
32)	Rubber Mats for Electric works	IS5424-1969

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

LIST OF PREFERRED MAKE OF MATERIALS(ELECTRICAL)		
S.No.	Material/Article	Manufacturers/Agencies/Brandmake
1	Engine	AshokLeyland/Cummins/Caterpillar/KOEL/Mahindra
2	Alternator	Kirloskar/KEL/CromptonGreaves(AL.series)/KEC
3	Battery(LeadAcid/Mntc.Free)	AmaraRaja/Exide/CromptonGreaves/Prestolite/Pace Setter/Standard/
4	HVSwitchgear	ABB/Siemens/Schneider/ L&T
5	LTSwitchgear	L&T/SchneiderElectric/Siemens//Legrand/ABB
6	VaccumCircuitBreaker	ABB/Siemens/Schneider/ L&T
7	Transformer(Oilfilled/Drytype)	ABB/CromptonGreaves/ /Kirloskar/Siemens/ Alstom/Uttam/OTPL
8	HTPanels	ABB/Siemens/Schneider/ L&T
9	AirCircuitBreaker	L&T/SchneiderElectric/Siemens/ABB
10	MCCB(lcs=lcu)	L&T(d sine)/Schneider(Compact NSX)/Siemens(Sentron-3 VL)/Legrand(DPX)/ABB(Elegance)
11	MV/LTPanels	ELECTRO ALLIED PRODUCTS/ A. C. Power System/ Green Galaxy/ CONTROL & SWITCHGEARS SCHEMATICS/ TRICOLITE/ ADLEC/Technocrat/Power Professional/Utkal Electrical/Power Tech
12	SDFunits	L&T/SchneiderElectric/Siemens/Legrand
13	PowerContactors	L&T/SchneiderElectric/Siemens/BCH/GE/PowerControls
14	ChangeOverSwitch	L&T/HPL/ Standard/Control&Switchgears
15	AirBrakeSwitch	National/Kiran/Pactil/Atlas/Powergridswitchgears
16	PinandDiscInsulator	Jayshree/WS/IEC/BHEL/BharatIndustries
17	11KVHornGapArrestor	Sahal/Pactil/GEC/SEW
18	LightningArrestor	Atlas/GE/Elaro/Lamco/International/Oblum/Elpro
19	DropoutFuses	National/Kiran/Pactil
20	GI/MSPipe(ISI Marked)	ATC /ATL/BST/GSI/ITC/ITS/IIA/JST/Jindal/TTA/ Tata/Zenith
21	APFCRelay	L&T/SchneiderElectric/NeptuneDucati/Syntron/Trinity Electronics
22	IDMT Relay	AVKC/SEGC
23	C.T./P.T.	AE/MP/Marshall/Pactil/Kappa/L&T/Ashmor/Waco/Meco/Gilbert/Trio/Indotech/Indocoil
24	SelectorSwitch	L&T/Kaycee/IMP/Vaishno/Seizer/rasscontrol
25	IndicatingLamp(LEDType)andPushBut	Vaishno/Siemens/L&T/AE/IMP/Rass
26	PowerCapacitors(MPP/APP)	Khatau/Junkar/L&T/EPCOS(Siemens)/ABB/Crompton/SchneiderElectric/NeptuneDucati
27	DigitalPanelMetersi/cMultiFunction Meter	Conzerv/SchneiderElectric/AE/Digitron/IMP/Meco/ Rishabh/Universal/HPL/L&T/ABB
28	Ammeter/Voltmeter	AE/Universal/Rishabh/Kaycee/Meco/Enercom
29	ColdshrinkHT/LTCableJointKit	Denson/3M(M-Seal)/ Raychem
30	RubberMatting(ISIMarked)	JyotiRubberUdyog/Raychem/Padmini/Dozz
31	AVM Pads	Dunlop/PolyBond
32	MCB/Isolator/RCBO/RCCB/ Distribution Board	L&T/SchneiderElectric/Siemens//Legrand/ABB (makesofDBsandcircuit breakersshallbesame)
33	TPNSwitches&HRCFuses	L&T/SchneiderElectric/Siemens//Legrand/ABB
34	PVCConduits(ISIMarked)Colour: Ivory/Grey	AKG/Polycab/AvonPlast/Precision/Norpack

35	SteelConduits(ISIMarked)	BEC/Bharat/Gupta/AKG/RMCON/SteelKrafts
36	ModularSwitchesandSockets	Legrand - Myrius/L&T Englaze /Anchor– Roma plus/ ABB - Ivie
37	CableTray	MEM/Bharti/Ratan/Slotco/Profab
38	CableGlands	MCI,Comet/Jainson/Dowells
39	Thimbles/Lugs	Jainson/Dowells/Ascon
40	1.1 KV/11KV grade Al. Condr., XLPE insulatedarmouredcables(ISIMarked)	Finolex/Havells/Polycab//KEI/RR KABEL
41	FireSurvivalcable	Finolex/Havells/Polycab//KEI/Anchor/ RR KABEL
42	Wires (PVC insulated copper conductor cable FRLS - ISI marked)/Telephone Cables/Submersiblecables/Co-axial/TV cables	Finolex/Havells/Polycab//KEI/ Anchor/ RR KABEL
43	BLDC Type FansandExhaustfans(AllTypes)	Havells/Crompton/Orient/Bajaj/Usha/atomberg
44	Internal LEDLuminaries	Philips/Havells/Crompton/ Bajaj/ Wipro/ Panasonic
45	External LEDLuminaries	Philips/Havells/Crompton/ Bajaj/ Wipro/ Panasonic/ K-Lite/LT
46	LANCables	Panduit/Legrand/Schneider//Polycab
47	CentrifugalPump	BEPower/Beacon/Crompton/Kirloskar/KSB
48	SubmersiblePump	BEPower/Beacon/Crompton/Kirloskar/KSB
49	Motors	CromptonGreaves/SchneiderElectric/Kirloskar/Siemens
50	MotorStarter	L&T/Siemens/BCH/GEPowerControl/SchneiderElectric
51	FreshAirFans	Khaitan/Havells/Crompton/Orient/Bajaj/Usha/Polycab
52	SinglePhasePreventer/OverloadUnit	L&T/Minilec/ Siemens
53	Timers	L&T/Minilec/Siemens/AE
54	GateValve/FootValve/NRV/ButterFly Valve	Advance/Audco/JohnsonControls/Zoloto/Annapurna/Fountain/Kirloskar/Leader/Sant/Trishul/Kartar/InterValve
55	Single/DoubleHeadedGMLandingValve	NewAge(Mumbai)/Safex/Ceasefire/Padmini/Lifeguard
56	HydrantValve	NewAge(Mumbai)/Safex/Ceasefire/Kalpana/L&Tvalves Ltd./Lifeguard
57	Sprinkler/HoseReel&HosePipe(ISI Marked)	Safex/Agni/Newage/Ceasefire/LifeGuard/Omex
58	FireExtinguisher(ISIMarked)	Minimax/Lifeguard/Safeguard/Safex/Omex
59	WaterPurifier	EurekaForbes/Kent/IonExchange/LG
60	InverterSystem	Sukam/Microtek/Luminous/Vertiv/Numeric
61	ElectricalWaterStorageHeater	Racold/Crompton/Havells/Bajaj/Polycab
62	VRF Unit	Daikin/ Carrier/ Mitsubishi/ Hitachi/ Toshiba
63	Cat-6 cable & components	Legrand/ Polycab/ Havells/ KEI/ Finolex/Systimax/Belden
64	CCTV Camera and accessories	Honeywell/ Pelco/ Bosch/Hikvision/ Panasonic
65	CCTV Rack	Valrack/Rittal/ APW
66	POE Switch	Cisco/Grandstream/Digisol
67	NVR	Honeywell/ Pelco/ Bosch/Hikvision/ Panasonic
68	Display	Samsung/LG/Sony

69	Optical Fiber	Belden / Legrand / Systimax
70	Street Light Poles	Valmont/ K-lite/BPP/ BAJAJ/ Passolite/ Homdec/ Utkars

Fire Fighting System (Wet risers system)

References & Design Guideline Sources

- National Building Code of India-(Latest Edition 2016 - Part - IV, Fire & Life Safety)
- IS: 3844-1989-Code of practice for installation and maintenance of internal fire hydrants and hose reels on premises.
- IS: 13039-2011-Code of practice for external hydrant system provision and maintenance.
- IS: 2190-2010-Code of practice for selection, and maintenance of first aid fire extinguishers.
- IS: 15105:2016-Design & Installation of Fixed Automatic Sprinkler Fire Extinguishing Systems

SCOPE OF WORK/ SPECIFICATION

Fire Fighting system shall comprise of Wet Riser /Hydrant Internal & External), Sprinkler system, Down comer System, Fire Extinguishers, Fire Signage's near Fireman's lift, Fire Exits, Fire Brigade Inlet/Draw Out Connections etc. proposed for building.

Some part of this work has to be executed in very early stage because pipeline has to be laid from other building pump room, and all fire pumps need to be installed in existing/new Fire pump room in early stage of tender.

Fire safety recommendation has to be obtained by the agency before starting the construction work of the building. And those have to be incorporated in the building apart from General CPWD specifications. Fire NOC has to be obtained by the agency after completing the work.

Suitable size shafts, cutouts, Niche, openings etc. shall be provided to facilitate installation of Pipelines etc. in all floor slabs of building for various service areas, as required. All shafts, cutouts, Niche, openings etc. provided on floor slabs shall be suitably closed after laying of services lines as per fire safety norms as per NBC 2016. Doors shall be provided for all shafts at all floors as per fire safety norms as per NBC 2016.

The ratings and capacities of various equipment 's are based on NBC 2016 Part - IV and subject to revision during detailed designing stage.

The firefighting system is proposed on basis of type of occupancy as per NBC 2016 Part -IV and building Height. The system proposed are water based and gas based. Water based Fire suppression system is having piping network inside and outside the building with internal and external Hydrants, First Aid Hose reel at regular intervals according to various type of occupancy. The distribution system is finally connected to ring main system for firefighting.

The following standards, bye-law, manual has been followed in designing the firefighting system:- Relevant IS codes

published by Bureau of Indian Standards.

National Building code Part IV for fire Protection System

2016. Pumps, Valves and Accessories shall be of UL listed and FM approved

CPWD General Specifications for Electrical Works-part V (Wet Riser & Sprinkler System-2020).

WATER REQUIREMENTS: Water services for Hydrants and sprinkler system shall be stored in underground/ overhead tanks.

Underground Static fire tank:- Underground reservoir shall be provided or can use the existing underground static fire tank as per latest NBC-2016 requirement/Local Fire Authority Byelaws

Overhead storage fire tank:-

116

Overhead fire water tanks on the terrace will be provided for down comer system and as supplementary fire storage as per NBC requirement/Byelaws.

System Description

The Fire Fighting System shall consist of Diesel Fire Pumps, Electrical Driven Fire Hydrant pump, Jockey Pumps, Fire hydrant (Internal), Air Cushion Tank with air release valves for all risers, Down comer system with terrace pumps, Pressure vessel, associated instruments, cabling, piping (internal & external), valves, Fire Brigade inlet connections, drawout connections for each wet riser, fire signage's, extinguishers, Gas based fire suppression system, Fire detectors, Discharge Nozzles, control panel etc. has to be provided as per NBC 2016 requirements.

Fire Control Room to be provided in Ground Floor which shall be easily accessible & shall accommodate all fire alarm system panel/public address system panel etc.

Egress components: -

Egress components to be considered are the no. of exits to which access is provided, capacity of exit access, travel distance to an exit, directional exit etc. The width of corridors, aisles/ramps required for exit access shall be sufficient to ensure smooth flow of occupants to exit. Exits shall be so located that the travel distance on the floor shall not exceed distance as mentioned in NBC 2016.

No exit doorway shall be less than 1000 mm in width except in building where door width shall not be less than 2000 mm in width. All exit doorway shall not be less than 2000 mm in height.

Smoke exhaust fans in mechanical ventilation system shall be fire rated & shall withstand 250 degree Celsius for 120 minute. If the fans of approved makes are certified with other make than the approved motor make then also it will be accepted.

Access to Fire Tenders: -

For access to fire tenders, a clear motor able approach of at least 6 meters shall be kept for movement of fire tenders all around the building. The width of the main entrance to the building shall not be less than 6.0 meters.

Location & size of Fire Pump House:-

The fire pump house shall be located adjacent to underground fire tanks. The slab of UGT shall be designed structurally to take the load of fire rescue tender (if coming in the driveway area).

The base of the water tank shall be kept at a level preferably 450 mm to 600 mm (or as desired as per codes) above the level of base of fire pump room so that pumps operate under positive suction condition & the entire water capacity is above the body of the fire pumps as per best fire engineering practice.

Fire Pump House shall be separated by fire walls all around & doors shall be protected by fire doors (120 mins rated).

The size of Fire pump house & distance between pumps, pumps & walls, panel & wall etc. shall be as per latest IS codes/NBC 2016.

Sufficient maintenance space shall be provided inside the fire plant room for accessibility of various pumps, panels etc. during repair & maintenance activities, Fire Plant Room shall be suitably ventilated considering adequate ACPH as per NBC 2016 code.

Suitable size Sumps with sufficient sized submersible pumps & level indicators to be considered in plant room for drainage. Also, proper slope to be provided in Fire Pump room so that there is no stagnancy of water during any leakage & it is properly channelized to nearest drainage sump.

Fire fighting pipes from Fire Pump Room to Buildings shall be laid underground at suitable depth as per CPWD specs. Adequate no. of HUME pipes/GI Pipes having suitable dia. with 3 spare shall be laid across the roads/pathway etc.

Fire Pump Room shall be provided with safety equipment/items like suitable elastomeric mat (as per relevant IS codes) for Panels, fire buckets, fire extinguishers, hand gloves, safety charts, framed Schematic/SLD etc.

Pumps&relatedEquipment/Piping&RelatedAccessories:-

Quantity & Type of Fire Pumps (Electric driven Jockey/ Electric driven Terrace Booster/ Electric driven Hydrant/Diesel driven Pumps) shall conform to NBC 2016/relevant IS codes.

All fire pumps shall be with positive suction arrangements.

Capacity of the Pumps shall be selected as per latest NBC 2016 /IS codes & Head as per Building Height & Frictional losses due to bends, pipe lengths etc.

Horizontally mounted split case multistage, single outlet energy efficient centrifugal pump, suitable for operation on 415 volts $\pm 10\%$, 3 phase, 50 HZ A.O supply, IE-3 Class efficiency motor, complete with flexible coupling (double arch) and coupling guard as required. Fire pump having C.I. body, bronze impeller and S.S. Shaft with mechanical seal to be considered. Casing shall be designed to withstand 1.5 times the working pressure.

Diesel driven pump with engine (Min. 4 Cylinders), water cooled radiator based cooling & shall be complete with cooling system, fuel system, fuel tank (to cater for min. 8 hours), inter connecting piping, starting system, governing system, PRV, exhaust system with building silencer suitable for outdoor installation & silencer piping shall be extended up to 1 m, outside pump house duly insulated with 50 mm thick glass wool/rock wool & 1 mm thick aluminum cladding. Flexible connection in between exhaust pipe & pump needs to be provided to suppress vibrations.

All the fire pumps shall cut-in automatically based on the pressure settings in pressure switch, so as to ensure that the entire fire main line, risers etc. are pressurized on a continuous basis.

The jockey pump shall automatically cut-out based on the pressure settings of pressure switch. However, the remaining fire pumps shall cut off only in the manual mode.

All Foundation (PCC/RCC) for Equipment including foundation bolts & vibration isolation springs/pads to be provided.

Mild steel 'C' pipes conforming to IS:1239/3589 including all ductile iron fittings like bends, elbows, tees, couplings etc. shall be used in Fire Fighting system. Pipes M.S. E.R.W. tube (black steel) heavy class as per I.S. 1239 in sizes up to 150 mm, and above 150 mm dia. heavy class as per I.S. 3589 shall be minimum 6.4 mm thick.

Pipe Supports GI Suspenders, Brackets & Floor/Wall supports for suspending/supporting pipe to be provided.

All pipes shall be adequately supported from ceiling or walls from existing/new inserts by Structural clamps fabricated from M.S. Structural e.g. Rods, Channels, Angles and Flats as per details given in drawings and specifications. All clamps shall be painted with one coat of red lead and two coats of black Enamel paint.

Where inserts are not provided, the Contractor shall provide anchor fasteners. Anchor fastener shall be fixed to walls and ceilings by drilling holes with Electrical drill in an approved manner as recommended by the manufacturer of the fasteners.

The maximum spacing for pipes supports shall be as below:

<u>Pipe (MM)</u>	<u>Spacing (MTR)</u>	<u>Size of support</u>
Up to 25	2.0	6mm
32 to 65	2.4	8mm
75 to 125	2.7	10mm
150 & above	3.0	12mm

Pipes supports shall be spaced at maximum interval of 1.5 mtrs. on either side of heavy fittings and valves. Wherever piping passes through walls, pipes sleeves of diameter larger than that of piping shall be provided. Pipe sleeves shall be of steel or cast-iron pipe.

Till 50 mm dia. Pipe, screwed joints with DI Threaded Fittings shall be provided & 65 mm dia. & above, DI Grooved Fittings joints to be considered.

Suction dia. & discharge dia. of pump shall be as per pump discharge as per OEM standards.

The entire pipe work (above ground), pump etc. shall be painted with one coat of primer & two or more coats of red color shade no. 536 of IS:5 (Post Office synthetic enameled red paint) as per directions of Engineer-in-Charge.

At terrace/Remote level hydrant, minimum 3.5 kg/sq cm pressure shall be maintained.

The pipeline shall be designed with suitable flow velocity & friction factor as per relevant standards.

All pipes below ground will be protected against soil corrosion by wrapping & coating material as per IS:10221

Suitable Nos. of Installation control Valve (ICVs) to be considered conforming to latest IS codes depending upon no. of sprinklers.

All necessary valves of PN 16 rating (min.) like butterfly/ globe/ gate/ non return/ sluice, Y/Pot Strainers, pressure gauges etc. to be considered as per requirement (controlling flow/ isolating/ one way flow etc.) & meeting the functionality.

Pressure vessel shall be provided with all the terrace pumps & at plant room also.

All Pumps shall be provided with flexible bellows (double arch, PN-16 Rating) to dampen vibration/noise at source.

Vibration Isolators/Anti Vibration Pads need to be provided for all pumps to absorb vibration at source.

Air vessel / Pressure vessel of suitable size need to be provided in fire plant room & near terrace pump. To compensate for slight losses of pressure in the system and to provide an air cushion for counteracting pressure surges / water hammer in the pipe work air vessel conforming to IS: 3844 shall be furnished in the pump room near pump. The air vessel shall normally be half full with water and remaining filled with air which shall be under compression when the system is in normal operation.

Air cushion tanks with air release valves need to be provided for all risers of hydrant pipes. No. of Pumps with capacities proposed in Fire Pump Room: -

Internal Hydrants

It shall consist of Type -A- single headed, Stainless Steel ISI marked oblique pattern hydrant landing valve with 80 mm dia. flange inlet and 63 mm dia. instantaneous type female out let, swinging type First Aid hose reel in red color drum with 30.0 mtr long and 20 mm dia. heavy duty rubber water hose, 20 mm dia. globe valve stop cock, terminating with Stainless Steel coupling & nozzle of 5mm outlet with shutoff valve, 63mm dia. Stainless Steel branch pipe with Stainless Steel nozzle of 20 mm nominal bore outlet with instantaneous type 63 mm dia. coupling, fireman's axe with heavy duty insulated rubber handle, 2 Nos. of 15 m long Non Percolating Hose Pipe, suitable size of MS door made up of 16 gauge MS Sheet capable of accommodating fire hose reel, landing valve, hose pipes, fittings. The door shall have a front glass with lock and key arrangement & shall be painted with one coat of primer & two coats of finished stove enamel post office red color paint & "Internal Fire Hydrant" written on front.

Quantity for the same need to conform to NBC 2016/relevant IS codes.

One no. pressure gauge & 80 mm dia. CI Butterfly Valve to be provided in each internal hydrant riser per floor. No. of risers/floor in building shall be governed by the max. Travel distance as specified in NBC 2016.

Fire Brigade Inlet Connections/Draw out Connection

1 Way Fire Brigade Inlet connection complete with all accessories (sluice valve/NRV etc.) shall be provided for connection to Ring mains, Wet riser/down comers system, underground tank.

2 way draw out connection to be considered near fire Pump House.

Testing

The entire piping shall be pressure tested by hydrostatic method up to a pressure of 1.5 times the working pressure. The piping shall be slowly charged with water so that all the air is expelled from the piping by providing a 25mm inlet with a stop cock. The piping shall be allowed to stand full of water for a period of minimum 12 hours and then the piping shall be put under pressure by means of manually operated test pump or by a power driven test pump. The pressure gauges used for testing shall be accurate and shall preferably be calibrated before the testing shall be rectified to the entire satisfaction of the Engineer-in charge.

The system may be tested in sections/parts as the work of erection of piping proceeds. The piping shall stand 1.5 times the working pressure for at least 12 hours.

Emergency assembly point.

In case of any emergencies, safe evacuation of people is the primary criteria. For the same proper exit routes are planned leading to common assembly point. These Emergency assembly points are located in the premises at strategic locations such that it is easily accessible & safe from the affected area. It is used to plan the further course of action to be taken to prevent spread of fire & also used to check for headcounts. With the above, a comprehensive check on the loss of life can be ascertained, further course of action can be initiated.

Portable Fire Extinguishers: -

The sufficient qty. of portable/trolley mounted type fire extinguishers (Gas Based stored pressure type CO2 type /Ammonium Phosphate Type/Mechanical Foam etc.) shall be provided at all levels of the building, plant room, substation etc. at strategic locations as per requirements, generally to follow NBC- 2016 and IS— 2190: 1992 to extinguish fire of class A, B, C.

One set of CO2, ABC and halogen free refrigerant shall be installed at the below locations.

Such as near all the Internal Hydrants, HT Panel Room, LT Panel Room, Lift Machine Room, Fire Pump House, Server Room, UPS Room, Fire Control Room, Security Control Room, Car Parking etc.

Clean agent fire extinguishers to be provided in laboratories & other critical areas. All Fire Extinguishers shall be Halogen Free.

Fire Signage: -

Self-illuminated type signages must be provided as per NBC 2016 updated up to date.

Various types of signage are proposed in the Building like: Fire Order Board, Fire Exit Signages, Floor Identification markers, Signages near Elevators/ lifts, Fire Extinguisher identification, Evacuation charts per NBC 2016 Part -4. Material of signage shall be of acrylic/aluminum of required dimensions. At every floor near Lift landing diagram showing stairways shall be provided mentioning instructions - 'IN CASE OF FIRE USE STAIRS UNLESS INSTRUCTED OTHERWISE'. Floor Signage will be provided in each floor within the staircase & should easily be readable. Each corridor of every floor will have directional signage indicating Fire Escape route.

Signages will be LED lit with UPS power backup of two hours or of photo Luminescent paint will also be provided as per latest NBC. So that they will be visible from 20mtr and also in dark in case of power failure.

Electrical Works related to Fire Fighting System: -

120

Firefighting panel of suitable size incoming & sufficient nos. of outgoing feeders for all pumps along with spares / spaces to be provided.

Power cabling of suitable size to be laid from LT panel to firefighting panel. Power cabling of suitable size from firefighting panel to fire pumps to be laid. Control cabling from fire pumps to firefighting panel & firefighting panel to pressure switch to be done.

INSPECTION AND TESTING:

Test Certificate

The test certificate shall be furnished to the employer for prior approval before dispatch of any equipment from works and the approval in writing from employer shall be essential to effect dispatch of the equipment. The test reports shall furnish complete identification of the data, including serial number of each equipment.

Note: In the absence of any definite provision in the technical specifications contained herein, reference may be made to the latest NBC, OPWD CPWD, MORTH, IRC, CPCB, GRIHA, NFPA and IS codes, in that order. Wherever these are silent, the construction and completion of the works shall conform to sound engineering practice and in case of any dispute arising out of the interpretation of the above, the decision of the Engineer-in-Charge shall be final and binding on the Contractor.

Fire Alarm and PA system

Scope of work.

Provision of Intelligent addressable automatic fire alarm system complete with detectors, addressable fire alarm panel and all other related accessories, integration with BMS, Fire Damper, AHU, Smoke Ventilation System etc., Public Address System for communication during fire and other exigencies and for general announcements including evacuation, in the Building to cater the requirements of relevant CPWD specifications, fire services norms of local body and NBC 2016 etc as required in the Building and suitable Fire alarm system with PA system in other buildings in compliance of requirements of relevant CPWD specifications, fire services norms of local body and NBC 2016 etc whichever are more stringent. This include installation of digital PA and Electrical Sign boards, Fire Exit signage etc. fire evacuation system/plan in the fire control room and minimum 2 nos. at each floor of the building with battery backup or more as per the requirements contained in NBC 2016. The interconnection /wiring for the detectors will be done with copper armored fire survival cable.

The system shall be digital type and fully networkable. All fire panels shall be networked with each other and also the fire, PA system, shall be **interlinked seamlessly** on RS 485 or Ethernet communication with each other so as in case of any emergency automatically the prerecorded messages shall be played on defined areas speakers.

Each close area shall have PA system speaker design for PA system shall be as per ISI standard.

General conditions

1.1 The work shall be carried out as per tender specifications and in accordance with the followings:

- a) CPWD General Specifications for Electrical works Part-VI-Fire Alarm System-2018.
- b) BIS Code of practice (IS: 2189 – 1988) for Selection, Installation and Maintenance of Automatic Fire detection and Alarm system with amendments up to date.

1.2 Inspection and Testing

1.2.1 The contractor shall provide all necessary facilities for inspection of his equipment. In case of imported equipment's, the contractor shall furnish the routine and type test certificates to the satisfaction of Engineer-in-charge.

SYSTEM DESCRIPTION

A.2 GENERAL DESCRIPTION OF INTELLIGENT FIRE ALARM SYSTEM

The Proposed Fire Detection and Early Warning System consists of Analog Addressable Detectors. All the Analog Addressable Detectors, Addressable Manual Call Points and the Addressable input, output Modules will be looped together and terminated onto an Analog Intelligent Addressable Main Fire Alarm Control Panel.

The Fire alarm system consists of the following elements:

A.2.1 **Analog Addressable Photo-Electric cum Thermal Detectors** for areas like Meeting Rooms, Cabins, Stores, open Workstation areas and the areas above false ceiling AHU Rooms, Electric Rooms, Electrical Shafts, Telecom Room, BMS Control Room, Fire Control Room, Pump Rooms, Transformer Rooms, HTPanel Rooms and Lift Machine Rooms.

A.2.2 **Addressable Multicriteria Detectors** to detect unusual rate of rise of temperature for Kitchen and Pantries.

A.2.3 **Addressable Manual Call Points** are proposed to be installed at each Fire Exit Staircase on each floor.

A.2.4 **Addressable Input Modules** shall be provided in suitable location for the purpose of providing location address for flow switch.

A.2.5 **Addressable Output Modules** shall be provided in suitable location for the purpose of shutting off Fire

Dampers on detection of smoke within its zone and for increasing the speed of exhaust /ventilationfans.

A.2.6 EntireFloor areaofthebuildingshallbedivided into suitable number of loops.

A.2.7 **MainFireAlarmControlPanel:**AlltheaboveAddressableInputModules,

Addressable Output Modules, Addressable Manual Call Points and the Addressable Detectors shallbe connected to Analog Intelligent Addressable Panel, which will raise an alarm, in case fire isdetected at anyofthelocations mentioned above.It shall beprovided in Firecontrolroom.

A.2.8 Sounders will be located on each floor and in the stilt, which will be activated in emergency.Sounder Circuit controllers shall be provided for the purpose of operating sounders at any locationon an addressable loop on the basis of command from control panel. It shall be possible to set auniqueaddresstothe devicesfed fromsoundercircuitcontroller.Controllers shallmonitoropen/short circuit in the wiring tothe sounders as well as the external power supply tothesounders.

A.2.9 PowerforModulesshallbeprovidedfromMainFireAlarmControlpanel.

A.2.10 Sounders,BatteryBack-up, PowerTransformers,Software, and Communication linkshall beprovided.

EQUIPMENT AND MATERIALS

MAIN FIRE ALARM CONTROL PANEL:

The Main Fire Alarm Control Panel shall contain a microprocessor based Central Processing Unit (CPU) and expandable from 02 loop to 04 loop. The CPU shall communicate with and control the following types of equipment used to make up the system: analog addressable smoke and thermal (heat) detectors, addressable modules, printer, annunciators, and other system-controlled devices.

The system shall include two or more loops (Each loop accessing minimum 240 addressable devices) or system having lesser loop capacity needs to increase the number of loops accordingly and supply the same in the same cost. Panel is capable of supporting not less than 240 devices (including detectors) and minimum 150 detectors per loop and loop length up to 1500-1800 mtrs depending upon requirement of building and decided by Engineer-in-charge.

The fire alarm panel system shall have the capability of inbuilt redundancy at all levels CPU, Loop card, Network, Display and Power supply.

The wiring for complete fire alarm system shall be in conformity to NFPA 72 – Class 7 Standard.

ADDRESSABLE DEVICES

General

Addressable Detectors Shall be of Optical, Photoelectric type, Photoelectric cum Heat Type and Thermal type.

ADDRESSABLE INPUT MODULE

The addressable input modules shall allow the connection of simple contacts to an addressable detection line of the control panel. No separate power supply shall be required. The addressable monitor modules shall represent one address on the control panel.

ADDRESSABLE OUTPUT MODULE

Addressable output Modules shall be provided to allow a compatible Main fire alarm control panel to switch discrete contacts by code command. The Module shall mount in a standard electrical box or to a surface mounted back box. The Module shall provide two isolated sets of Form-C contacts for fan shutdown and other auxiliary control functions.

The Module contact ratings shall support up to 1 Amp/30 VDC of Inductive load or 2 Amps/30 VDC (coded) of Resistive load (up to 3 Amps in non-coded applications). The relay coil shall be magnetically latched to reduce wiring connection requirements and to ensure that 100% of all auxiliary relays or may be energized at the same time on the same pair of wires.

The Module shall provide address-setting and shall also store an internal identifying code that the Main fire alarm control panel shall use to identify the type of device. An LED shall be provided that shall flash under normal conditions, indicating that the Module is operational and is in regular communication with the control panel.

A magnetic test switch shall be provided to test the module without opening or shorting its internal circuit wiring.

The interface unit shall be suitable for connecting normally open (N.O.) alarm initiating devices such as pressure switch, flow switch, level switch, potential free contacts etc in the addressable loop.

The interface unit shall be a sealed electronic unit with individual address. It shall be housed in a metallic/ high impact plastic enclosure and suitable for indoor/outdoor installation.

The operating voltage shall be 20 v to 28 volts D.C

ADDRESSABLE MANUAL CALL POINT:

The manual Call Box units shall be addressable type and suitable to connect with two wires to the Main fire alarm control panel, Signaling Line Circuit (SLC) loops.

These units shall be designed for semi-flush mounting.

The Units shall be either with **Push or Pulling Lever** to activate the unit or **with Pulling lever and breakable glass rods** such that the front glass rod is broken on pulling the lever to activate the unit.

Manual Call points shall be connected with two wires to one of the control panel SLC loops. The Manual Station shall, on command from the control panel, send data to the panel representing the state of the manual switch.

The manual call points shall be addressable and identifiable by the master fire alarm control panel; Address assignments shall be set electronically and reside within the station in non-volatile memory.

It shall be of pleasant streamlined and flat appearance permitting its use as flush, surface mounted or semi flush mounting.

It shall have a built-in LED lighting up automatically to confirm its actuation.

Operating instructions must be clearly marked in the Manual call Point.

All Manual Call Stations shall be furnished with a spare glass rod.

LIST OF STANDARDS AND CODES APPLICABLE

The Fire Alarm system shall comply with latest requirements of NFPA standard No. 72 / EN Standard for protected premises signaling system, Indian Standards IS 2189, IS 2175, IS 11360 and local Statutory Regulations. The system shall be as per above IS standards but not limited to it.

Tenderer(s) is/are required to submit the information in the following Schedules

Annexure: I

(List of Plants & Equipments to be deployed on contract work)

Sl. No	Type of Equipments	No. of machines required	Marks
1	Water Tanker of 4000 ltr. Capacity wheel mounted/mounted over Truck/ Tractor	2nos	10
2	Truck/Tipper	2nos	10
3	Welding machine 450 Ampere or more	1no	5
4	Generator of 125.00 KVA Capacity or more	1no	5
5	Batching Plant of minimum 15 cum/hour capacity	1no	10
6	Concrete pump with pumping accessories along with minimum 30 mt. pipe	1 set	5
7	Concrete mixer	2nos	5
8	Concrete vibrator : Needle type	2nos	3
9	Concrete vibrator : Screed type	2nos	4
10	Concrete vibrator : Plate type	2nos	3
11	Complete staging, shuttering, centering arrangement . For steel shuttering-	2000sqm	20
12	Water Pump – 1 HP Capacity	2nos	5
13.	Cube Testing Machine	1 no	5
14.	Excavator	1 no	5
15.	Bar bending machine	1 no	3
16.	Bar Cutting Machine	1 no	2
	Minimum Qualifying marks –80%	Total =	100

SCHEDULE - A

I/We hereby certify that I/We* am/are* **related / not related** (*) to any officer of IDCO of the rank of Deputy Manager & above I/We* am/are* aware that, if the facts subsequently proved to be false, my/our* contract will be rescinded with forfeiture of E.M.D and security deposit and I/We* shall be liable to make good the loss or damage resulting from such cancellation.

Signature of the Tenderer
Date:-

SCHEDULE - B

Descrip tion of works	Place & State	Contract No.	Name & Address of Employ er	Value of Contract (. In lakh)	Stipulated Period of Completion		Value of works* remaining to be complete d (. In lakh)	Anticipated date of completion
1	2	3	4	5	6		7	8
					Date of commence ment	Stipulated date of completion		

* The above information is to be certified by the Engineer in Charge / Employer not below the rank of Executive Engineer or equivalent. In case of there is no existing commitment and ongoing works, the bidder shall declare as nil in schedule B. All column of the Schedule B are to be filled up. Incomplete & uncertified Schedule'B' will not be accepted under any circumstances.

Signature of the Tenderer

Date.....

CERTIFICATE OF TOOLS AND PLANTS

I/We hereby certify that the following tools and plants, machineries and vehicles are in my /our possession and in working order.

I/We
note
non-

Sl. No	Type of Equipment's	No. of machines required	No. of machines owned/ leased/ hired
1	Water Tanker of 4000 ltr. Capacity wheel mounted/mounted over Truck/ Tractor	2nos	
2	Truck/Tipper	2nos	
3	Welding machine 450 Ampere or more	1no	
4	Generator of 125.00 KVA Capacity or more	1no	
5	Batching Plant of minimum 15 cum/hour capacity	1no	
6	Concrete pump with pumping accessories along with minimum 30 mt.pipe	1 set	
7	Concrete mixer	2nos	
8	Concrete vibrator : Needle type	2nos	
9	Concrete vibrator : Screed type	2nos	
10	Concrete vibrator : Plate type	2nos	
11	Complete staging, shuttering, centering arrangement . For steel shuttering-	2000sqm	
12	Water Pump – 1 HP Capacity	2nos	
13.	Cube Testing Machine	1 no	
14.	Excavator	1 no	
15.	Bar bending machine	1 no	
16.	Bar Cutting Machine	1 no	

also
that,

submission of this certificate will render my/our tender liable for rejection.

Signature of the Tenderer
Date.

SCHEDULE – D

WORK EXPERIENCE

LIST OF SIMILAR NATURE OF PROJECTS EXECUTED

Name of Employer	Name of location and name of work	Contract price in Indian Rupees/Agreement no.	Major Items of works	Stipulated date of commencement / completion of the work as per Agreement	Actual date of completion of the work	Value of work actually executed during last 5 financial years					Reasons for delay in starting/ completion, if any	
						Financial year						Value
1	2	3	4	5	6	7					8	9
						2021-22	2022-23	2023-24	2024-25	2025-26		

Signature of the Engineer-in-Charge/ Employer
-Seal-

Note: The above information is to be certified by the Engineer in Charge / Employer not below the rank of Executive Engineer. Column '7' & '8' are to be filled up for the **last 5 (Five) financial** years. Incomplete & uncertified Schedule-D will not be accepted under any circumstances, which may lead to rejection of the bid.

Signature of the Tenderer
Date.

**INFORMATION REGARDING CURRENT LITIGATION, DEBARRING EXPELLING OF
TENDERER OR ABANDONMENT OF WORK BY THE TENDERER**

- | | | | |
|----|----|--|----------|
| 1. | a) | Is the tenderer currently involved in any litigation relating to the works. | Yes / No |
| | b) | If yes: give details: | |
| 2. | | Has the tenderer or any of its constituent partners been debarred/ expelled by any agency in India during the last 5 years. | Yes / No |
| 3. | a) | Has the tenderer or any of its constituent partners failed to perform on any contract work in India during the last 5 years. | Yes / No |
| | b) | If yes, give details: | |

Note:

If any information in this schedule is found to be incorrect or concealed, qualification application will summarily be rejected.

Signature of Tenderer

SCHEDULE – F

AFFIDAVIT
(Need to be notarized)

1. The undersigned do hereby certify that all the statements made in the required attachments are true and correct.
2. The undersigned also hereby certifies that neither my / our firm / company / individuals _____ nor any of its constituent partners have abandoned any road/ bridge/Irrigation /Buildings or other project work in India nor any contract awarded to us for such works have been rescinded during the last five years prior to the date of this bid.
3. The undersigned hereby authorise(s) and request(s) any bank, person, firm or Corporation to furnish pertinent information as deemed necessary and as requested by the Department to verify this statement or regarding my (our) competency and general reputation.
4. The undersigned understands and agrees that further qualifying information may be requested and agree to furnish any such information at the request of the Department.
5. In case any of the information furnished found to be false or untrue or misleading or misrepresenting, I am aware that I may be held liable for it as per the tender clauses.
The undersigned hereby confirms that our firm has not been blacklisted/ debarred/ penalized by Govt. agency or public sector undertaking or judicial authority.

(Signature of Tenderer)
Title of Officer
Name of Firm
Date:

**CERTIFICATE OF EMPLOYMENT OF UNEMPLOYED GRADUATE
ENGINEER / DIPLOMA HOLDERS
(For Super Class / Special Class / 'A' Class Contractors only)**

I / We hereby certify that at present, the following Engineering personnel are working with me / in our firm / company and their bio-data are furnished below.

Sl. No.	Name of Engineering personnel appointed for supervising contractor's work with address	Qualification	Date of Appointment	Monthly emolument	Whether full time engagement and continuous	If they are superannuated / retired / dismissed or removed personnel from state Govt./ Central Govt. / Public Sector Undertaking / private Companies and s or any one ineligible for Government service
1	2	3	4	5	6	7

Signature of the Tenderer.
Date:-

UNDER TAKING**This is to certify that**

1. My firm has neither been associated, directly or indirectly, with the Consultant or with any other entity that has prepared the design, specifications, and other documents for the Project nor has any person associated with been proposed as Project Manager for the Contract.
2. My firm has not engaged any agency and any of its affiliates engaged by the Engineer-in-Charge to provide consulting services for the preparation or supervision of this work.
3. My firm has not engaged any Engineer of gazetted rank employed in Engineering or Administrative duties in an Engineering Department of the Government of Odisha or other gazetted officer retired from Government service during last two years without prior permission of the Government of Odisha in writing on or before submission of this tender. I am aware that my contract is liable to be cancelled if either I or any of my employees is found any time to be such a person who had not obtained the permission of the Government of Odisha as aforesaid.

Signature of the Tenderer.

Date:-

Note: i. Strike out whichever is not applicable

- ii. In case any person is under his employment with due permission from Government, the same may be cited in a separate letter.

Performa for Centring and Shuttering materials

Certified that M/s.....,Class Contractor possess.....Sqm of steel shuttering plates for centering materials in good condition for use in building construction works. The shuttering materials are physically available at our worksite at and we have no objection if shifted for other works.

Seal and Signature of issuing Authority

RELATIONSHIP DECLARATION

To,
The Chief General Manager (Civil),

Subject: Construction of Block Level Stadium (With Indoor Hall) in Bonai Block under Sundargarh District.

Reference : Civil/ EST/09/ 2026-27

Sir,

Pursuant to clause 2 of the ITB, it is to inform that I have relative(s) employed as an Officer in the rank of an Assistant Engineer and Above from Govt. of Odisha / Deputy Manager and Above of IDCO. His (Their) details are as follows.

Relationship:

Name:

Designation

Office

Address

Pursuant to clause 2 of the ITB, I am to submit herewith the names of persons who are working under my firm having near relatives to any officer in the rank of an Assistant Engineer and Above from Govt. of Odisha / Deputy Manager and Above of IDCO.

SI No	Name of the my employee and his designation in the firm	Presently working at	Details of his relatives working in the Department
			Relationship Name: Designation Office Address
			Relationship Name: Designation Office Address

I am also duty bound to inform the relationship of any subsequent employment with any officer in the rank of an Assistant Engineer and Above from Govt. of Odisha / Deputy Manager and Above of IDCO. I **am aware that** any breach of this condition would render my firm liable for penal action for suppression of facts.

Yours Sincerely

Signature of the Tenderer.

Date:-

(**Note:-** The bidders who have No Relation to any officer of IDCO of the rank of Deputy Manager and Above / Assistant Engineer and Above from Govt. of Odisha and furnished Schedule – ‘A’ are not required to furnish Schedule – ‘I’)

MEMORANDUM OF UNDERSTANDING

(Duly Notarised)

First Party I Sri/Smt....., Aged Years, S/O-, At / P.O. /
Dist-..... (hereinafter called the First Part)

AND

Second Party I Sri/Smt....., Aged Years, S/O-, At / P.O. /
Dist-..... (hereinafter called the Second Part) having H.T. / L.T. license registration No..... valid upto
.....

AND WHEREAS the First Party of 1st part is the managing partner of

AND WHEREAS the First Party willing to appoint the Second Party to execute the E.I. portion for the
tender work, “.....”

AND WHEREAS the Second Party accepted the offer of First Party.

NOW THIS DEED OF AGREEMENT WITNESSES AS FOLLOWS;

- 1) That, the Second Party shall do all E.I. works, if the tender is awarded to First Party.
- 2) That, the Second Party shall fulfill all the E.I. works as per the tender schedule by instruction of Divisional Head.
- 3) That, the First Party shall receive payment, signing the bill the document for the concerned work.
- 4) That, the Second Party shall abide the rules, regulations and specification of E.I. works of above said matter.

In witness where of both the party have signed in presence of

WITNESS

W₁ -

W₂ -

MEMORANDUM OF UNDERSTANDING
(Duly Notarized)

First Party I Sri/Smt. _____, Aged ____ Years, S/O / D/O
_____, At / P.O. / Dist.- _____
(hereinafter called the **First Party / Bidder**)

AND

Second Party I Sri/Smt. _____, Aged ____ Years, S/O / D/O
_____, At / P.O. / Dist.- _____
(hereinafter called the **Second Party**) having experience in execution of **Sports related Infrastructure**.

AND WHEREAS the First Party of the 1st part is the bidder intending to participate in IDCO tenders for Block level stadium works.

AND WHEREAS the First Party is willing to appoint the Second Party to execute, the Sports related infrastructure, if awarded, **on subcontract basis**.

AND WHEREAS the Second Party has successfully completed at least **one (01) Sports related infrastructure** in India during the last **five (05) years** for a State / Central Government / PSUs and has agreed to associate with the First Party.

NOW THIS DEED OF AGREEMENT WITNESSES AS FOLLOWS;

1. That, the Second Party shall execute the complete **sports related infrastructure** under subcontract, if the tender is awarded to the First Party.
2. That, the Second Party shall fulfil the sports related infrastructure works strictly as per the **tender conditions, specifications and instructions** of the Engineer-in-Charge / Divisional Head.
3. That, execution shall conform to relevant **S&YS Department specifications**, and product datasheets shall be submitted.
4. That, the Second Party shall abide by all rules, regulations and specifications of sports related infrastructure and shall submit **non-blacklisting affidavit**.

In witness whereof both the parties have signed in presence of

WITNESS

W1 – _____

W2 – _____

FORM '8'

UNDERTAKING

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India, I certify that this bidder is not from a such a country or, if from such a country has been registered with the Competent Authority . I hereby certify that this bidder fulfils all requirements in this regard and is eligible to be considered [Where applicable, evidence of valid registration by the Competent Authority shall be attached}’

Signature of the Tenderer

Sd/-

Chief General Manager (Civil)