THE STATE FISHERIES DEVELOPMENT CORP. LTD.

(An ISO 9001:2015 Certified Govt. Undertaking)

Bikash Bhawan, Bidhannagar, Kolkata - 700091
Ph No. : 033 2358 3123, Tele Fax No. : 033 2337 6470
Email: sfdcltd@yahoo.co.in / sfdcltd66@gmail.com, Website: www.wbsfdc.com

e-NIQ No. SFDC/MD/NIQ-03(e)/2023-24

Memo No: 121/ACC-737/2023 **Date: 08/01/2024**

The Managing Director, **The State Fisheries Development Corporation Limited** invites e-NIQ for the work detailed in the table below. (Submission of Bid through ***online***)

Sl. No.	Name of work	Estimated Amount (Rs.)	Earnest Money (In Rs.)	Period of completion	Eligibility of Bidder
1	Design, Drawing, Construction and Commissioning of 25 KLD Fish Preservation Effluent Treatment and 140 KLD sewage Treatment Plant with 03(three) months Trial Run of all Civil and Electromechanical Works on Turn Key Basis at Deshapran Fishing Harbour, Petuaghat, Purba Medinipur, W.B.	Rate to be Quoted	EMD Amount: Rs.1,70,000.00	(09+03)=12 (Twelve) Months including 03(three) Months Trial Run	Bonafide outsider resourceful & reliable agencies (reference Serial No. 5 of this e-NIQ).
2	Design, Drawing, Construction and Commissioning of 25 KLD Fish Preservation Effluent Treatment and 105 KLD sewage Treatment Plant with 03(three) months Trial Run of all Civil and Electromechanical Works on Turn Key Basis at Shankarpur Fishing Harbour, Ramnagar-I, Purba Medinipur, W.B.	Rate to be Quoted	EMD Amount: Rs.1,60,000.00	(09+03)=12 (Twelve) Months including 03(three) Months Trial Run	Bonafide outsider resourceful & reliable agencies (reference Serial No. 5 of this e-NIQ).

Note:-Rate to be quoted including GST, CESS and other Govt. statutory taxes as applicable as per present Govt. norms.

N.B.:- The successful L1 Bidder shall have to pay the fees of requisite set of quotation documents for execution of formal agreement.

1. Both Technical document and Financial Bid are to be submitted in technical (Statutory & Non- Statutory) and financial folder concurrently duly digitally signed in the website http://wbtenders.gov.in.

2. Necessary Earnest Money will be deposited by the bidder electronically: online – through his net banking enabled bank account, maintained at any bank or: offline – through any bank by generating NEFT/ RTGS challan from the e–tendering portal. Intending Bidder will get the Beneficiary details from e–tender portal with the help of Digital Signature Certificate and may transfer the EMD from their respective Bank as per the Beneficiary Name & Account No., Amount, Beneficiary Bank name(ICICI Bank) & IFSC Code and e–Proc Ref No. Intending bidder who wants to transfer EMD through NEFT/RTGS must read the instruction of the Challan generated from E–Procurement site (i.e Unique transaction receipt) & must be uploaded in the EMD folder of Statuary Bid Document. Bidders are also advised to submit EMD of their bid, at least 3 working days before the bid submission closing date as it requires time for processing of Payment of EMD. *Bidders eligible for exemption of EMD as per Govt. rule may avail the same and necessary documents regarding the exemption of EMD must be uploaded in the EMD folder of Statuary bid documents.*

3. The Technical document and Financial Bid submitted online only.

4. The FINANCIAL OFFER of the prospective quotation will be considered only if the TECHNICAL Document of the quotation found qualified by the Managing Director, The State Fisheries Development Corporation Limited. The decision of the Managing Director, The State Fisheries Development Corporation Limited will be final and absolute in this respect. The both list of Qualified Bidders will be displayed in the website and also in the Notice Board of the office of the Managing Director, The State Fisheries Development Corporation Limited, on the scheduled date and time.

5. **Eligibility criteria for participation in the quotation.**

i) The intending quotationers should produce credentials of a similar nature of completed work as a prime agency of the minimum value of 40% (forty percent) of the estimated amount put to quotation during 5 (five) years prior to the date of issue of the quotation notice; or,

ii) The intending quotationers should produce credentials of 2 (two) similar nature of completed work as a prime agency, each of the minimum value of 30% (thirty percent) of the estimated amount put to quotation during 5 (five) years prior to the date of issue of the quotation notice; or,

iii) The intending quotationers should produce credentials of one single running work of similar nature as a prime agency which has been completed to the extent of 80% (eighty percent) or more & value of which is not less than desired value at (i) above;

In case of running works, only those quotationers who will submit the certificate of satisfactory running work from the concerned Executive Engineer, or Equivalent competent authority will be eligible for the quotation, in the required certificate it should be clearly stated that the work is in progress satisfactorily & that no penal action has been initiated against the executed agency i.e. the quotationer.

The prospective quotationers must have sufficient credential to participate in the Quotation as per Notification bearing No. 04-A/PW/O/10C-02/14 dated 18.03.2015 of Accounts Branch, PWD, Govt. of W.B. [Non Statutory Documents].

N.B. :- Completion certificate should contain a) Name of work , (b) Name of Client, (c) Amount put to quotation, (d) Schedule month and year of commencement and completion as per work order (e) actual month and year of completion.

Completion Certificate along with Work Order and BOQ must be uploaded. Otherwise, quotation will be treated as non qualified.

iv) Payment certificate will not be treated as credential.

v) Credential certificate issued by the Executive Engineer or equivalent or competent authority of a state / Central Govt., State / Central Govt. undertaking, Statutory / Autonomous Bodies Constituted under the Central / State Statute, on the executed value of completed / running work will be taken as credential.

vi) The prospective bidders shall have in their full time engagement experienced technical personnel, the minimum being **one Diploma holder Civil** (Authenticated documents in respect of qualification and engagement shall be furnished for Technical Evaluation)., failing which the bid may be treated as non-responsive [Non statutory Documents].

vii) A Bank Solvency Certificate not be less than 10% (Ten percent) of the amount put to quotation with Proper & authentic documents to be submitted through e-filling. Evidence of access to or availability of credit facilities should be certified by the any commercial Bank [Non statutory Documents].

Available Bid capacity to be calculated on the basis prescribed Format as illustrated in Form- II A attached at Section A (Kindly note that this Form- II A must be submitted duly signed & sealed by the applicant / bidder & authenticated by Statutory Auditor's Firm failing which this application / bid will be rejected) The Bid capacity shall not be less than the estimated amount put to quotation.
Bid capacity should be mentioned UDIN.

viii) Declaration regarding Structure and Organization duly digitally signed by the applicant to be submitted along with application.

ix) In case of Registered Unemployed Engineers' Co-operative Societies and Registered Labour Co-operative Societies, documents of credentials as per Serial No. 5, Page No. 2 of this e-NIQ. 'Certificate of Registration' and 'Certificate for Validity of Registration' from the respective Assistant Registrar of Co-operative Societies, Bye Law, PAN Card, Current P. Tax Challan, Valid 15-digit Goods and Services Taxpayer Identification Number (GSTIN) under GST Act '2017, Employees Provident Fund and Employees State Insurance registration number and current challan eligible list of Registered Unemployed Engineers' Co-operative Societies / Registered Labour Co-operative Societies issued by the concerned Assistant Registrar of Co-operative Societies showing the name of their Society must be documented through e-filling. Also in case of Registered Unemployed Engineers' Co-operative Societies, documents in satisfying the following criteria are required to be documented through e-filling:-

a)The Society consists of at least 10 (ten) members of which at least 60% should hold Degree or Diploma in any branch in Engineering as per Memo No. 44-A/4M-11/2002 dt. 09.01.2004 of Deputy Secretary-III, P.W.D.. Privilege will be allowed as per G.O. No. 378(9)-A/PW/O/10C- 17/05 dt. 31-05-2005 P.W.D. Accounts Branch by Deputy Secretary-III including necessary documents in support of the statement and along with other supporting papers. (Non-Statutory documents)

b) Above society shall be allowed to participate the work mentioned in this e-NIQ as per G.O.

x) In case of proprietorship & partnership Firm & Company, System Generated Tax Audit Report in 3 CD & 3CB Form shall have to be furnished along with Balance Sheet & Profit & Loss Account & all schedules forming the part of Balance Sheet & Profit & Loss Account. Tax Audit Report, Balance Sheet & Profit & Loss Account including all schedules forming the part of Balance Sheet & Profit & Loss Account should be in favour of applicant. No other name along with applicant name in such enclosure will be entertained. (Non-Statutory Document).

xi) **Joint venture will not be allowed** to participate in the above e-NIQ.

xii) Where there is a discrepancy between the unit rate & the line item total resulting from multiplying the unit rate by the quantity, the unit rate quoted shall govern.

Xiii) Prevailing safety norms has to be followed so that LTI (Loss of time due to injury) is zero.

xiv) The Quotation evaluation committee will have sole discretion to decide eligibility of the contractor on the basis of e-filing documents and reserves the right to refuse any explanation to contractors found ineligible after scrutiny.

xv) A prospective quotationers shall be allowed to participate in the particular work either in the capacity of individual or as a partner of a firm. If found to have applied severally in a single work, all his applications will be rejected for that work without assigning any reason thereof.

xvi) The partnership firm shall furnish (a) Registration certificate from Register of Firms, (b) The registered partnership deed & the company shall furnish (a) Incorporation Certificate & (b) Article of Association & Memorandum. (Non-Statutory Document).

6. No mobilization /secured advance shall be allowed.

7. Agencies shall have to arrange land for erection of Plant & Machineries, storing of materials, labour shed, laboratory etc. at their own cost and responsibility.

8. (a)All materials such as cement, steel etc. are to be procured at his own cost including all Taxes. Quality of material should be maintained as per specification with reliable B.I.S. Code & as mentioned in the structural detail drawing & test certificate should be submitted as per direction of E.I.C. Authenticated evidence for purchase of cement & steel etc. are to be submitted along with the challan & test certificate. In the event of further testing opted by the E.I.C., then such testing from any Govt. approved testing laboratory shall have to be conducted by the agency at their own cost. The quality of materials & specifications of items as per provision of P.W.D. S.O.R. & relevant I.S. Code.

(b) The Prospective bidders shall submit the work program as per schedule time in Bar Chart format. The work program shall be prepared as per working schedule with duly signed by Engineer & shall be considered the actual time.

9. Recovery of 1% (one percent) cess on construction cost in accordance with the buildings and other construction worker's (Regulation of Employment & conditions of service) Act. 1996 will be implemented in this Quotation.

10. Arbitration will not be allowed. The Clause No. 25 of 2911 is to be considered as deleted clause vide gazette notification no. 558/SPW-13th December, 2011.

11. Bids shall remain valid for a period not less than 180 (One hundred eighty) days from the date of opening of the Financial Bid. Bid valid for a shorter period shall be rejected by The Managing Director, as non-responsive.

12. The prospective bidders shall have own the required plant & machinery in working condition. The contractor must furnish the documents in support of ownership & shall have to be submitted through e-filling [Non – Statutory Documents]. The minimum numbers of machineries are given in the form.

13. The works stated above, broadly comprise of : Design, Drawing, Construction and Commissioning 25 KLD Fish Preservation Effluent Treatment Plant and 140 KLD Sewage Treatment Plant for Sl.1 and 25 KLD Fish Preservation Effluent Treatment Plant and 105 KLD Sewage Treatment Plant for Sl.2

TECHNICAL SPECIFICATIONS

1. GENERAL

The main source of the effluent treatment plant is wastewater resulting from the fish preservation unit is fish washing waste water, and ammonia used in the cooling and fish preservation facility and main source of sewage treatment plant is i) the toilet flushing and urinal flushing, ii) some possible mixing of ammonia from fish cooling unit, iii) oil and grease from the troller washing. The scope of work includes design, drawings, getting approvals from statutory bodies, construction, and erection and commissioning of 25 KLD fish preservation effluent treatment plant and 140 KLD/105KLD sewage treatment plant with electrical, mechanical and piping. The treated effluent should be fit for reuse for gardening and/ or disposal in the water bodies. The work must be carried out on a turnkey basis covering a guarantee of satisfactory performance as per the standards laid for a minimum of one year.

2. BASIC DATA ON WASTEWATER (Fish preservation unit and Sewage)

Fish preservation effluent treatment plant (Sl 1)

i. Water Consumption = 25,000 ltr/day

ii. Waste water generation = Water Consumption (assumed)

$= \frac{25000}{12}$ ltr/day (taking 12 hr as operating hour)

= 2083.33 ltr/hr

= 2.083 m^3/hr

Sewage treatment plant (Sl 1)

i. Water Consumption = 200 KLD = 2,00,000 ltr/day = $\frac{2,00,000}{24} = 8334$ ltr/hr = 8.334 m^3/hr

ii. Waste water generation = 70% of Water Consumption = 140 KLD = 5834 ltr/hr =5.834 m^3/hr

Deshapran	**Fish preservation effluent treatment plant**	**Sewage treatment plant**
Quantity	25 KLD	140 KLD

Fish preservation effluent treatment plant (Sl 2)

iii. Water Consumption = 25,000 ltr/day

iv. Waste water generation = Water Consumption (assumed)

$= \frac{25000}{12}$ ltr/day (taking 12 hr as operating hour)

= 2083.33 ltr/hr

= 2.083 m^3/hr

Sewage treatment plant (Sl 2)

iii. Water Consumption = 150 KLD = 1,50,000 ltr/day = 150000/24 ltr/hr = 6.250 m^3/hr

iv. Waste water generation = 70% of Water Consumption = 105 KLD = 437.5 ltr/hr =4.375 m^3/hr

Deshapran	**Fish preservation effluent treatment plant**	**Sewage treatment plant**
Quantity	25 KLD	105 KLD

Quality of wastewater (from fish preservation treatment plant and sewage treatment plant): As analyzed by the environmental engineering laboratory, department of civil engineering, Jadavpur University

	Fish preservation effluent treatment plant	**Sewage treatment plant**
BOD (mg/l)	740	520
COD (mg/l)	1180	800
pH	8.4	8.15
TKN (mg/l)	193.8	160.2
TP (mg/l)	27.7	39.1
Oil & Grease (mg/l)	6.3	19.1
Sulphate (mg/l)	22.9	57
Chloride (mg/l)	172.2	134
TSS (mg/l)	120	230
TDS (mg/l)	980	1360

3. TREATED WATER QUALITY

Treated effluent quality shall be within the following values for various parameters, for typical reuse application of reuse for gardening and/ or disposal in the water bodies.

	Treated Water Quality
BOD (mg/l)	10
COD (mg/l)	50
pH	6.5-8.5
TKN (mg/l)	10
TP (mg/l)	1
Oil & Grease (mg/l)	10
Sulphate (mg/l)	100
Chloride (mg/l)	200
TSS (mg/l)	10
TDS (mg/l)	750

4. **THE TREATMENT PLANT**

Based on the Raw Waste Water/ Treated effluent characteristics following treatment scheme is suggested:

A. **Fish preservation effluent treatment plant**

i. The raw effluent from the existing collection drain should proceed through by gravity into a medium bar Screen chamber and fine screen chamber provided with MS Bar Screen.

ii. The screened effluent is collected in a circular holding basin. Then the effluent will be transferred by two sump cum lifting station and transfer pump towards the mixing tank. In the mixing tank this pre-treated fish preservation effluent will be mixed with pre-treated sewage. After that biological treatment will be provided.

B. Sewage treatment plant

i. The raw effluent should be collected in a circular collection tank and should proceed through an inclined plate settler/ tube settler by gravity.

ii. Effluent waste water from inclined plate settler/ tube settler unit should proceed through oil and grease removal tank. Effluent from this tank will be mixed with the pre-treated fish preservation effluent.

iii. The mixed waste will be further treated in Sequential Batch Reactor, filtration unit and chlorine contact basin to get the treated effluent fit for reuse for gardening and/ or disposal in the water bodies.

Sequential Batch Reactor (4 Nos)

The sequencing batch reactor (SBR) process is a sequential suspended growth process in which all major steps occur in the same tank in sequential order. SBRs are a variation of the activated-sludge process. They differ from activated-sludge process because they combine all of the treatment steps and processes into a single basin, or tank, whereas conventional facilities rely on multiple basins.

Basic treatment Process

The operation of an SBR is based on a fill-and-draw principle, which consists of five steps – fill, react, settle, decant, and idle. These steps can be altered for different operational applications.

Fill: During the fill phase, the basin receives influent wastewater. The influent brings food to the microbes in the activated sludge, creating an environment for biochemical reactions to take place.

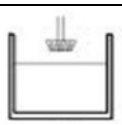
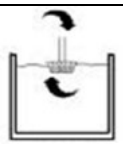
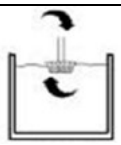
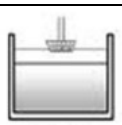
React: This phase allows for further reduction or "polishing" of wastewater parameters. During this phase, no wastewater enters the basin. Here reaction will happen in two phase i) aerobic and ii) anaerobic.

i) **Aerobic**: During this phase the mechanical mixing and aeration units are on. Because there are no additional volume and organic loadings, the rate of organic removal increases dramatically.

ii) **Anaerobic**: During this phase aeration units are not in operational condition but the mechanical mixing unit will be operational.

Settle: During this phase, sludge is allowed to settle under quiescent conditions – no flow enters the basin and no aeration and mixing takes place. The activated sludge tends to settle as a flocculent mass, forming a distinctive interface with the clear supernatant.

Decant: During this phase, a decanter is used to remove the clear supernatant effluent.

				
Fill (1hrs)	**Aerobic (2 hrs)**	**Anaerobic (1 hr 45 min)**	**Settle (45 min)**	**Decant (30 min)**

Time for "Fill" phase provided = 1 hrs

Time for "Aeration" phase provided = 2 hrs

Time for "Anaerobic" phase provided = 1hrs 45 min

Time for "Settle" phase provided = 45 min
Time for "Decant" phase provided = 30 min
Total Cycle Time provided = 6 hrs

Pressure Sand filter

The process of passing the water through beds of sand or other granular materials is known as filtration. In this filter unit the water to be treated is passed under pressure. Broadly speaking, filters essentially consist of a thick layer of sand and the water is allowed to pass through it. Pressure sand filters remove turbidity, suspended particles, colour and odour that are present in wastewater.

Mechanical Filter Press

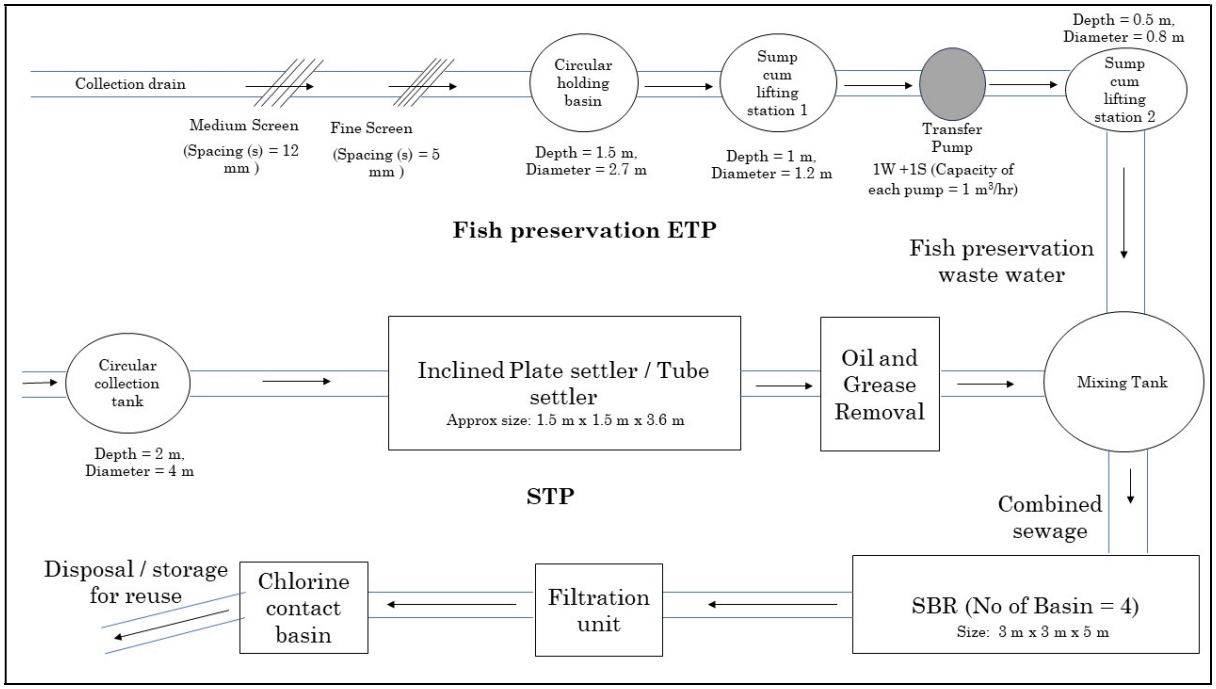
Filter presses are facilities developed for the mechanical liquid-solid separation. The Filter Press is ideal for sludge dewatering and slurry dewatering in small volumes. Using a feeding pump the suspension will be led into the filter press and against a liquid-permeable filter cloth. During the process the retained solids form the sludge cake.

Chlorine Dozer

Chlorine is an effective disinfectant. The dosing of chlorine is carried out in a chlorine dosing tank. Provide metering pump dosing capacity 4-6 LPH with 25 liters capacity dosing tank. The excess sludge shall be pressed through an automatic hydraulic filter press and the cakes formed can be used as manure.

5. Proposed scheme for treatment:

The below mentioned process flow diagram is suggested for the treatment of fish preservation effluent and sewage treatment plant. Any changes to the proposed treatment scheme/ sizing **needs to be vetted from faculty members of the environmental engineering specialization from Jadavpur university/ Indian Institute of Technology (IIT)/ Indian Institute of Engineering Science and Technology (IIEST), National Institute of Technology.**



Treatment Plant Units

A. Fish preservation ETP

i. Medium Screen and Channel

Size of bar : 10 mm x 50 mm
Spacing (s) = 12 mm = 1.2 cm

Cleaning = manual
Angle of inclination = 45°
No of vertical bar, n_b = 4 nos
Total width of the screen channel = (4 x 10 + 5 x 12) mm = 100 mm = 10 cm

ii. Fine Screen in Channel

Size of bar : 10 mm x 50 mm
Spacing (s) = 5 mm = 0.5 cm
Cleaning = manual
Angle of inclination = 45°
No of vertical bar, n_b = 9 nos
Total width of the screen channel = (10 x 5 + 9 x 10) mm = 140 mm = 14 cm

iii. Circular collection chamber/ holding basin

Adopting detention time = 4 hrs
Water Depth = 1.5 m
Diameter = 2.7 m

iv. Sump cum lifting station 1

Adopting detention time = 30 min = 0.5 hrs
Water Depth = 1 m
Diameter = 1.2 m

v. Design of transfer pump

No of pumps considered = 1 W + 1 S
Capacity of each pump = 1 m^3/hr

vi. Sump cum lifting station 2 (inlet to combined treatment)

Adopting detention time = 15 min = 0.25 hrs
Water Depth = 0.5 m
Diameter = 0.8 m

B. Sewage treatment plant

i. **Collection Tank near outfall: / circular**

Water Depth = 2 m
Diameter = 0.4 m

ii. **Inclined Plate settler:**

Shape of the unit = Square
Length provided = 1.5 m
Width provided = 1.5 m

Design of Plates

MOC of Plate = FRP
Length of Plate =1.25 m
Width of Plate = 0.9 m
Thickness of plate = 4 mm
Perpendicular space between the plates = 50 mm
Inclination of plate with horizontal = 55° = 0.96 radian
No. of plates, N provided in per row = 5 no
Provided No. of rows of plates = 2
Total no. of Plate provided = 5 x 2 = 10
Total no. of Plate to be provided for each IPS

Design of inner Launder of IPS
Width of inner launder = 0.15 m
Providing 5 cm deep 90° V - notches at 12.5 cm center to center.
Depth of V-Notch = 0.05 m
Total No. of V-Notches provided = 25

Minimum side water depth in clarifier:
SWD provided = 3.6 m
Volume provided for each IPS tank = 1.5 m x 1.5 m x 3.6 m = 8.1 m^3

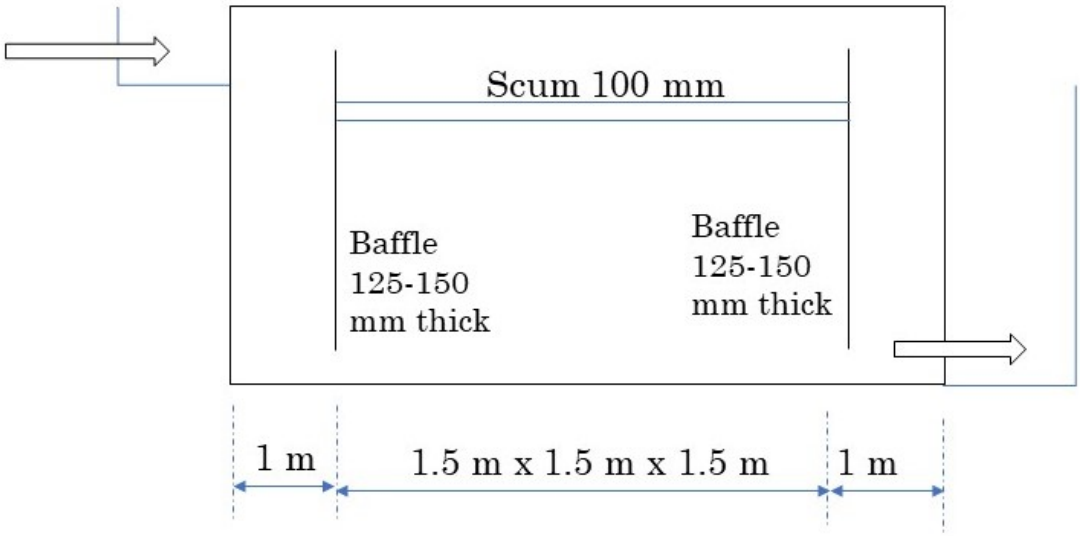
Size : 2 Nos. (1W + 1S) of Inclined Plate Settler provided each with 1.5 m L x 1.5 m W x 3.6 m SWD + 0.3 m FB. Sludge scraped to the central pit shall be removed by means of hydrostatic pressure through pipes not less than 150 mm dia & provided Sluice valves not less than 150 mm manually operated and Telescopic Valve arrangement for each.

Size : 10 Nos. FRP Plate of size 1.25 m L x 0.9 m W x 4 mm thick to be provided for each IPS.

Outlet channel of inclined plate settler:
No of unit = 2 (1W + 1S)
Size: 1 No. of Channel provided with 0.4 m W x 0.25 m LD + 0.5 m FB

Or suitable tube settler module also can be provided.

iii. <u>Oil and Grease removal:</u>



C. Treatment of Mixed Waste:

i. Mixing Tank
Det time = 1hr

ii. Sequential Batch Reactor

Approx quality of sewage influent in SBR:
BOD_5 = 419.05 mg/l
TKN (as N) = 151.47 mg/l
TP (as P) = 37.43 mg/l
Design quality of treated sewage
BOD_5 @ 20° C ≤ 10 mg/l
TKN (as N) ≤ 10 mg/l
TP (as P) ≤ 1 mg/l

Time for "Fill" phase provided = 1 hrs
Time for "Aeration" phase provided = 2 hrs
Time for "Anaerobic" phase provided = 1hrs 45 min
Time for "Settle" phase provided = 45 min
Time for "Decant" phase provided = 30 min
Total Cycle Time provided = 6 hrs
No. of Cycles provided per Basin per day = 24/6 = 4 nos
Aeration Time provided per Basin per day = 2 hrs x 4 nos = 8 hrs
No. of Basins under "Fill" simultaneously = 1 nos
No. of Basins under "Aerate" simultaneously = 1 nos
No. of Basins under "Decant" simultaneously = 1 nos

BASIN SIZING
MLSS considered = 4000 mg/l
MLVSS = MLSS x 0.7 = 2800 mg/l
F/M considered = 0.15 d^{-1}
No. of Basins provided = 4
Side Water Depth (SWD) provided = 5 m
Width = 3 m
Length = 3 m
Volume provided = 3 m x 3 m x 5 m = 45 m^3
Total Volume provided = 45 x 4 = 180 m^3
Freeboard provided = 0.5 m
Total depth provided = 5 + 0.5 m = 5.5 m
BOD_5 removed in a day = 67.05 kg/day
Specific Sludge Yield = 0.8
Solids Retention Time (SRT) provided = 13.43 days
Recirculation Ratio provided = 25.0% of Feed Flow per Basin
Capacity of Return Activated Sludge (RAS) Pump provided = 2 m^3/hr

6. MECHANICAL & ELECTRICAL SPECIFICATIONS/ ITEMS FOR WASTE WATER TREATMENT PLANT AT PETUAGHAT

Sl.No.	Items	Specification	Quantity	Unit
A	**For Fish Processing Effluent Treatment Plant**			
1	Coarse Bar screen Chamber	SS Screen with 15 MM gap	1	pc
		MOC-SS304		
2	Fine Bar Screen Chamber	SS Screen with 10 MM gap	1	pc
		MOC-SS304		

3	Lifting Sump 1 Pump with lifting arrangements	Submersible pump with 30-40 mm solid hanling ; Capacity - 5 cum/hr;Head -8-10 meter	2	nos
		MOC-Wilo/KSB/Kirloskar		
4	Lifting Sump 2 Pump with lifting arrangements	Submersible pump with 30-40 mm solid hanling ; Capacity - 5 cum/hr;Head -8-10 meter	2	nos
		MOC-Wilo/KSB/Kirloskar		
Sl.No.	**Items**	**Specification**	**Quantity**	**Unit**
B	**For Sewage Treatment Plant**			
1	STP collection Tank Transfer Pump with lifting arrangements	Submersible pump with 30-40 mm solid hanling ;Capacity - 15 cum/hr;Head -10-12 meter	3	Nos
		MOC-Wilo/KSB/Kirloskar		
2	Inclined Plate Separator For STP	MOC of Plate - FRP ;Length of Plate -1.25 m; Width of Plate - 0.9 m	10	Nos
		Make-Mondal & Co/TMAWPL/Equiv	1	lot
3	Piping arrangement for oil & Grease Tank	Schedule 40 pipe with fittings;MOC-UPVC;Make-Astral/Supreme/Equiv	1	Lot
C	For SBR Unit			
1	Air Blower For Mixing Tank	Capacity - 100 cum/hr @ 6000mmwg	2	Nos
		MOC-CI;Make-Kay/Everest/Usha		
2	Air Blower For SBR Basin	Capacity - 190 cum/hr @ 6000mmwg	3	Nos
3	Diffuser Network for SBR Basin	UPVC Schedule 80 pipe along with fittings & fixing arrangement;MOC-UPVC;Make- Astral/Supreme/Equiv	1	lot
4	Fine Bubble Diffuser	Fine Bubble diffuser ;63 mm dia x 600 mm length;Cylindrical Type	60	pc
		MOC-EPDM;Make-Mmaqua/Aqua Inc/Equiv		
5	Coarse Bubble diffuser for Mixing Tank	Coarse Bubble diffuser;150 mm dia;Disc Type	15	pc
		MOC-EPDM;Make-Mmaqua/Aqua Inc/Equiv		
6	Sludge Recirculation Removal Pump	Semi open impeller type;Capacity - 10 cum/hr;6-7 m head;MOC -CI	4	Nos
		Make -wilo/KSB/Kirloskar		
7	Filter Feed Pump	Horizontal Centrifugal;Capacity - 12 cum/hr;25-30 m head;MOC -CI	2	Nos
		Make -wilo/KSB/Kirloskar		
8	Pressure Sand Filter equipped with hand hole along with media & frontal Pipeline & Valves	Vertical Torrispherical;Capacity 12 cum/hr;MOC-FRP;Make-Tata/Equiv	1	Nos
9	Activated Carbon Filter equipped with hand hole along with media & frontal Pipeline & Valves	Vertical Torrispherical;Capacity 12 cum/hr;MOC-FRP;Make-Tata/Equiv	1	Nos

10	Hypochlorite Dosing System with dosing Tank;Dosing Tank Capacity 100 lit (MOC-PVC)	Metering Type Dosing Pump;Capacity -0-6 LPH;MOC-PP;Make-Edose/Milton Roy/Positive/Equiv.	2	Nos
11	Inter Connecting pipe & pipe line	UPVC Schedule 80 pipe along with fittings & fixing arrangement;MOC-UPVC;Make- Astral/Supreme/Equiv	1	Lot
Sl. No.	**Items**	**Specification**	**Quantity**	**Unit**
12	MCC Panel ;Individal MCC Panels for lifting station pumps ;Separate MCC panel for Waste water Treatment Plant	Compartmentalised panel fabricated from powder coated mounted with voltmeter & ammeter;Indoor type;Make of internal components -L&T/Siemes/Equiv		
13	Electrical Cabling	Suitable gauge cables for cabling of Motors with MCC panel	1	Lot
		MOC-Finolex/Gloster/Polycab/RR/Equiv		
14	Erection & Commissioning			
15	Transportation			
16	Loading & unloading			

14. In case of inadvertent typographical mistake in the bill of quantity, the same will be treated to be corrected as to confirm with the prevailing relevant schedule of rates of PWD / PWD (Electrical) / PWD (Roads)/ I& WD for the concerned district or as per Technically sanctioned estimate.

15. No fixed Security Deposit will be allowed.

16. No Price Adjustment in respect of certain construction material (i.e. cement components, steel components etc.) will be considered.

17. If required ready Mix Concrete as per specification required for the construction work will be supplied by the agency through his own plant / from any reputed/recognized supplier if required.

18. Running payment for the work may be made on availability of the fund after necessary certification of work along with checking of contractor's bill.

19. Successful bidder (L1) will have to purchase atleast 2(two) copies of quotation at usual cost which mentioned in e-NIQ from the office of the respective MD, SFDCL.

20. A **:- Important information**

Date & Time schedule

Sl. No.	Particulars	Date & Time
1.	Date of uploading of e-N.I.Q. Documents online) (Publishing Date)	**10/01/2024 at 6.55 p.m.**
2.	Documents download/sell start date (Online)	**10/01/2024 at 6.55 p.m.**
3.	Documents download/sell end date (Online)	**25/01/2024 at 3.00 p.m.**
4.	Date of Pre Bid Meeting with the intending bidders In the office of The Managing Director, The State Fisheries Development Corporation Limited	**17/01/2024 at 12.30 p.m.**
5.	Bid submission start date (Online)	**10/01/2024 at 6.55 p.m.**
6.	Bid Submission closing (Online)	**25/01/2024 at 3.00 p.m.**
7.	Bid opening date for Technical Proposals (Online)	**30/01/2024 at 3.00 p.m.**

22. LOCATION OF CRITICAL EVENT

Pre Bid Meeting
And Bid Opening → Office of the **Managing Director The State Fisheries Development Corporation Limited**

23. The Agency will be liable to maintain the work at working portion at the appropriate service level to the satisfaction of the Engineer-in-Charge at his own cost for a period as per prevailing Govt. rule from the date of completion of the work. If any defect/damage is found during the period as mentioned above contractor shall make the same good at his own cost expense to the specification at par with instant project work. Failure to do so, penal action against the Agency will be imposed by the Department as deem fit. The Agency will have to quote his rate considering the above aspect.

24. All Bidders are requested to present in the ' The State Fisheries Development Corporation Limited.', during opening the financial bid The Managing Director, **The State Fisheries Development Corporation Limited** may call **Open Bid/Sealed Bid** after opening of the said bid to obtain the suitable rate further, if it is required. No objections in this respect will be entertained raised by any Bidder who will present during opening of bid, or from any Bidder who will absent at the time of opening of Financial Bid. No informal quotationer will be entertained in the Bid further.

25. Site of work and necessary drawings may be handed over to the agency phase wise. No claim in this regards will be entertained.

26. **Earnest Money :** Necessary Earnest Money will be deposited by the bidder electronically: online – through his net banking enabled bank account, maintained at any bank or: offline – through any bank by generating NEFT/ RTGS challan from the e–quotationing portal. Intending Bidder will get the Beneficiary details from e–quotation portal with the help of Digital Signature Certificate and may transfer the EMD from their respective Bank as per the Beneficiary Name & Account No., Amount, Beneficiary Bank name(ICICI Bank) & IFSC Code and e–Proc Ref No. Intending bidder who wants to transfer EMD through NEFT/RTGS must read the instruction of the Challan generated from E–Procurement site & must be uploaded in the EMD folder of Statuary Bid Document. Bidders are also advised to submit EMD of their bid, at least 3 working days before the bid submission closing date as it requires time for processing of Payment of EMD. Bidders eligible for exemption of EMD as per Govt. rule may avail the same and necessary documents regarding the exemption of EMD must be uploaded in the EMD folder of Statuary bid documents.
Balance amount of earnest money if any required (calculated on the basis of @ 2% of total Estimated amount) has to be deposited by the successful bidder(s) at the time of formal agreement.

27. The Bidder, at his own responsibility and risk is encouraged to visit and examine the site of works and its Surroundings and obtain all information's that may be necessary for preparing the Bid and entering into a contract for the work as mentioned in the Notice Inviting Quotation, before submitting offer with full satisfaction, the cost of visiting the site shall be at his own expense.

28. The intending Bidders shall clearly understand that whatever may be the outcome of the present invitation of Bids, no cost of Bidding shall be reimbursable by the Department. The Managing Director, The State Fisheries Development Corporation Limited reserves the right to reject any application for purchasing Bid Documents and to accept or reject any offer without assigning any reason whatsoever and is not liable for any cost that might have incurred by any Quotationer at the stage of Bidding.

29. **Prospective applicants are advised to note carefully the minimum qualification criteria as mentioned in 'Instructions to Bidders' before quotationing the bids.**

30. **Conditional / Incomplete quotation will not be accepted.**

31. The intending quotationers are required to quote the rate ***on line.***

32. Contractor shall have to comply with the provisions of (a) the contract labour (Regulation Abolition) Act. 1970 (b) Apprentice Act. 1961 and (c) minimum wages Act. 1948 of the notification thereof or any other laws relating there to and the rules made and order issued there under from time to time.

33. **Guiding schedule of rates – For building works**: Current Schedule of rates for concerned District P.W.D. with effect from 01.11.2017 for Building, Sanitary & Plumbing works P.W (R) SOR, P.W.D. (Electrical) SOR along with up to date Corrigenda & Addenda.

34. No price preference & other concession as per Order No. 1110-F dated 10.02.2006 will be allowed.

35. During the scrutiny, if it come to the notice to quotation inviting authority that the credential or any other paper found incorrect/ manufactured/ fabricated, that bidder would not allowed to participate in the quotation and that application will be out rightly rejected without any prejudice. The The Managing Director, The State Fisheries Development Corporation Limited reserves the right to cancel the N.I.T. due to unavoidable circumstances and no claim in this respect will be entertained.

36. In case if there be any objection regarding prequalifying the Agency that should be lodged to the The Managing Director, The State Fisheries Development Corporation Limited within 2 (two) days from the date of publication of list of qualified agencies and beyond that time schedule no objection will be entertained by the authority.

37. Before issuance of the **WORK ORDER**, the quotation inviting authority / bid evaluation committee may verify the hard copy of earnest money, the credential and other documents of the lowest quotationer if necessary. After verification if it is found that the documents submitted by the lowest quotationer is either manufactured or false in that case work order will not be issued in favour of the said Quotationer under any circumstances.

38. If any discrepancy arises between two similar clauses on different notification, the clause as stated in later Notification will supersede former one in following sequence.
    i) Form No. 2911.
    ii) e-NIQ
    iii) Special terms & conditions.
    iv) Technical Bid.
    v) Financial Bid

39. The prospective quotationers or any of their constituent partner shall neither have abandoned any work nor any of their contract have been rescinded during the last 3 (three) years. Such abandonment or rescission will be considered as disqualification towards eligibility.

40. Qualification criteria.

The quotation inviting & Accepting Authority will determine the eligibility of each bidder, the bidders shall have to meet all the minimum regarding.

a) ***Financial Capacity.***

b) Technical Capability comprising of personnel & equipment capability.

c) ***Experience/Credential***

The eligibility of a bidder will be ascertained on the basis of the digitally signed documents in support of the minimum criteria as mentioned in a, b, c above. If any document submitted by a bidder is either manufacture or false, in such cases the eligibility of the bidder quotationers will be out rightly rejected at any stage without any prejudice.

41. Where an individual person holds a digital certificate in his own name duly issued to him by the company or the firm of which he happens to be a director or partner, such individual person, either belonging to an appropriate cadre officer of the company or an authorized partner of a firm, having a registered power of attorney empowered by the board or by the firm, shall invariably upload a copy of registered power of attorney showing clear authorization in his favour, to upload such quotation.

The power of attorney shall have to be registered to accordance with the provisions of the Registration Act, 1908.

42. The bidder should submit necessary labour license from the competent authority under contract labour (Regulation & Abolition) Act '1970.

43. No child labour will be allowed at the working site.

44. The prospective bidder to arrange sufficient construction materials & mechanical equipment's to ensure compliance with his obligations under the contract.

45. All the EMD/Quotation Fees in respect of e-Quotation will mandatorily be received and refund/settlement made as per Finance Department, Govt. of West Bengal vide No. 3975-F(Y) dated 28th July '2016.

46. Rate should be quoted including all duties, taxes & other levies Educational Cess etc. as imposed by Govt. of India & Govt. of West Bengal valid on date of bidding, payable by the Contractor under the Contract, or for any other cause. **The Managing Director**, **The State Fisheries Development Corporation Limited** will not make any payments towards taxes, duties, levies etc. for the entire contract period.

47. Bidder shall submit copy of :-

i) Valid PAN issued by the IT Deptt., Govt. of India & I.T Return for last 05 (five) years.
ii) Valid 15-digit Goods and Services Taxpayer Identification Number (GSTIN) under GST Act '2017.
iii) Tax invoice(s) needs by the supplier for raising claim under the contract showing separately the tax charged in accordance with the provisions of GST Act '2017.
iv) Employees Provident Fund and Employees State Insurance registration number and current challan.

48. **Defect liability period for the work shall be 01 (One Year)** from the actual date of Completion of the work.
Refund of Security Deposit for work will be paid after one year Defect Liability Period.

49. Supplementary work/ deviation quantity if any should be followed as per Notification No. 6754-PW/L & A/2M-312/2017 dt. 18/12/2017.

Sd/-
MANAGING DIRECTOR
THE STATE FISHERIES DEVELOPMENT
CORPORATION LIMITED

Memo No. 121/1(6)/ACC-737/2023 **Dated : 08.01.2024**

Copy forwarded for favour of kind information to the:-

1) The Secretary to the Govt. of West Bengal, Fisheries Department,
2) Director of Fisheries, Govt. of West Bengal.
3) The Managing Director, BENFISH,
4) The PS to Minister in Charge, Fisheries Department,
5) Notice Board.
6) Guard file

Sd/-
MANAGING DIRECTOR
THE STATE FISHERIES DEVELOPMENT
CORPORATION LIMITED

SECTION A

INSTRUCTION TO BIDDERS

1. *General guidance for e-Quotation*

Instructions/ Guidelines for quotationers for electronic submission of the quotation online have been annexed for assisting the contractors to participate in e-Quotation.

1. Registration of Contractor

   Any contractor willing to take part in the process of e- Quotation will have to be enrolled & registered with the Government e-Procurement system; through logging on to https://etender.wb.nic.in (the web portal of public works department) the contractor is to click on the link for e-Tendering site as given on the web portal.

2. Digital Signature certificate (DSC)
   Each contractor is required to obtain Digital Signature Certificate (DSC) for submission of quotationers, from the approved service provider of the National Information's Centre (NIC) on payment of requisite amount details are available at the Web Site stated in Clause-2 of Guideline to Bidder DSC is given as a USB e- Token.

3. The contractor can search & download NIQ & Quotation Documents electronically from computer once he logs on to the website mentioned in Clause 2 using the Digital Signature Certificate. This is the only mode of collection of Quotation Documents.

4. Participation in more than one work

   A prospective bidder shall be allowed to participate in the job either in the capacity of individual or as a partner of a firm. If found to have applied severally in a single job all his applications will be rejected for that job. A prospective bidder (including his participation in partnership) shall be allowed to participate in single road /building work as mentioned in the list of schemes.

5. Submission of Quotation.
   General process of submission, Quotation are to be submitted through online to the website stated in Cl. 2 in two folders at a time for each work, one in Technical Proposal & the other is Financial Proposal before the prescribed date & time using the Digital Signature Certificate (DSC) the documents are to be uploaded virus protected scanned copy duly Digitally Signed. The documents will get encrypted (transformed into non readable formats).

A. Technical proposal
The Technical proposal should contain scanned copies of the following further two covers (folders).

A-1. Statutory Cover Containing

(i) Prequalification Application (Sec–B, Form– I).

(ii) Quotation Form No. 2911 & NIQ (download properly and upload the same digitally Signed).

iii) SPECIAL TERMS AND CONDITIONS_DECLARATION BY THE QUOTATIONER_EXPERIENCE PROFILE.

A-2. Non statutory Cover Containing

i) PAN Card, Current P.Tax Challan, Current IT Return for last 5 (five) years, Trade License, Valid 15-digit Goods and Services Taxpayer Identification Number (GSTIN) under GST Act '2017, Tax invoice(s) needs by the supplier for raising claim under the contract showing separately the tax charged in accordance with the

provisions of GST Act '2017, Employees Provident Fund and Employees State Insurance registration number and current challan.

ii. Registration Certificate under Company Act. (if any).

iii. Registered Deed of partnership Firm/ Article of Association and Memorandum.

iv. Registered Power of Attorney (For Partnership Firm/ Private Limited Company, if any).

v. System generated Tax Audit Report in 3 CD/ 3CB Form shall have to be furnished along with Balance Sheet and Profit and Loss A/c for the last five years (year just preceding the current Financial Year will be considered as year – I).

vi. Employees Provident Fund and Employees State Insurance registration number and current challan.

vii. Clearance Certificate for the Current Year issued by the Assistant Register of Co-Op(S) (ARCS) bye laws are to be submitted by the Registered Labour Co-Op (S) Engineers' Co.-Opt.(S).

x. List of technical staff along with structure and organization (Section – B, Form – III).

xi. Credential as per Serial No. 5, Page No. 2 of this e-NIQ. To be furnished (Section – B, Form – V).

xii. Information regarding litigation etc. to be furnished (Section – B, Form – VI).

xiii. Bank solvency certificate to be furnished (Section – B, Form – VII).

xiv. Work program in Bar chart format.

Note:- The eligibility of a bidder will be ascertained on the basis of scanned copy of all original documents duly digitally signed as stated in A-1 & A-2. Failure of submission of any of the above mentioned documents (as stated in A1 and A2) will render the quotation liable to summarily rejected for both statutory & non statutory cover.

C. <u>Financial proposal</u>

(i) The financial proposal should contain the following documents in one cover (folder) i.e. Bill of quantities (BOQ) the contractor is to quote the rate (percentage Above/ Below/ At par) online through computer in the space marked for quoting rate in the BOQ.

(ii) Only downloaded copies of the above documents are to be uploaded virus scanned and Digitally Signed by the contractor.

(iii) Financial capacity of a quotationers will be judged on the basis of available bid capacity as mentioned in the e-N.I.Q. to be derived from the information furnished in **FORM- II A** i.e., Application (for Pre-qualification). If an applicant feels that his/their Working Capital beyond own resource may be insufficient, he/they may include with the application a letter of guarantee issued by a first class Bank to supplement the applicant. This letter of guarantee should be addressed to the Quotation Inviting/ Accepting Authority and should guarantee duly specifying the name of the project that in case of contract is awarded to the quotationer, the quotationer will be provided with a revolving line of credit. Such revolving line of credit should be maintained until the works are taken over by the Engineer-In-Charge/ Employer. The audited Balance sheet for the last five years, net worth bid capacity etc. are to be submitted which must demonstrate the soundness of quotationer's financial position, showing long term profitability including an estimated financial projection of the next two years.

iv) As per G.O. No. 4608-F(Y) dated 18.07.2018 of Finance Department, Govt. of West Bengal, Additional Performance Security @ 10% (Ten Percent) of the quoted amount shall be obtained from the successful bidder if the accepted bid value is 80% (Eighty percent) or less of the Estimated amount put to quotation.

The Additional Performance Security shall be submitted in the form of Bank Guarantee from any Scheduled Bank before issuance of the Work Order.

The Bank Guarantee shall have to be valid upto end of the Contract Period & shall be renewed accordingly, if required.

Necessary provisions regarding deduction of security deposit from the progressive bills of the contractor as per relevant clauses of the contract shall in no way be altered / affected by provision of this Additional Performance Security.

6. Penalty for suppression / distortion of facts

Submission of false document by quotationers is strictly prohibited and in case of such act by the quotationers r the same may be referred to the appropriate authority for prosecution as per relevant IT Act with forfeiture of earnest money forthwith.

7. <u>REJECTION OF BID:-</u>

The Employer (quotation accepting authority / bid evaluation committee) reserves the right to accept or reject any Bid and to cancel the Bidding processes and reject all Bids at any time prior to the award of Contract without thereby incurring any liability to the affected quotationer or quotationers or any obligation to inform the affected quotationer or quotationers of the ground for Employer's (quotation accepting authority) action.

The quotationers whose Bid has been accepted will be notified by the Quotation Inviting and Accepting Authority through acceptance letter/ Letter of Acceptance.

The Letter of Acceptance will constitute the formation of the Contract.

The Agreement in Printed Quotation Form in WBF No. 2911 / 2911(i) /2911(ii) will incorporate all necessary documents e.g. N.I.T., all addenda corrigendum, special terms and condition (Section –C), different filled-up forms (Section –B), B.O.Q. and the same will be executed between the Quotation Accepting Authority and the successful quotationer.

Sd/-
The Managing Director
The State Fisheries Development Corporation Limited

THE ABOVE STATED NON-STATUTORY/TECHNICAL DOCUMENTS SHOULD BE ARRANGE IN THE FOLLOWING MANNER

Click the check boxes beside the necessary documents in the My Document list and then click the tab " Submit Non Statutory Documents' to send the selected documents to Non-Statutory folder. Next Click the tab " Click to Encrypt and upload" and then click the "Technical" Folder to upload the Technical Documents.

Sl. No.	Category Name	Sub Category Description	Details
A.	CERTIFICATES	CERTIFICATES	1. Valid 15-digit Goods and Services Taxpayer Identification Number (GSTIN) under GST Act '2017. 2. Tax invoice(s) needs by the supplier for raising claim under the contract showing separately the tax charged in accordance with the provisions of GST Act '2017. 3. PAN Card, Current P.Tax Challan. 4. Current IT return 5. Current Trade License 6. Employees Provident Fund and Employees State Insurance registration number and current challan.
B.	Company Details	Company Details – I	1. Society (Society Registration copy, Trade License). 2. Power of attorney. 3. Partnership Firm (Partnership Deed, Trade License). 4. Bye Law. 5. Eligible list of Registered Unemployed Engineers Co-operative Society /Registered Labour Co-operative Society. 6. Current Audit Report. 7. Current N.O.C. from A.R.C.S. 8. Minutes of last A.G.M.
C.	Credential	Credential 1	1. Similar nature of work done & completion certificate which is applicable for eligibility in this quotation.(ref. Serial no-5 of this e-NIQ)
D.	Man Power, Machineries	Technical Personnel	List of Technical Staffs along with Structures & Organization (As per e-NIQ), Section-B (Form-IV), & Work – program in Bart Chart format.
E	Financial Information	Work in Hand	1. Bid Capacity (Form-II A) 2. Affidavits – X & Affidavits – Y (Section – B) 3. Certificate of revolving line of credit by the Bank.
		Profit & Loss A/c. & Balance Sheet for last 5 (five) years	Profit & Loss A/c. & Balance Sheet (with Annexure & System generated 3CD & 3 CB form in case of Tax Audit).

Note:- <u>Scan copy of all original documents stated above shall be uploaded duly signed by the bidder.</u>

A. Quotation evaluation by The Managing Director, The State Fisheries Development Corporation Limited

i. Opening of Technical proposal: - Technical proposals will be opened by Bid evaluation Committee

constituted by The Managing Director, The State Fisheries Development Corporation Limited, and his authorized representative electronically from the web site stated using their Digital Signature Certificate.

ii. Intending quotationers may remain present if they so desire.

iii. Cover (folder) statutory documents (vide Cl. No. 5.A-1 of Section "A") should be open first & if found in order, cover (Folder) for non-statutory documents (vide Cl. No. – 5.A-2 of Section "A") will be opened. If there is any deficiency in the statutory documents the quotation will summarily be rejected.

iv. Decrypted (transformed in to readable formats) documents of the non statutory cover will be downloaded & handed over to the Managing Director, The State Fisheries Development Corporation Limited.

v. Uploading of summary list of technically qualified quotationers.

vi. Pursuant to scrutiny & decision of the Bid evaluation committee constituted by The Managing Director, The State Fisheries Development Corporation Limited the summary list of eligible quotationers & the serial number of work for which their proposal will be considered will be uploaded in the web portals.

vii. While evaluation by Bid evaluation committee constituted by The Managing Director, The State Fisheries Development Corporation Limited may summon of the quotationers & seek clarification / information or additional documents or original hard copy of any of the documents already submitted & if these are not produced within the stipulated time frame, their proposals will be liable for rejection.

viii. Opening & evaluation of Quotation :-

If any contractor is exempted from payment of EMD, copy of relevant Government Order needs to be furnished.

B. Financial proposal

i) The financial proposal should contain the following documents in one cover (folder) i.e. Bill of quantities (BOQ) the contractor is to quote the rate (Presenting Above/ Below/ At par) online through computer in the space marked for quoting rate in the BOQ.

ii) Only downloaded copies of the above documents are to be uploaded virus scanned & Digitally Signed by the contractor.

6. Penalty for suppression / distortion of facts

If any quotationer fails to produce the original hard copies of the documents (especially Completion Certificates and audited balance sheets), or any other documents on demand of **The Managing Director**, **The State Fisheries Development Corporation Limited** within a specified time frame or if any deviation is detected in the hard copies from the uploaded soft copies or if there is any suppression, the quotationers will be suspended from participating in the quotationers on e- Quotation platform for a 3 (Three) years. In addition, his user ID will be deactivated and Earnest Money Deposit will stand forfeited. Besides, the SFDCL may take appropriate legal action against such defaulting quotationer.

The Employer reserves the right to accept or reject any Bid and to cancel the Bidding processes and reject all Bids at any time the prior to the award of Contract without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the ground for Employer's action.

7. **AWARD OF CONTRACT**

The Bidder whose Bid has been accepted will be notified by the Quotation Inviting & Accepting Authority through acceptance letter.

The notification of award will constitute the formation of the Contract.

The Agreement in W.B.F.No.-2911 will incorporate all agreements between the Quotation Accepting Authority and the successful Bidder.

Sd/-
The Managing Director
The State Fisheries Development Corporation Limited

Form – II A

Information of audited financial statements for the last year to demonstrate the current soundness of the Bidder's financial position :

1. The Bidder's Net worth for the last year calculated on the basis of capital, profit & free reserve available to the firm should be positive.
2. Bidders, 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 x N x 2 - B) where
   A = Maximum value of engineering works in respect of projects executed in any one year during the last 5 (five) years (updated to the price level of the year indicated in table below under note) taking into account the completed as well as works in progress. The projects include turnkey project / item rate contract / construction works.
   N = Number of years (i.e._____ year) prescribed for completion of the works for which Bids are invited.

   B= Financial Liability of the bidder to be incurred for existing commitments & on-going works during the period of the subject contract.

To calculate the value of 'A'

i) A table containing value of Engineering Works in respect to Projects (Turnkey projects/item rate contract/construction works) undertaken by the bidder during the last 5 (five) years is as follows :

Sl. No.	Year	Value of Engineering Works undertaken w.r.t. Projects (Rs. In Crores)
1	Year – 5	
2	Year – 4	
3	Year – 3	
4	Year – 2	
5	Year – 1	

ii) Maximum value of projects that have been undertaken during the F.Y. _____out of the last 5 years & value thereof is Rs._____Crores. (Rupees_____).Further,value updated to the price level of the year indicated in Table is as follows:

Rs. _____ Crores x _____(Updation Factor as per Table annexed)
Rs._____ Crores (Rupees_____).

Table indicating the factory for the year for updation to the price level is indicated as under

Sl. No.	F.Y. / Calendar year	Updation factor
1	Year – 1	1.0
2	Year – 2	1.05
3	Year – 3	1.10
4	Year – 4	1.15
5	Year – 5	1.20

iii) Net worth for the last year of _____ (name of the company)

……
……
Name of the Statutory Auditor's

Firm/Chartered Accountant

Signature:-

Seal of the Audit/Chartered Accountant Firm:

…… …… Signature: Name: Designation of Authorized Signatory For & on behalf of …….. (Name of the Applicant)	Name of signatory (in capital) : Membership No.:- Firm Regn. No:- Date of Birth :- Mob:- UDIN :-

Note :

1. All the documents to be submitted in support of Annexure – P must be duly signed & sealed by the applicant / bidder & authenticated by Statutory Auditor's firm.
2. In case of a Joint Venture, Lead Member of such joint venture shall be required to meet 60% of required Bid Capacity & each of the Joint Venture Members shall be required to meet atleast 30% of requirement of BID Capacity. Bid capacity of all members in total should be atleast 100% of required Bid capacity **(Joint Venture is not allowed in this e-NIQ).**

SECTION – B

FORM –I

PRE-QUALIFICATION APPLICATION

To
The Managing Director
The State Fisheries Development Corporation Limited

Ref: - Quotation for_____
_____ (Name of work) _____
_____
_____

e-N.I.Q. NO- _____ of 2023-24 of The Managing Director, The State Fisheries Development Corporation Limited

Dear Sir,

Having examined the Statutory, Non statutory and e-NIQ documents, I /we hereby submit all the necessary information
and relevant documents for evaluation. The application is made by me / us on behalf of ……In the capacity_____duly authorized to submit the order.

The necessary evidence admissible by law in respect of authority assigned to us on behalf of the group of firms for Application and for completion of the contract documents is attached herewith.

We are interested in bidding for the work(s) given in Enclosure to this letter.

We understand that :

(a) Quotation Inviting and Accepting Authority/Engineer-in-Charge can amend the scope and value of the contract bid under this project.

(b) Quotation Inviting and Accepting Authority/Engineer-in-Charge reserves the right to reject any application without assigning any reason.

Enclo:- e-Filling:-

1. Statutory Documents
2. Non Statutory Documents

Signed by an authorized officer of the firm

_____

Title of the officer

_____

Name of the Firm with Seal

Date

N.B. THIS APPLICATION MUST BE MADE IN THE LETTER HEADED PAD OF THE FIRM IN WHICH APPLICATION IS MADE, CLEARLY MENTIONING THE ADDRESS AND CONTACT NUMBER & email ID OF THE FIRM.

SECTION – 'B'
AFFIDAVIT – "X"
(To be furnished in Non – Judicial Stamp paper
of appropriate value duly notarized on after the date of publication of this e-NIQ)

Work in progress				Work order issued but work not started		
Sl. No.	Name of the work with Quotation No.	Estimated Amount	% of work executed	Sl. No	Name of the work with Quotation No.	Quoted Amount

Signed by an authorized officer of the firm

_____
Title of the officer

_____
Name of the Firm with Seal

Date_____

SECTION – 'B'
AFFIDAVIT – "Y"
(To be furnished in Non – Judicial Stamp paper
of appropriate value duly notarized)

1. I, the under-signed do certify that all the statements made in the attached documents are true and correct. In case of any information submitted proved to be false or concealed, the application may be rejected and no objection/claim will be raised by the under-signed.

2. The under-signed also hereby certifies that neither our firm M/S _____nor any of constituent partner had been debarred to participate in quotation for Govt. works during the last 5 (five) years prior to the date of this e-NIQ.

3. The under-signed would authorize and request any Bank, person, Firm or Corporation to furnish pertinent information as deemed necessary and/or as requested by the Department to verify this statement.

4. The undersigned understands that further qualifying information may be requested and agrees to furnish any such information at the request of The Department.

5. Certified that I have applied in the quotation in the capacity of individual/as a partner of a firm and I have not applied severally for the same work.

6. Certify that the rates have been offered by carrying out & completing the work to the satisfaction by the Department by taking due consideration of all factors after inspection of the work site & going through the detailed Notice Inviting e-Quotation & Schedule of probable items of work with approximate quantities & other documents.

_____
Signed by an authorized officer of the firm

_____
Title of the officer

_____
Name of the Firm with Seal

Date_____

SECTION - B
FORM- III
STRUCTURE AND ORGANISATION

A.1 Name of applicant :

A.2 Office Address :

Telephone No. and Cell Phone No. :

Fax No. :

E mail ID :

A.3 Attach an organization chart showing the structure of the company with names of Key personnel and technical staff with Bio-data. :

A.4 PAN No. :

A.5 G.S.T. No. :

A.6 Details of Bank Accounts :-

i) Name of Bank :

ii) Name of Branch & Addressed with Phone No. :

iii) Account No. :

iv) MICR No. :

v) IFSC Code No. :

Note: Application covers Proprietary Firm, Partnership, Limited Company or Corporation.

_____
Signed by an authorized officer of the firm

_____
Title of the officer

_____
Name of the Firm with Seal

Date_____

FORM- III B

[Ref. NIQ Clause No. 3.0 (ii)]

(To be furnished in Non- Judicial Stamp paper of appropriate value duly notarized on or after the date of publication of this NIQ)

List of Technical Personnel to be full time engaged/ appointed for the work "_____ _____(Name of work)_____"

Sl. No.	Name of Technical Personnel	Qualification	Designation	Date of Joining	Mob No	PAN	Remarks

I on behalf of **(bidders name)** do hereby declare that the above information furnished by me are true to the best of knowledge and belief and shall be responsible if any information is found incorrect in due course and the Department has got all right to take any action as deems fit.

Witness :_____

_____

Signed by an authorized officer of the firm

Title of the officer

Name of the Firm with seal

Date _____

_____

Signature of Notary

SECTION-B

FORM-V

EXPERIENCE PROFILE

LIST OF WORKS COMPLETED WHICH ARE SIMILAR IN NATURE AND EXECUTED & RUNNING WORKS DURING THE LAST FIVE YEARS AS PER CLAUSE 5 OF THIS e-NIQ.

Name of Employer	Name, Location & nature of work	Contract price in Indian Rs.	Value completed & certified in Indian Rs.	Original date of start of work	Original date of completion of work	Actual date of starting the work	Actual date of completion the work	Reasons for delay in completion (if any)

Note : a) Certificate from the Employers to be attached.

Signed by an authorized officer of the firm

_____

Title of the officer

_____

Name of the Firm with Seal

Date_____

SECTION-B

FORM-VI

INFORMATION REGARDING CURRENT LITIGATION, DEBARRING/EXPELLING OF QUOTATIONER OR ABANDONMENT OF WORK BY QUOTATIONER

1. a) Is the Applicant currently involved in any litigation relating to the contract works. : YES / NO

   b) If yes, give details with reasons :

2. a) Has the Applicant or any of its constituent partners been debarred / expelled by any Agency in India, during the last 5 (five) years. : YES / NO

   b) If yes, give details with reasons :

3. a) Has the Applicant or any of its constituent abandoned / suspended any contract during the, last 5 (five) years. : YES / NO

   b) If yes, give details with reasons :

Note: If any information in this Schedule is found to be incorrect or concealed, pre-qualification application will be summarily rejected.

Signature of applicant including title & capacity in which application is made

SECTION-B

FORM-VII

Bank Solvency Certificate

This is to certify that ……..(name of firm) is a reputed company with a good financial standing.

If the contract for the work, namely "…….. "(As per NIeQ against Notice Inviting e-Quotation No. …….. of **The Managing Director**, **The State Fisheries Development Corporation Limited** is awarded to the above firm, we shall be able to provide overdraft / credit facilities to the extent of Rs……..(Rupees……) **only to meet their working capital for executing the above contract during the contract period.**

Signed by an authorized officer of the Bank with seal
Name of the Bank
Address of the Bank
Phone No.
e-Mail ID
Date

SECTION-B

FORM-VIII

DECLARATION BY THE QUOTATIONER

Ref: - Quotation
for_____
_____ (Name of work)
_____
_____
_____

e-N.I.Q.No.: …….. of 2023-24 of The Managing Director, The State Fisheries Development Corporation Limited

I/We have inspected the site of work and have made myself/ourselves fully acquainted with local conditions in and around the site of work. I /We have carefully gone through the Notice Inviting Quotation and other quotation documents mentioned therein. I/We have also carefully gone through the 'Priced schedule of Probable Items and Quantities'.

My/Our quotation is offered taking due consideration of all factors regarding the local site conditions stated in this Detailed Notice Inviting Quotation to complete the proposed construction in all respects.

I/We promise to abide by all the stipulations of the contract documents and carry out and complete the work to the satisfaction of the department.

I/We also agree to procure tools and plants, at my/our cost required for the work.

I/We have applied in the quotation in the capacity of individual / as a partner of a firm.

_____

Signature of Quotationer

_____

Postal address of the Quotationer

Section – 'C"
Special terms and conditions

1. Drawings
The quotation must be based on the Departmental G.A.D. and execution of work shall be done as per detailed working drawings to be designed and prepared by the Bidder which will be approved by Department from time to time.

2. Site Conditions

i) The quotationer must inspect and examine the site and its surroundings and satisfy himself before submission of his quotation about the nature of the ground, sub-soil characteristics, the quantities and nature of the work, material necessary for completion of the work, the means to access to the working site, the H.F.L. & O.F.L., the accommodation he may require for his men and materials and in general he shall obtain all necessary information as to risks, contingencies overhead and other circumstances that may influence or affect his qoutated rates, and no claim whatsoever will be entertained after acceptance of his quotation.

ii) The contractor must accept the entire site, as it is, including changes, if any, during the period of construction, and any work that may be necessary to carry out the entrusted job, except those otherwise specifically mentioned or included in the priced schedule of work / B.O.Q. shall be deemed to have been included for in the rates quoted by the quotation.

3. Access Road
The contractor shall, construct and maintain through out the contractual period of work as access road, without intervening the water flow of the cross-channel suitable for the loaded trucks for carriage of his construction materials from the nearby State Highway to the actual place of work-site at his own cost and for which no separate, payment will be made.

4. Excavation And Earth Work

i) General
The excavation will generally refer to open excavation of foundation wet or dry.

ii) Excavation and Preparations of Foundation for Pilling and Concreting
It shall include removal of all materials of whatsoever nature for all depths, whether wet or dry. necessary for the construction of foundation (including mass excavation) in accordance with lines, levels, shown on the Departmental drawings and the plan, dimension of the excavation shall be the theoretical dimensions Plus 0.16 meter on all sides or as directed by the Engineer-in-Charge. The Bottom of excavation shall be leveled both longitudinally and transversely or stepped as directed by the Engineer in- Charge. If the contractor excavate greater depth or width than shown on the Departmental drawings or as directed by the Engineer-in-Charge, he shall at his own expenses fill the extra depth or width with cement concrete in proportion as directed by the Engineer-in-Charge but in no case with concrete of mix leaner than I:4:8 cement concrete.

The contractor shall report to the Engineer-in-Charge when the excavations are ready for piling or laying of lean concrete or soling or to receive structural concrete. No concrete shall be placed in foundations until the contractor has obtained the approval of the Engineer-in-Charge. In case, the excavation is done through different strata of soil and if the same is payable as per provision in the schedule of items with quoted rates, the contractor shall get the dimensions of the strata decided and approved from the Engineer-in-Charge. If no specific provision is made in the Schedule of Items with rates appearing in the priced schedule of items of work it will be presumed that excavation shall be in all types of soil and the contractor's rate cover for the same. After the excavation is approved by the Engineer-in-Charge

and before commencement of piling work or laying of the concrete) the contractor shall get the depth and dimensions of the excavation and levels (and nature of strata if applicable as per Schedule of Items like
hard rock, soft rock etc) and measurements recorded from the Engineer-in-Charge.

iii) Shoring

The sides of the excavations should be timbered and shored in such a way as is necessary to secure them from falling and the shoring shall be maintained in position as long as necessary. The contractor shall be responsible for the proper design of the shoring to hold the sides of the excavation in position and ensure safety from slips and present damages to work and property and injury to persons. The shoring shall he removed as directed after the items for which is it required are completed.

iv) Protection

All foundation pits and similar excavations shall be strongly fenced and marked with red lights at night in charge of watchman to avoid accidents. Adequate protective measures shall be taken to see that the excavation does not effect or damage adjoining road structures or any temporary structure erected at site for the work. All measures required for the safety of all people working in and near the foundation trenches and the people in the vicinity shall be taken by the contractor at his own cost. The Contractor will be entirely responsible for any injury and damage to property caused by his negligence or accident due to his constructional operations.

v) Stacking of Excavated Materials

All materials excavated will remain the property of the department and rate for excavation includes shorting out of useful materials and stacking unserviceable materials as directed. Materials suitable and useful for backfilling or leveling of the site or other use shall be stacked in convenient place but not in such a way as to obstruct free movement of men and vehicles or encroach on the area required for construction purpose.

vi) Backfilling

All shoring and frame work shall be removed after their necessity ceases and trash of any sort shall be cleaned out from the excavation. All space between foundation concrete and the sides of excavation shall be refilled to the original surface with approved excavated materials in layers of 15 cm. to 20 cm. thick, watered and rammed. The filling shall be done after concrete is fully set and done in such a way as not to cause undue thrust on any part of the structures. Where suitable excavated materials are to be used for refilling, it shall be brought from the place where it was temporarily stacked for use in refilling. Measurement of excavations, lean concrete or soling, piling work, concrete and other works below ground level are to be jointly recorded. Black Cotton soil shall not be used for backfilling.

vii) Dewatering

Rate for excavation shall include bailing or pumping out water which may accumulated in the excavation during the progress of work either from seepage, springs, rain or any other cause, and diverting surface flow, if any by bunds or other means. Pumping out water shall be done in such approved manner as to preclude the possibility of any damage to the foundation or trenches or masonry or any adjacent structure. When water is met in foundation trenches, pumping out water shall be from an auxiliary pit of adequate size dug, slightly outside the foundation excavations. The depth auxiliary pit shall be more than the working foundation trench levels. The auxiliary pit shall be refilled with approved excavated materials, after the dewatering is over.

The excavation shall be kept free from water.
a) During inspection and measurements.
b) During placement of reinforcements.
c) When concrete work is in progress and till it completion comes above the natural water level.
d) Till the Engineer-in-Charge considers that the concrete is sufficiently set.

viii) Rate to Include for Excavation

Apart from other factors mentioned elsewhere in the contract, rates for the item of excavation shall also include for the following :
a) Clearing site.

b) Setting out works as required.
c) Providing shoring and shuttering to avoid sliding of soil and to protect adjacent Structure and subsequently removing the same.
d) Bailing out and pumping out water as required and directed.
e) Excavation at all depth (unless otherwise specified in the Schedule of Items) and removal of all materials of whatever nature wet or dry and necessary for the construction of foundation etc. and preparing bed for laying concrete.
f) Sorting out useful excavated materials and conveying beyond the structure and stacking them neatly in the size for backfilling or reuse as directed.
g) Necessary protection including labour, materials and equipment to ensure safety and protection against risk or accident.
h) Drilling of holes / pits for local inspection as directed to explore the nature of substratum if necessary.
i) Dismantling, cutting and removing under-ground drainage, concrete or masonry structure if any encountered during excavation.
j) The excess excavation required for fixing for work or working space and refilling the same on completion of all works.
k) Removing surplus excavated materials from site upto 450 metre including loading and unloading.
l) MEASUREMENT FOR EXCAVATION
Excavation for foundation shall be measured and paid as per drawing dimensions (or the actual work done at site whichever is less) of concrete (bed concrete where so specified) at the lowest level plus 0.46 metre in all sides. In regard to length and breadth, and depth shall be completed from the concerned excavation levels and ground levels taken before excavation. Any additional excavation required for working space for from work planking dewatering installation and shuttering etc. shall not be measured and paid for separately but rate quoted by the quotationer shall include for all these factors. No increase in bulk after excavation shall be made.

5. Concrete Work

A) General

i) Supervision

A competent person approved by the Engineer-in-Charge shall be employed by contractor whose first duty will be to supervise all stages in all preparation and placing of the concrete. All tests required shall be carried out as directed by the Engineer-in-Charge.

ii) Approval of Concreting Arrangement etc.

Well before construction commences the contractor shall supply to the Engineer-in-Charge his approved drawing showing the general detailed arrangement for his concreting plant, system of form work, conveyance of the concrete to the point of pouring and all other devices which he proposes to use for the construction of the structure.

iii) Samples and Tests

Every facility shall be provided to enable the Engineer-in-Charge to obtain samples and carry out tests on the materials and construction. If those test show that any of the materials for construction do not comply with the requirements of the relevant IS specification, the contractor shall be responsible for replacement of the defective materials, and or construction. The necessary cost of all such tests has to be borne by the contractor.

iv) Rejected Materials

All materials which have been damaged, contaminated or have deteriorated or do not comply in any way with the requirements of the relelvant IS specification shall be rejected immediately from the site at the contractors own expenses.

v) Equipment

Contractor shall keep of work site testing equipment for aggregate, concrete like test sieves, balance, slump cones, cube testing machine, cube moulds, weight batch, mixer machine with hoppers, vibrators, hoist, pile driving machineries etc. as required conforming to relevant IS specification.

B) Materials

All materials shall be of approved quality.]

i)Cement

Brand of Cement: Ultratech / Ambuja / Lafarge / ACC / Ramco / or equivalent (Cement from Mini Plant will not be allowed)

a) Ordinary Portland Cement shall conform to the IS specification IS:269-1967, Portland Pozzolona Cement shall conform to IS:1489-1967. PSC confirming to IS-455.
b) Cement shall be stored in dry Weather proof godowons (or shed) built at the cost of the contractor in the stocks which are not higher than 100 bags. Sufficient space shall be provided for circulation and rotation of bag in order to minimize the length of storage time of any of the bags. The floor of the godown shall consist of wooden planks resting on base prepared of dry bricks laid on edge and joints grouted with cement morter.
c) Cemet which is deteriorated, damaged or wet shall not be allowed to be used. All such cement shall he immediately removed from work site by the contractor. The cost of all such removal of cement shall be borne by the contactor.

ii) Steel

HYSD Bars conforming to IS 1786 of appropriate grade shall be used.

iii) Aggregates

All aggregates shall confirm to IS:383-1970

iv) Fine Aggregate

a) The fine aggregate sand shall be hard, dense durable and clean with uncoated grains. The maximum size of particles shall be graded down. The sand shall be 4.75 mm. (3/ 16 in) and shall he graded down. The sand shall not contain any harmful materials such as iron, pyrites, coal, mica, silt, clay, alkali, sea shells, organic impurities, loam etc. or in case of reinforced cement work any material which might attack the reinforcement or detrimental to concrete. Aggregate which are chemically reactive with the alkalizes of the cement shall not be used. The maximum quantity of the deleterious materials shall not exceed the limits specified in the relevant IS specification. The finess modulus for such sand should normally not less than 2.
b) Grading the natural sand used for work shall have a grading conforming to one of the three grading zones of I, II & III of IS:383-1970.

v) Coarse Aggregates

a) Coarse aggregate unless otherwise stated shall consist of hard, dense, durable, uncoiled crushed rock of Pakur or Pakur variety.

b) The aggregate shall be free from soft, friable than or long laminated pieces. Aggregate shall be free from injurious amounts of alkali organic matter and other deleterious materials. Flaky or weathered stones shall not be used. The maximum percentage of deleterious materials shall not exceed those specified in the relevant IS specifications. The Engineer-in-Charge at his direction may allow the use of Graded Aggregate of nominal size to conform to the grading in the IS:383- 1970.

c) Contractor shall arrange to supply coarse aggregate, in single sizes. The single sizes shall be combined in suitable proportion to get desired over all grading of aggregates.

d) Size of Aggregates: Nominal maximum size of aggregate in R.C.C. piles, piers, shutters, slabs etc. should be restricted to 6 mm. less than the minimum clear distance between the main bars or 6 mm. less than the minimum cover to the reinforcement whichever is less. In no case the maximum size of the aggregate should be more than 40 mm.

e) In selecting the aggregate, the contractor shall satisfy himself that the source is suitable for regular supply and a watch shall be maintained that the particular shape and grading remain available uniformly throughout the progress of work. Unless authorised specified, this shall be obtained from Pakur.
f) Where directed by the Engineer-in-Charge, aggregate shall he washed by approved methods at contractor's expenses.

g) The sample of coarse aggregate for concrete work should be produced for the approval of Engineer-in-Charge and the whole work should be done with course aggregate conforming to the approved sample.

h) Stack - piling of aggregate
Unless otherwise directed with a view to maintain uniform water cement ratio, the aggregate shall be stocked in stack - piles. Where stock-pile are unused, the floor should be clear, the stock - piles should as far as possible be large, flat -

topped and drained. It is recommended that the aggregate should not be drawn bottom 0.5 metre of the stock piles, since this is normally such than that above.

vi) Water

Water used for easing of aggregate, mixing and curing shall be potable, free from iniurious amounts of deleterious materials which are likely to affect the strengh and durability of concrete pH value of Water shall be between 6 to 8.
In addition, water shall not contain an excess of acid, alkali, sugar or salt. The permissible limits of those materials shall be as stipulated in IS. 456-2000.

C) Mixing of Concrete

C.1) Machine Mixing

Concrete shall be mixed in a Batching Plant or as the case may be mechanical mixer. Mixing shall be continued until there is uniform distribution of materials and the mass is uniform in colour and consistency. Mixing shall be continued till individual particle of the coarse aggregates shown complete coating of mortar containing its proportionate amount of cement. The mixing time from the time of adding water shall be in accordance with IS:1951-61. but in no case mixing shall be done for less than two minutes. Mixers which have been out of use for more than 30 minutes shall be thoroughly cleaned before putting in a new batch. Unless otherwise agreed to by the Engineer-in-Charge the first batch of concrete from the mixer shall contain only two thirds of the normal quantity. Mixing Plant shall be thoroughly cleaned before changing from one type of cement to other.

C.2) Transporting, Placing, Compacting and Curing of Concrete

a) Transporting Concrete shall be handled from the place of mixing at site to the place of final deposit as rapidly as practicable by method which will prevent contamination, segregation or loss of any of the ingredients. If segregation occurs during transport the concrete shall be remixed before use. The concrete shall be placed in position and compacted before the initial set of cement has commenced and shall not be subsequently disturbed. During hot or cold weather concrete shall be transported in deep containers to reduce loss of water by evaporation during hot weather and loss of heat during cold weather. Deep containers are specified on account of their lower surface area.

b) Placing of Concrete

Unless otherwise agreed to by the Engineer-in-Charge, Concrete shall not be dropped into position from height greater than 1.2 metre.

c) Removal of Debris etc .

All debris dust etc. shall be removed from the shuttering at the cost of the contractor before any concrete is placed. Care should be taken to see that shuttering is watertight and has been properly treated with approved composition to prevent absorption of water. No concrete shall be placed in any part of the strueture until the approval of the Engineer-in-Charge has been obtained.

d) Temparature of Concrete

Concrete when deposited shall be a temperature of not less than 4.5°C and not more than 38°C. When concreting under water, the concrete shall not be placed in water having a temperature below 4.5°C The temperature of the concrete, when deposited under water, shall not be less than 16°C nor more than 18°C.

e) Protection and Placing in Layers

Concrete shall be placed into the form in layer not exceeding 450 mm. in thickness. Concrete after placing shall be protected by use of covering subject to approval of the Engineer-in-Charge during first stages of hardening against high winds hot sun and/or rain or surface water. No shock or vibrations shall be allowed to be imported to forms supporting fresh concrete. No such vibration shall be given in reinforcing bars portion of which are emboded in fresh compacted concrete.

f) Compaction

All concrete shall be compacted to produce it dense homogeneous mass. Concrete shall be thoroughly compacted during operation of placing by the use of Mechanical Vibrators. It shall be compacted in its final position within 30 minutes of its discharge from the mixer unless carried in properly designed agitators operating continuously when this time shall be within 2 hours of the addition of cement to the mix and within 30 minutes of its discharge from the agitator. Sufficient number of vibrators (including standby) of adequate capacities shall be used for compaction of concrete. Vibration shall be carried out by trained men and in presence of a qualified supervisor trained in the use of vibrators and vibrated concrete. In certain portions where vibration is not effective, careful rolling and tamping shall be earned out and sufficient men employed to ensure that thorough consolidation taken place. Where manual compaction becomes necessary the workability of the mix should be controlled to suit such mode of compaction, subject of course to strength requirement if specified also being complied with. When concreting has to resume on a surface which has hardened, it shall be roughened swept clean, thoroughly wetted, and covered with a 13mm. layer of mortar composed of cement and sand in the same ratio as in the concrete mix itself. This 13 mm. layer of mortar shall be freshly mixed and placed immediately before placing new concrete. Where concrete has not fully hardened, all laitance shall be removed by scrubbing the wet surface with wire or bristle brushes, care being taken to avoid dislodgement of any particulars of coarse aggregate. The surface shall then be thoroughly wetted, oil free, water removed and then coated with neat cement grout. The first layer of concrete to be placed on this surface shall not exceed 150 mm. in thickness, and shall be well ram mad against old work.

g) Packing Round Reinforcement;
In the case of reinforced concrete work, the concrete shall be carefully consolidated and packed round the reinforcement and care shall be taken to ensure that the reinforcement is not displaced during the placing and compaction of concrete. If reinforcement moves out of the place, it must be brought back to position immediately.

h) Lapse of approval for Concreting & Method of Continuous Concreting
If concreting is not started within 2 hours of the approval being given, it shall have to be obtained again from the Engineer-in-Charge. Concreting shall be carried out continuously unto predetermined positions of construction joints.The position and arrangement for construction joints shall be approved by the Engineer-in-Charge. Fresh concrete shall not be placed against concrete which have been in position for more than 30 minutes unless a proper construction joint is formed. Rest, Panes for meals etc. shall be suitable to the approval of the Engineer- in- Charge.

i) Protecting & Curing
The contractor shall adequately protect freshly laid concrete from rapid drying due to strong sunshine, drying winds etc, and also from running of surface water and shocks. All concrete work shall be water-cured for a minimum period of 14 days after concreting as advised by the Engineer-in-Charge. Horizontal surface shall be kept covered with water pounded by means of builds and vertical surfaces like those of walls etc. by burlaps kept constantly wet with water sprays. More sprinkling of water of vertical surface without sacks or burlaps will not be allowed. In respect of concrete made out of Puzzolona cement, curing shall be continued for another 8 days.

j) Trained Supervisor
It is essential that the contractor's supervisor who is in charge of the construction of all concrete work whether reinforced or not, shall be skilled in this class of work and shall superintend personally the whole construction and pay special attention to:

a) The quality, testing, proportioning and mixing of the materials particularly control of water cement ratio.
b) Laying of materials in place and through consolidation of the concrete to ensure solidity and freedom for voids.
c) Sizes and positions of reinforcements.

D) Construction Joints:
i) General
The position of all the construction joints shall be determined by contractor in consultation with the Engineer-in-Charge before the work commences. The joints shall be vertical (in rafts, beams etc.)

and horizontal (in walls, columns. etc.) as required, except in the case of inclined or curved member the joints shall be at right angles to the exist of the member. No Vertical Joint shall be formed without a proper stop-board at the joint. Where directed, the joints shall be of approved shape. All costs of the construction joint shall be included in the rates for the respective concrete items and no claim for extra amount on this accounts would be entertained.

E) Test for Concrete

i) General

Tests shall be conducted in accordance with IS:516/1956 with upto date amendments. It shall be the responsibility of the contractor to ensure that test moulds are prepared in work-man like manner. If in the opinion of the Engineer-in-Charge there is doubt regarding the quality of cement, the sample of cement shall be tested before being used in the work. The Engineer-in-Charge reserves the right to reject the structure (columns, copping, beams, girders, slabs etc.) if the results obtained from concrete cube tests falls short according to criteria as laid down in IS:456/2000 with latest amendment, and in such case, the dismantling and reconstruction of the structure or and component thereof shall be done by the contractor at his own cost.

ii) Test Cubes

a) Works test cubes shall be taken in sets of 6 cubes. The concrete for preparation of one set of 6 cubes shall he taken from the batch of mixed concrete discharged from mixture. The cubes shall be moulded in accordance with Indian Standard Code of Practice.

b) A minimum of one set of 6 cubes shall be taken for every 28 cum. or part thereof of concrete poured and they shall be considered as representative for the said quantity. This is an average figure, and may be decreased to cater to special conditions like different mixes, special structures etc. at the discretion of the Engineer-in-Charge.

c) The cubes shall be cured as per I.S. Code of Practice. The entire operation of casting, arranging and dispatch of cubes to Laboratory will be carried out by the contractor under the supervision of the Engineering-in-Charge. Out of '6 cubes, 2 cubes shall be tested at the age of 7 days and the other 4 at the age of 28 days in an approved Laboratory. Usually testing of the cube would be carried out at site by the cube testing machine of the contractor in presence of the Engineer-in- Charge or his authorized representatives. Out of the 4(four) sets to be tested at 28 days, the Engineer-in-Charge may arrange to have any two tested at any Government Engineering Collage whose report shall be binding on all parties concerned. The contractor shall have to install at site the machine for testing concrete test cubes. In such case the same shall have to be got approved by the Department before undertaking any test and the accuracy and performance of such machine(s) shall be subject to checking and inspection by the Engineer-in Charge or any person authorized by him to do so.

d) The cubes will be initialed, and dated jointly by contractor's representatives and the Engineer-in-Charge or his authorized representative with a piece of wire or nail so that an indicating of the initials is left on the cube.

e) The contractor shall arrange transport the cubes to the approved laboratory and arrange to have the testing results for warded (in duplicate) directly from laboratory to the Engineer-in-Charge. The contractor shall bear all expenses in connection with the preparation of test cubes like cost of mould, cost of concrete, labour and transport charges to the approved laboratory etc, including necessary laboratory testing charges.

f) A Register shall be maintained at site by the contractor with the following details entered initialed by the contractors and the Engineer-in-Charge.

1) Reference to specific structural member receiving the batch of concrete from which the cubes were cast.
2) Mark on cubes.
3) Grade and/or mix of concrete.
4) Date and time of casting.
5) Water cement ratio by weight and slump.
6) Crushing strengths as obtained at the age of 7 days for 2 cubes out of a set of 6 and at the age of 28 days for the 2 cubes. In case of doubt the remaining 2 cubes shall be tested at any recommended Engineering College.

7) Laboratory in which tested and reference to test certificate.
8) Any other information directed by the Engineer-in-Charge.

g) A record of the quality of concrete incorporated in the work that is represented by the quality of concrete of the set of cubes along with the description of the structural members where such concrete has been deposited shall be maintained. This record shall be initialed by the contractor and maintained by the Engineer-in-Charge.

F) Vibration of Concrete:

a) Water Cement Ratio

The water-cement ratio (by weight) for all vibrated concrete (except controlled concrete) shall generally be 0.45 and it shall not be varied unless otherwise directed. In respect of Controlled concrete the water-cement ratio shall be as determined in the laboratory mix design suitable for vibrated concrete.

b) Placing

Concrete shall be placed in layers not over 15 cm. deep and each layer shall be vibrated into place by methods which will not permit the ingredients to separate.

c) Number and size of Vibrators

Vibrators shall be of sturdy-construction, adequately powered and capable of transmitting to the concrete not less than 3,500 impulses per minute when operating under load. The vibration shall be sufficiently tense to cause to the concrete to flow of settle reading into place and visible affect the concrete over a radius of at least 450 mm. (18") when used in concrete having slump of 25 mm. Sufficient number of vibration at least one vibrator for a rate of concreting of 1.5 cum (50 cft.) per hour shall be employed so that at the required rate of placement, vibration throught the entire valued of each layer of concrete and complete compaction are incurred.

d) Manipulation of Vibrators

Internal vibrators shall be kept constant moving in the concrete and shall be applied at points uniformly placed not further apart than the radius over which the vibrator is visibly effective. The vibrator shall not be held in one location long enough to draw a pool of grout from the surrounding concrete. The vibration shall be such that the concrete becomes uniform plastic and there shall be at least 200 second of vibration per Sq.metre (20 second of vibration per sq.ft) of surface of each layer of concrete computed on the basis of visibly affected radius and taking overlap into consideration.

G) Grades of Concrete

i) General

Before taking up the concrete work the contractor shall have to get mix design desired and approved by the Engineer-in-Charge and necessary tests conducted to satisfy the requirement specified for the respective grade of concrete. Contractor when there is any change in the quality or aggregates (both coarse and fine) and alteration made in the mix which should be got approved by the Engineer-in-Charge before being carried out for the work. The preliminary test and work test results should conform to the requirement of I.S.Code of Practice 456-2000 with latest amendment. Cube tests shall have to be done in accordance with IS:516-1959.

ii) Criterion Regarding Strength

Although the works test cubes are specified to be conducted at the age of 7 and 28 days. compressive strength specified at 28 days shall alone be the criterion for acceptance or rejection of concrete.

iii) Sample size and Acceptance Criteria

All tests shall be carried out in accordance with IS:516-1959. The criteria for acceptance of a concrete of a specific grade shall be in accordance with recommendation of IS:456-2000.

H) Execution of Concrete Work

No concrete work shall be done in absence of Engineer-in-Charge or his representative.

I) Form Work

i) **General**

Form work shall include all temporary or permanent forms required for forming the concrete together with all temporary construction required for their support.

ii) Material and Design

The form work shall be of approved dressed timber/plywood true to line and level not less than 3 cm. thick. Surface in contact with concrete are to be planed smooth except where otherwise stated. Where timber is used for form work it shall be well reasoned. Free from loose knots, projecting nails, splits or other defects that may not affect the surface of concrete. As an alternative, sufficiently rigid steel shuttering may be used. In every case, joints of the shuttering are to be such as to prevent the loss of liquid from concrete. In timber shuttering the joints shall therefore be either tongued and grooved or the joints must he perfectly close and lined with kraft paper or other types of approved materials. In case of steel shuttering also the joints are to be similarly lined to ensure water titghtness. The inside surface of the forn work shall be properly greased to prevent adhension of concrete. The form work shall be so constructed as to remain sufficiently rigid during placing of the concrete.

All shuttering and framing must be adequately stayed and braced to the satisfaction of the Engineer-in-Charge for properly supporting the concrete during the period of hardening. The forms shall have sufficient strength and rigidity to hold concrete and withstand the pressure of ramming and vibration without excessive deflection from the prescribed lines when the concrete is vibrated. Suitable device shall be used to hold corners of adjacent ends and edges of panels of forms together for accurate alignment.

iii) If directed by the Engineer-in-Charge suitable camber shall be provided in horizontal members e.g. R.C.C. beams, girders of the structure to counter act the effects of any defection. The formwork shall be so fixed as to provide for such camber.

iv) Forms shall be so constructed as to be removable in sections in the desired sequence without damaging the surfaces of concrete or disturbing other sections.

v) Unless otherwise specified or directed, chambers or fillets of size 25 mm. X 25 mm. shall be provided at all angles of the formwork to avoid sharp corners.

vi) The form work shall conform to the shape, lines and dimensions to suit the R.C.C. member as shown in drawings. Formwork shall be adequately designed to support the full weight of workers, freshly placed concrete, without yielding settlement or deflection and to ensure good and truly aligned concrete finished in accordance with drawings.

vii) Staging with sallbullah posts of adequate diameter to support the mould for concrete shall be sufficiently rigid with provision of stays and bracing. For the staging of sub-structure, the Salbullah posts shall be capable of sustaining dead load due to formwork, concrete etc. and working load on it without yieldig. Before actual erection of the staging of the sub-structure the contractor shall have to get the drawing showing their arrangement of staging and form work along with supporting calculations approved by the Engineer-in-Charge.

viii) The arrangements for side shattering including supporting arrangement to be done by the contractor shall have to be get approved by the Engineer-in-Charge.

ix) The load carrying capacity of the Iron / Salbullah timber posts which will be considered in the design of staging for super structure shall be ensured at site prior to the erection staging by suitable arrangement of load testing to the satisfaction of the Engineer-in-Charge.

x) Cleaning and Treating of Forms

All rubbish particularly chipping, sawings and saw- cast shall be removed from the Interior of the forms before the concrete is placed and the form work in contact with the concrete shall be cleaned and thoroughly treated with an approved composition. Care shall be taken that such approved composition is kept out of contract with the reinforcements. Interior of all moulds and boxes must be thoroughly washed out with a hose pipe or otherwise so as to be perfectly cleaned and free from all extraneous matter prior to the deposition of the concrete. Prior approval of the formwork shall be taken from the Engineer-in-Charge before placing of reinforcements in the formwork.

xi) Stripping

Forms shall be left in place until their removal is authorised by the Engineer-in-charge and shall then be removed which reaches adequate strength so as to avoid injury to concrete. In no circumstances shall forms be struck until concrete reaches strength of at least twice the stress to which the concrete maybe subjected to at the time of striking. The strength referred to shall be that of concrete using the same cement and aggregates with the same proportion and cured under conditions of temperature and moistures similar to those existing on the work. Where possible, the formwork should be left longer as it wound assist the curing.

xii) Stripping Time

In normal circumstances (generally where temperatures are above 20ºC) and where Ordinary Portland Cement is used, the shuttering for the vertical sides shall be retained for a minimum period of 2 days unless otherwise directed at site by the Engineer-in-Charge.

xiii) Tolerances

The following shall be maximum permissible tolerances :

a) On general setting out for dimensions upto 4 metre in length a tolerance upto 3 mm. will be allowed.

b) On lengths of more than 4 metre, tolerance of not more than 5 mm. will be allowed.

c) On the cross sectional dimension of R.C. members, tolerance of more than 3 mm. will not be allowed.

If the work is not carried out within the tolerances set out above in (a) to (c), the cost of all rectification measure, dismantling and reconstruction as decided by the Engineer-in-Charge shall be borne by the contractor. In case of work dismantle, the same shall not be measured and paid for.

J) Defective / Poor Concrete – Procedure for Dealing with :

a) General

If in the opinion of the Engineer-in-Charge there is doubt as to the strength of the structure due to the works test cubes failing to attain specified strength or due to poor workmanship like honey combing etc. or displacing of concrete or similar circumstances or any reason attributing the negligence on the part of the contractor, then the decision of the Engineer-in-Charge regarding dismantling of such concrete or rectification of concrete allowed to be retained in its place shall be final and binding on the contractor.

b) Where Concrete in Structure is Allowed to Retain :

When the works test strength as revealed by cube tests lies below the specified strengths, then if in the opinion of the Engineer-in-Charge the lower strength attained is acceptable to be retained in the structure then such concrete shall be allowed retained in the structure and payment for such concrete to the contractor shall be made at such reduced rate as may be decided by the Engineer-in- Charge whose decision shall be final and binding on the contractor. For deficiency in strength upto 5 percent from the specified strength rates will be reduces by 5 percent and for deficiency above 5 percent and upto 10 percent rates will be reduced by 10 percent. Concrete deficient in strength beyond 10 percent of the specified strength if allowed to be retained the limit of' reduction in rate will be limited to 15 percent of the rate.

c) Concrete ordered to be Dismantled

Where the Engineer-in-Charge does not accept the poor or defective concrete and order the same to be dismantled, then the contractor shall dismantle such concrete at his expense and reconstruct the same to the satisfaction of the Engineer-in-Charge. Concrete thus dismantled will not be measured and paid for.

d) Concrete Retained with Rectification
Where the Engineer-in-Charge in order to save time and where he considers adequate steps that defective concrete be strengthened as directed by him, the contractor shall carry out all rectification measures to the approval of the Engineer-in-Charge at contractor's expenses. The concrete of lower strength thus accepted shall however be paid for after nccessary reduction of rate as would be decided by the Engineer-in Charge.

e) Quantity of Defective Concrete Represented by Cubes
In all cases of defective concrete as revealed by works test cubes strength failing below the specified strength the quantity of concrete thus affected and represented by the cubes shall be decided by the Engineer-in-Charge, whose decision shall be final and binding on the contractor.

f) Honeycombing:
a) Where honeycombed surfaces are noticed in the concrete the contractor shall not patch up the same until examined by the Engineer-in-Charge and decision given regarding the acceptance with rectification or rejection of the same. If the contractor patches up such defects without the knowledge of the Engineer-in-Charge, the Engineer-in-Charge will be at liberty to order demolition of the concerned concrete member to the extent he considers necessary. In such case, the contractor at his expense shall re-construct the same. Demolished work shall not be measured and paid for and the cost of cement thus wasted shall he recovered at penal rate from the contractor.

b) If in the opinion of the Engineer-in-Charge the honeycombing is harmful to the structure and where so directed by the Engineer-in-Charge the full structural members affected by honey combing as decided by the Engineer-in-Charge, shall be dismantled and reconstructed to the approval of the Engineer-in-Charge at contractor's expenses. The demolished concrete will not be measured and paid for and the cost of cement thus wasted shall he recovered at penal rate from the contractor.

c) Where in the opinion of the Engineer-in-Charge the structural member containing honeycombing can be allowed to be remained with rectification, the rectification shall be carried out as directed by the Engineer-in-Charge by guniting (with cement sand mortar I : 3 proportion) the areas concerned at contractor's expenses.

d) Where such honeycombed area are not severe in the opinion of the Engincer-in-Charge and where so directed shall be patched up with cement-sand mortar consisting of I part of cement to 3 parts of sand after removing defective concrete down to sound concrete to the satisfaction of the Engineer-in-Charge all at the expense of the contractor.

g) **Other Defects**
Any other defects in concrete shall be made good as directed by the Engineer-in-Charge at contractor's expenses.

K) Contractor's Rate to Include
The rate of contractor for providing and laying cement concrete in various grades or proportions shall apart from any other factors specified else, where in the quotation documents include for the following :-

a) For all factors and methods of work described in these specifications.
b) For all materials, labour, tools and plants etc. mixing, conveying and placing concrete in position, ramming, vibrating trowelling, curing, providing necessary shoring and removing the same after the works is complete. Shuttering and staging are described as separate items in the Priced Schedule of Items / B.O.Q. being attached with the quotation unless otherwise stated. As such the rates for shuttering and staging shall not be included in the rate of concrete. The rates for shuttering and staging are inclusive of all the work mentioned in specification for form work. The reinforcement in case of reinforced concrete work will be paid for separately unless otherwise stated in the particular items but the rate shall include for pouring concrete and packing around reinforcement.
c) The measurement of concrete will be as per detailed drawings, shape and sizes based on net structural sizes as per drawings.

d) Rates for concrete items shall cover for any shape on structural members like columns, girders, slabs, rafts etc.

e) Testing of work test cubes shall be done as required by Specification in a laboratory approved by the Engineer-in Charge and for tests of materials and work required in the opinion of the Engineer-in- Charge as described in these specification.

f) Fixing all inserts like pipes, plugs, forming holes etc. as described.

g) Weigh batching using a Mechnical weigh batcher or a batching plant except where so specified for volumetric batching.

h) For taking out dowel bars etc. through shuttering.

i) For work at all levels.

iii) Cleaning of Reinforcement

Before steel reinforcement is placed in position, the surface of the reinforcement shall be cleaned of rust, grease and any oilier objectionable substance.

iv) Cutting of Reinforcement

Before the reinforcement bars are cut, the contractor shall study the length of bars required as per drawings and shall care out cutting only to suit the sizes required as per drawings. Reinforcements shall be securely placed in position and firmly supported or edged by precast concrete blocks of suitable thickness at sufficiently close intervals so that they will not sag between the supports or get displaced during the placing of concrete or any other operation of the work. It is most important to maintain reinforcement in its correct position without displacement and to maintain the correct specified cover. Contractor shall be responsible to all costs for rectification required in case the bars are displaced out of their correct position.

L) Welding

Welding of bars may be carried out as per I.S. Specification and code of Practice in place of placing. However no extra payment shall be allowed for the same.

M) Bending of Reinforcement

Bends etc. on steel reinforcement shall be carefully formed. Care being taken to keep bends out of binding. Otherwise all rods shall be truly straight. If any bend shows signs of brittleness or cracking, the
rod shall be removed immediately from the site. Minimum radius of 2 times diameter of the bars shall be used unless otherwise spacified in the drawing. In respect of standard hooks the radius of bend shall be 2 times the diameter of bar. Heating of reinforcement of bars to facilitate bending will not be permitted. The bars shall always be bend cold. In case of mild steel reinforcment bars of larger sizes if used, where cold bending is not possible, they may be bent by heating with written permission of the Engineer-in- Charge. Bars bent hot shall not be heated beyond cherry red colour and after bending shall be allowed to cool slowly without quenching. The bars damaged or weakened in any way in bending shall not be used on the work. High Strength deformed bars shall in no case be heated to facilitate bending.

N) Inspection of Reinforcements

No concreting shall be commenced until the Engineer-in-Charge or his authorised representative has inspected the reinforcement in position and until his approval has been obtained. A notice atleast 24 hours before concreting shall be given to the Engineer-in-Charge or his authorised representative by the contractor for inspection of reinforcement. If in the opinion of the Engineer-in-Charge any material is not to accordance with the specification or the reinforcement is incorrectly spaced, bent or otherwise defective, the contractor shall immediately remove such materials from the site and replace with new ones and rectify any other defects in accordance with the instruction of the Engineer-in-Charge or his authorised representative and to his entire satisfaction.

O) Net Measurements

Reinforcement shall be placed as shown in the structural drawings and payment will be made on the net measurements from drawings. Only such laps, dowels, chairs and pins in reinforcement as approved by the Engineer-in-Charge or his authorised representative or shown in drawings shall be paid for. The contractor shall consider in his Quotation for all

wastage in reinforcement work which will not be paid for separately. All lap lengths shall be as per I.S. specification or drawings.

P) Cover for Reinforcements
Cover for reinforcement shall be as per IS: 21-1972 / Drawings.

Q) Rate of the Contractor for Reinforcement shall in Addition to any Factors
a) Recoiling, straightening (coiled bars, bent bars to facilitate transporting).
b) All cutting to lengths, labour in bending and cranking, forming hooked ends, handling, hoisting and every thing necessary to fix reinforcement in work as per drawing.
c) Cost of binding wire required as described.
d) Cost of pre-cast concrete cover blocks to maintain cover and holding reinforcement in position.
e) For fabrication and fixing reinforcement in any structural member irrespective of its location, dimensions and level.
f) Removal of rust and other undesirable substances. using wire brush etc. as described.
g) Work at all levels.

Notes :
a) Stone metal and chips of any size as required will have to be arranged by the contractor and cost will be deemed to have been included in the rate of respective items.

Bored Piling Work

Piling work has to be done as per latest IS specification IS 2911.

6. Specifications

A) Timber
All timber shall be of best quality well-seasoned and/or well treated for preservation and protection against decay etc. It shall be uniform in substance, straight in fibre, free from large or dead knots, sap, flaws, sun-cracks, shakes or blemishes of any kind. Any damage or splits across the grain shall not be permissible. The colour of the timber shall be uniform through out, firm and shining with a silky luster when planed and shall not omit dull sound when struck.

B) Timber doors, windows etc. and their fittings

i) Door and Window works shall be carried out as per detailed drawings or as directed by the Engineer-in-Charge. Specified timber shall be used and it shall be sawn in the direction of the grains and shall be straight and square.

ii) Fitting shall be of Iron, brass and aluminium or as specified. These shall be well made reasonable smooth and free from sharp edges, corners flaws and other defects. Screw holes shall be counter sunk to suit the head of specified wood screws. Iron fittings shall be finished bright or black enamelled or copper oxidised. Brass fittings shall be finished bright (brass), oxidised, or chromium plated (Electro-plates) and aluminium fittings shall be finished bright or anodised or as specified. Fittlrgs shall be got approved by the Engineer-in-Charge before fixing. In case of renewal works, the new fittings, shall as far as possible match with the existing ones. Screws shall be driven with screw driver and not hammered in.

C) 1st Class Brick works
Cement mortar shall be prepared by mixing sand and cement in specified proportion. Sand shall be measured on the basis of its dry volume. In case of damp sand, its quantity shall be increased suitable to allow for bulkage.

D) Damp Proof Course

Damp Proof Course shall be laid to specified thickness over walls for the full thickness of the superstructure walls. The surface shall be levelled and prepared before laying the cement concrete. Edges of damp proof course shall be straight even vertical side shuttering shall consist of wooden frame and shall be strong and properly fixed so that it does not got disturbed during compaction and the mortar does not lead through. The concrete mix shall be of workable consistency and shall be tamped thoroughly to make a dense mass. When the sides are removed, the surface should come out smooth without any honey-combing. The damp proof course shall be laid continuous and surface shall be double chequered. Damp proof course shall be cured for at last seven days, after which it shall be allowed to dry. Water proofing materials of approved quality shall he added to the concrete mixture in accordance with the manufacturer's specifications.

E) Cement Plaster

The proportion for mortar for exterior or interior plaster shall be specified in the items of work. The plaster shall be of thickness as specified and the surface shall be similarly cured as for cement concrete. The moulding shall be carried out as shown in the drawing and shall be separately measured in overall length unless otherwise specified in the items. Interior corners and edges of openings if so directed by the Engineer-in-Charge shall be rounded off or chamfered with the same mortar for which no extra payment will be allowed. All cement concrete surface should be chipped off properly before taking up the plastering work.

I/We have inspected the site of work and have made myself / ourselves fully acquainted with local conditions in and around the site of works. I/We have carefully gone through the Notice Inviting Quotation including the Corrigendum Notices and other Quotation documents mentioned therein. I/We have also carefully gone through the PWD(WB) Schedule and special terms and conditions and agreed to execute all the terms of the priced schedule as per General Conditions Specification as laid down in the said schedule. My / Our quotation is offered taking due consideration of all factors and if the same are accepted I/We promise to abide by all the stipulations of the Quotation Documents and carry out and complete the work to the satisfaction of the Department.

Sd/-
The Managing Director
The State Fisheries Development Corporation Limited