Volume-II

NATIONAL AGRI-FOOD BIOTECHNOLOGY INSTITUTE (NABI)

(Department of Biotechnology,
Ministry of Science and Technology, Govt. of India)
C-127, Industrial Area, Phage 8, SAS Nagar, Mohali, Punjab

FINANCIAL BID DOCUMENT

Construction of transgenic screen houses at Sector-81, Mohali

TECHNICAL SPECIFICATIONS

1.0 STANDARD SPECIFICATIONS TO BE FOLLOWED

The work should be executed as per following CPWD specification and also the specification laid in tender document. In case, above specifications are not available for certain item, then the material should conform to ISI and BIS standards.

1.1 Civil Engineering Works

CPWD Specification 2009 Vol. I & II along with latest correction slips. These Specifications have replaced CPWD Specifications 1996 along with Correction Slips issued on them. These Specifications cover all types of Works. The specifications are available as a printed document issued by CPWD and also in soft copy PDF Format in CPWD website.

1.2 Electrical Engineering Works

(A) CPWD General Specifications for Electrical Works Part I Internal - 2013.
(B) CPWD General Specifications for Electrical Works Part II External - 1994.
(C) CPWD General Specifications for Electrical Works Part IV Sub Stations – 2013.

The above specifications shall be read with upto date correction slips (if any).

Further, while execution, the contractor shall adhere to the procedure/norms set by Department of Biotechnology (DBT).

2.0 STANDARD SPECIFICATIONS ISSUED BY MINISTRY OF SURFACE TRANSPORT

Specifications for Road and Bridge works (Fourth Revision) August 2001 have been published by Indian Road Congress as a priced document. These Specifications cover exhaustively various Road and Bridge works.

(A) CIVIL WORKS

WORKMANSHIP FOR THE ENTIRE PLUMBING WORK.

The workmanship shall be best of its kind and shall conform to the specifications, as below or Indian Standard Specifications in every respect or latest trade practices and shall be subject to approval of the Engineer-in- Charge. All materials and/or Workmanship which in the opinion of the Engineer-in- Charge is defective or unsuitable shall be removed immediately from the site and shall be substituted with proper materials and/or workmanship forthwith.

1. Hot Dipped Galvanized Iron Hollow Sections

Structural hot dipped galvanized iron steel hollow section shall be used in erection of structure of screen houses. The hot dipped GI sections should be either riveted/bolted, screwed and no welding is allowed after hot dipped galvanization. The erection shall only be done by skilled workers with safety and standard

engineering practice. The material should conform to IS4923 YST 210 grade. The minimum galvanization for same shall be 450 gsm per sqmtr. The factory test certificate along with testing during execution shall be provided by contractor free of cost to department. Any plates, cleats, flange etc as required for fixing shall be paid by weight as per this item only.

2. Polycarbonate sheet

Polycarbonate sheet should be of double walled design/shape of minimum 6 mm thickness , approx. weight 1.3 KG/m2 with light & solar transmission of 75-80%, U value 3.56 W/msq K, self-extinguishing, UV & chemical resistant of colour including cutting, hoisting, sealing with appropriate sealant etc. The aluminium profiles shall be used for fixing of polycarbonate sheet. The sample of same should be got approved from Engineer-in- Charge before execution of work. The work should be carried out as per design/drawing by skilled workers. Shop drawing of same shall be got approved from Engineer-in-charge before execution of work. All the joints, connection points with structural members should be sealed properly with silicon sealants etc.

3. SS mesh

Stainless steel mesh shall have 40 x 40 nos lining per centimeter & operature thickness of 0.19mm. The mesh should be conforming to SS grade 316 L for outdoor usage in screen house & as per guidelines by Department of Biotechnology for screen houses. The factory test certificate for same should be provided. The cost of aluminium profile, structural steel shall be paid separately. Payment should be made for measured area on walls, roof without any overlapping of SS mesh. Same is deemed to be included in rates. The work shall only be carried out by skilled workers with precision and as per standard engineering practice.

4. **Water Softner:-**

Supply , Installation, testing & commissioning of manual water softner system of flow rate capacity up to 10,000 ltrs/hour, minimum soft water output of 1,25,000 ltrs and treated water hardness less than 5 ppm including resins, container body, accessories, regeneration salt of 288 Kgs complete to the satisfaction of Engg-in-charge.

(B) PLUMBING WORK

WORKMANSHIP FOR THE ENTIRE PLUMBING WORK.

The workmanship shall be best of its kind and shall conform to the specifications, as below or Indian Standard Specifications in every respect or latest trade practices and shall be subject to approval of the Engineer-in- Charge. All materials and/or Workmanship which in the opinion of the Engineer-in- Charge is defective or unsuitable shall be removed immediately from the site and shall be substituted with proper materials and/or workmanship forthwith.

MATERIALS FOR THE ENTIRE PLUMBING AND FIREFIGHTING WORK.

All materials shall be best of their kind and shall conform to the latest Indian Standards.

All materials shall be of approved quality as per samples and approved by the Engineer-in-Charges. As and when required by the Engineer-in- Charges, the contractor shall arrange to test the materials and/or portions of works at his own cost to prove their soundness and efficiency. If after tests any materials, work or portions or work are found defective or unsound by the Engineer-in-Charge, the contractor shall remove the defective material from the site, pull down and re-execute the works at his own cost to the satisfaction of the Engineer-in- Charge. To prove that the materials used are as specified the contractor shall furnish the Engineer-in- Charge with original vouchers on demand.

a) SANITARY FIXTURES & FITTINGS

1 GENERAL REQUIREMENT

All fixtures and accessories shall be fixed in accordance with a set pattern matching the tiles or interior finish as per Engineer-in- Charge requirements. Wherever necessary, the fittings shall be centered to dimensions and pattern as called for. Fixing screws shall be half round head chromium plated (CP) brass screws, with CP brass washers unless otherwise specified. Fixtures shall be installed by skilled workman with appropriate tools according to the best trade practice.

All appliances, fittings and fixtures shall be fixed in a neat workmanlike manner true to level and to heights shown on the drawings and in accordance with the manufacturers' recommendations. Care shall be taken to fix all inlet and outlet pipes at correct positions. Faulty locations shall be made good and any damage to the finished floor, tiling, plaster, paint, insulation shall be made good by the contractor at his own cost. Fixtures shall be mounted rigid, plumb and true to alignment.

All materials shall be rustproof; materials in direct or indirect contact shall be compatible to prevent electrolytic or chemical (bimetallic) corrosion. Wall flanges, if any shall be provided on all walls, floors, columns etc. wherever supply and disposal pipes pierce through them. These wall caps shall be or chromium plated brass fittings and the receiving pipes and shall be large enough to cover the punctures properly.

Sanitary appliances, subject to the type of appliance and specific requirements, shall be fixed in accordance with the relevant standards and the following:

a. Contractor shall, during the entire period of installation and afterwards protect the appliances by providing suitable cover or any other protection so as to absolutely prevent any damage to the appliances until handing over (The original protective wrapping shall be left in position for as long as possible)

b. The appliances shall be placed in correct position or marked out in order that pipe work can be fixed or partially fixed first.

c. The appliance shall be fixed in a manner such that it will facilitate subsequent removal if necessary.

d. The appliance shall be securely fixed. Manufacturer's brackets and fixing methods shall be used wherever possible. Compatible rust-proofed fixings shall be used. Fixing shall be done in a manner that minimizes noise transmission.

e. Appliances shall not be bedded (e.g. WC pans, pedestal units) in thick strong mortar that could crack the unit (e.g. ceramic unit)

f. Pipe connections shall be made with demountable unions. Pipe work shall not be fixed in a manner that it supports or partially supports and appliance.

g. Appliances shall be fixed true to level firmly fixed to anchor or supports provided by the manufacturer and additional anchors or supports where necessary.

The contractor shall fix all plumbing fittings such as water faucets, shower fittings, mixing valves etc. in accordance with manufacturer’s instructions and connect to piping system. The contractor shall supply all fixing materials such as screws, raw plugs, unions, collars, compression fittings etc., as required.

Joints / gaps between all sanitary appliances / fixtures and the floor / walls shall be caulked with an approved mildew resistant sealant, having antifungal properties, of colour and shade to match that of the appliances / fixture and the floor / wall to the extent possible.

2. MOCKUP AND TRIAL ASSEMBLY

The installation of the sanitary fixtures and fittings shall be as per the all drawings approved by the Engineer-in- Charge. The contractor shall have to assemble at least one set of each type of sanitary fixtures and fittings in order to determine precisely the required supply and disposal connections. Relevant instructions from manufacturers shall be followed as applicable. This trial assembly shall be developed to determine the location of puncture holes, holding devices etc. which will be required for final installation of all sanitary fixtures and fittings. The above assembly shall be subject to final approval by the Engineer-in- Charge.

The fixtures in the trial assembly can be re-used for final installation without any additional payments for fixing or dismantling of the fixtures.

3. SUPPORTING AND FIXING DEVICES

The contractor shall provide all the necessary supporting and fixing devices to install the sanitary fixtures and fittings securely in position. The fixing devices shall be rigidly anchored into the building structure. The devices shall be rust resistant and shall be so fixed that they do not present an unsightly appearance in the final assembly. Where the location demands, the Engineer-In-Charge may instruct the contractor to provide chromium plated or other similarly finished fixing devices. In such circumstances the contractor shall arrange to supply the fixing devices and shall be installed complete with appropriate vibration isolating pads, washers and gaskets.

4. FINAL INSTALLATION

The contractor shall install all sanitary fixtures and fittings in their final position in accordance with approved trial assemblies and as shown on drawings. The installation shall be complete with all supply and waste connections. The connection between building and piping system and the sanitary fixtures shall be through proper unions and flanges to facilitate removal/replacement of sanitary fixtures without disturbing the built in piping system. All unions and flanges shall match in appearance with other exposed fittings.

Fixtures shall be mounted rigid, plumb and to alignment. The outlets of water closet pans and similar appliances shall be examined to ensure that outlet ends are butting on the receiving pipes before making the joints. It shall be ensured that the receiving pipes are clear of obstruction. When fixtures are being mounted, attention shall be paid to the possibility of movement and settlement by other causes. Overflows shall be made to ensure that necessary anchoring devices have been provided for supporting water closets, wash basins, sinks and other appliances.

5. PROTECTION AGAINST DAMAGE

The contractor shall take every precaution to protect all sanitary fixtures against damage, misuse, cracking, staining, breakage and pilferage by providing proper wrapping and locking arrangement till the completion of the installation. At the time of handing over, the contractor shall clean, disinfect and polish all the fixtures and fittings.

6. MEASUREMENT

6.1 Rate for sanitary fixtures accessories, CP fittings shall etc. include all items, and operations stated in the respective specifications and bill of quantities and nothing extra is payable.

6.2 Rates for all items under specifications para above shall be inclusive of cutting holes and chases and making good the same, CP screws, nuts, bolts and any fixing arrangements required and recommended by manufacturers, testing and commissioning and making good to the satisfaction of the Engineer-in- Charge

7. TESTING

All appliances, fixtures and fittings shall be tested before and after installation. Water seals of all appliances shall be tested. The contractor shall block the ends of waste and ventilation pipes and shall conduct an air test.

COMMISSIONING & GUARANTEE (For Entire Plumbing, Sanitary Installations)

1. SCOPE OF WORK

On award of work, Contractor shall submit a detailed proposal giving methods of testing and gauging the performance of the equipment to be supplied and installed under this contract.

Contractor shall provide all tools, equipment, metering and testing devices required for the purpose.

All tests shall be made in the presence of the Engineer- In-Charge or his representative or any inspecting authority. At least three working days' notice in writing shall be given to the inspecting parties before preforming any test.

Water flow rates of all equipment and in pipe lines through valves shall be adjusted to design conditions. Complete results of adjustments shall be recorded and submitted.

Contractor shall ensure proper balancing of the hydraulic system and for the pipes /valves installed in his scope of work by regulating the flow rates in the pipe line by valve operation. The contractor shall also provide permanent Tee connection (with plug) in water supply lines for ease of installing pressure gauge, temperature gauge & rotameters. Contractor shall also supply all required pressure gauge, temperature gauge & rotameter for system commissioning and balancing. The balancing shall be to the satisfaction of Consultant / Engineer Incharge.

Three copies of all test results shall be submitted to the Engineer in A4 size sheet paper within two weeks after completion of the tests.

2. PRECOMMISSIONNIG

On completion of the installation of all pumps, piping, valves, pipe connections, insulation etc. the Contractor shall proceed as follows:

a. The water storage tanks and pipes shall first be filled with water and thoroughly flushed out. The storage tanks shall then be filled with water again and disinfecting chemical containing chlorine added gradually while tanks are being filled to ensure thorough mixing. Sufficient chemical shall be used to give water a dose of 50 parts of chlorine to one million parts of water.

If ordinary bleaching powder is used, the proportions will be 150 gm of power to 1000 litres of water. The power shall be mixed with water in the storage tank. If a proprietary brand of chemical is used, the proportions shall be specified by the manufacturer. When the storage tanks are full, the supply shall be stopped and all the taps on the distributing pipes are opened successively working progressively away from the storage tank. Each tap shall be closed when the water discharged begins to smell of chlorine. The storage tank shall then be filled up with water from supply pipe and added with more disinfecting chemical in the recommended proportions. The storage tank and pipe shall then remain charged at least for three hours. Finally the tank and pipes shall be thoroughly flushed out before any water is used for domestic purpose.

The pipe work shall be thoroughly flushed before supply is restored.

b. After the pipe work has been tested and approved, but before it is coupled, it shall be sterilized with a solution of chloride of lime.

c. Prior to start-up and hydraulic testing, the Contractor shall clean the entire installation including all water tanks, fitments and pipe work and the like after installation and keep them in a new condition. All pumping systems shall be flushed and drained at least once through to get rid of contaminating materials.

All pipes shall be rodded to ensure clearance of debris, cleaning and flushing shall be carried out in sections as the installation becomes completed.

d. All strainers shall be inspected and cleaned out or replaced.

e. When the entire systems are reasonably clean, a pre-treatment chemical shall be introduced and circulated for at least 8 hours. Warning signs shall be provided at all outlets during pre-treatment. The pre-treatment chemical shall:

· Remove oil, grease and foreign residue from the pipework and fittings;

· Pre-condition the metal surfaces to resist reaction with water or air.

· Establish an initial protective film;

· After pre-treatment, the system shall be drained and refilled with fresh water and left until the system is put into operation.

· Details and procedures of the pre-treatment shall be submitted to the Engineer- In-Charge for approval.

f. Check all clamps, supports and hangers provided for the pipes.

g. Check all the equipment, piping and valves coming under cold water system and operate each and every valve on the system to see if the valves are functioning properly. Thereafter conduct & hydro test of the system as for (b) above.

h. Fill up pipes with water and apply hydrostatic pressure to the system as given in the relevant section of the specification. If any leakage is found, rectify the same and retest the pipes.

3. FINAL ACCEPTANCE TESTS

Following commissioning and inspection of the entire installation, and prior to issue of the Completion Certificate, the Contractor shall carry out final acceptance tests in accordance with a programme to be agreed with the Engineer- In-Charge.

Should the results of the acceptance tests show that plant, systems and/or equipment fail to perform to the efficiencies or other performance figures as given in this Specification, the Contractor shall adjust, modify and if necessary replace the equipment without further payment in order that the required performance is obtained.

Where acceptance tests are required by the relevant Authorities having jurisdiction, these tests shall be carried out by the Contractor prior to the issue of Completion Certificate to the acceptance of the Authorities.

4. REJECTION OF INSTALLATION / PLANT

Any item of plant or system or component which fails to comply with the requirements of this Specification in any respect whatsoever at any stage of manufacture, test, erection or on completion at site may be rejected by the Engineer in- Charge either in whole or in part as he considers necessary/appropriate. Adjustment and/or modification work as required by the Engineer- In-Charge so as to comply with the Authority's requirements and the intent of the Specification shall be carried out by the Contractor at his own expense and to the satisfaction of the Engineer-in- Charge.

After works have been accepted, the Contractor may be required to carry out assist in carrying out additional performance tests as reasonably required by the Engineer-in-Charge.

5. WARRANTY AND HANDOVER

The Contractor shall warrant that all plant, materials and equipment supplied and all workmanship performed by him to be free from defects of whatsoever nature before handover to

the Engineer-in-Charge. All the Guarantee/Warranty certificates of all the items shall be in the name of Institute i.e., National Agri-Food Biotechnology Institute (NABI), Mohali.

6. HANDING OVER OF DOCUMENTS

All testing and commissioning shall be done by the Contractor to the entire satisfaction of the Engineer-in- Charge and all testing and commissioning documents shall be handed over to the Engineer-in-Charge.

C)ELECTRICAL WORKS

1) The Electrical works are to be executed at site as per the following CPWD specifications with latest upto date correction slips:

a) CPWD General Specifications for Electrical Works Part I Internal - 2013.
b) CPWD General Specifications for Electrical Works Part II External - 1994.
c) CPWD General Specifications for Electrical Works Part IV Sub Stations – 2013.

Apart from above specifications, those items which are not covered in the above CPWD specifications, the manufacturer specifications as per the approved make list and BIS specifications shall be referred to.

2) All the light fixtures shall be water proof and dust proof type i.e., minimum of IP65 protection.
3) All the Electrical items shall be of approved make only.
4) The samples of each and every electrical item shall be submitted by the contractor for prior approval from the Engineer-Incharge before execution/installation at site.
5) The test certificates of each and every electrical item shall be submitted by the contractor to the Engineer-Incharge.
6) All the items must strictly confirm to specifications laid down in the tender document.
7) In case of any contradiction between the specifications, the contractor shall take the prior approval of the Engineer- In – Charge before executing the same at site.
8) The LT cable shall be tested at site in front of Engineer-Incharge before laying the same.

NOTE: In case of any contradiction between the specifications, the contractor shall take the prior approval of the Engineer- In – Charge before executing the same at site.

LIST OF MAKES TO BE ADOPTED

CIVIL & PUBLICH HEALTH WORKS

S.No	Item	Make
1.	Cement	J K Lakshmi/ ACC/ Ultratech/ Ambuja
2.	Steel Reinforcement (TMT bars)	Tata/JSW Jindal/ Sail/Vizag
3.	Structural hot dipped Galvanized Iron section members	Tata/JSW Jindal/Apl Apollo Tubes Ltd
4.	CP Fittings	Jaguar/ Hindware/ Cera
5.	GI pipes	Tata/ Jindal/ Swastic
6.	Paint	Asian Paint/ Berger/ICI
7.	White Cement based putty	Birla White/JK Lakhsmi
8.	Polycarbonate Sheet	Lexan/Tuflite/Prakash Acrlylics
9.	Chinaware	Jaguar/Hindware/cera
10.	UPVC/PVC pipes	Diplast/Supreme/Prince
11.	PVC tank	Diplast/Finolex/ Sintex
12.	Water Softner	Ion Exchange
13.	Aluminium	Jindal, Hindalco (Indal), Gulf extrusion, Alualpha,
14.	Ball Valve	Zoloto/L&T/Kirloskar Brothers Ltd

Note:- Any other material make not mentioned shall be ISI marked & got approved from Engg-in-charge

ELECTRICAL WORKS

S.No	Item	Make
15	MCCBs/MCBs/RCCBs/Isolators/Distribution boards(DBs)	L&T/ABB/Siemens/Legrand/Hager/Schneider Electric
16	Wires & Cables	Polycab / Finolex / KEI
17	Light Fixtures	Philips/Crompton/Wipro
18	Switch & Sockets, GI switch boxes	MK/ABB/Schneider Electric/L&T
19	Steel conduit pipes	BEC/AKG/JPC/STEEL KRAFTS
20	PVC conduit pipes	BEC/Polycab/AKG
21	Aluminium Lugs	Dowells/3D (Billets Elektro Werke Ltd.)/Electro
22	Cable Glands	Comet/Cable Glands India/Brass Turnomatics
23	Exhaust fan , Wall fan	Crompton/Bajaj/Khaitan/Almonard
24	Air-curtain	Euronics/Almonard/Fly-Ban Industries

Note:- Any other material make not mentioned shall be ISI marked & got approved from Engg-in-charge

NAME OF WORK: - CONSTRUCTION OF TRANSGENIC SCREEN HOUSES (2nos) AT SECTOR-81, MOHALI

ABSTRACT SHEET

S.NO	PARTICULARS	AMOUNT (In INR)
1	**ESTIMATED VALUE OF WORK**	**Rs 1, 00, 72,769.00**
2	**PERCENTAGE (% AGE) QUOTE PLUS/MINUS (+/ -) BY BIDDER ON ESTIMATED AMOUNT (IN FIGURES)**	
3	**PERCENTAGE (% AGE) QUOTE PLUS/MINUS (+/ -) BY BIDDER ON ESTIMATED AMOUNT (IN WORDS)**	
4	**NET AMOUNT AFTER UN-CONDITIONAL PERCENTAGE REBATE OR QUOTE ABOVE ESTIMATED VALUE ((IN FIGURES)**	
5	**NET AMOUNT AFTER UN-CONDITIONAL PERCENTAGE REBATE OR QUOTE ABOVE ESTIMATED VALUE ((IN WORDS)**	

Stamp & Signatures of bidder

B.O.Q FOR CONSTRUCTION OF TRANSGENIC SCREEN HOUSES (2no) AT SECTOR-81, MOHALI

S.No.	Description.	Unit	Qty.	Rate	Amount
	PART-A - CIVIL WORKS				
1./2.28	Surface dressing of the ground including removing vegetation and in-equalities not exceeding 15cm deep and disposal of rubbish, lead upto 50 m and lift upto 1.5 m.	100 Sqm.	75.960	1245.75	94,627.17
	- All kind of soil.				
2/2.8	Earth work in excavation by mechanical means(hydraulic excavator)/manual means in foundation, trenches of drains(not exceeding 1.5 m in width, 1.5 m to 4.5 m in depth or 10 sqm. on plan), including dressing of sides and ramming of bottoms lift , including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50m.				
		cum	2398.77	157.5	3,77,806.25
3/2.33	Felling trees of the girth (measured at a height of 1 m above ground level), including cutting of trunks and branches, removing the roots and stacking of serviceable material and disposal of unserviceable material. The bushes with girth less than 30 cm shall be cleared by contractor in the jungle cleaning work and nothing extra is payable for same.				
a	Beyond 30 cm girth upto and including 60 cm girth	each	92.00	196.7	18,096.40
b	Beyond 60 cm girth upto and including 120 cm girth	each	38.00	871.1	33,101.80
c	Beyond 120 cm girth upto and including 240 cm girth	each	7.00	4,029.05	28,203.35
4/2.25	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead upto 50 m and lift upto 1.5 m.				
	total in cum	cum	2398.77	112.4	2,69,621.73

5/NS	Supply & laying of good earth at site along with carriage, compaction etc complete to the satisfaction of Engg-In-charge. Contractor may verify the source of availability of earth, nothing extra is payable on account of extra carriage etc.	cum	7.57	340.86	2,581.44
6/DSR	Supplying and filling in plinth with sand under floors, including watering, ramming consolidating and dressing complete.				
		cum	2.109	910.25	1,919.58
7/4.1.10	Providing & laying in position cement concrete of specified grade excluding the cost of centering and shuttering –All work upto plinth level.				
-	1:5:10 (1cement: 5 coarse sand: 10 graded stone aggregate 40 mm nominal size).				
		cum	47.77	4004.0	1,91,283.38
8/4.1.2	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level :				
a	1:1½:3 (1 Cement: 1½ coarse sand: 3 graded stone aggregate 20 mm nominal size)				
		cum	56.52	5,970.60	3,37,475.87
b	Reinforced cement concrete work in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts etc. up to floor five level, excluding cost of centering, shuttering, finishing and reinforcement :				
	1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size)	cum	5.80	6,570.00	38,079.72
9/ 5.3	Reinforced cement concrete work in beams, suspended floors, roofs having slope up to 15° landings, balconies, shelves, chajjas, lintels, bands, plain window sills, staircases and spiral stair cases up to floor five level, excluding the cost of centering, shuttering, finishing and reinforcement, with 1:1.5:3 (1 cement :1.5 coarse sand : 3 graded stone Aggregate 20 mm nominal size).				
		cum	3.98	7,074.30	28131.203
10	Centering & shuttering including strutting, propping etc. and removal of form for:-				
A/ 5.9.1	Foundation, footings, bases of columns, etc. for mass concrete.	Sqm.	299.52	196.45	58,840.70
B/5.9.6	Columns, Pillars, Piers, Abutments, Posts and Struts.	Sqm.	155.94	453.35	70,695.40
C/ 5.9.5	Lintels, beams plinth beams, girders,				

	bressumers and cantilevers.				
		sqm.	2.000	332.15	664.30
D/ 5.9.3	Suspended floor, roofs, landing, balconies & access platform.				
		Sqm.	37.70	401.65	15142.205
11/5.22.6	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level & above levels.				
	-Thermo-mechanically treated bars.	Kg.	684.077	68.1	46,585.68
12/6.1.1	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in:				
	Cement mortar 1:4 (1 cement : 4 coarse sand)				
	Qty in cum.	cum	105.24	4,918.65	5,17,623.77
13/10.2 DSR based	Providing and fixing of Structural hot dipped galvanized iron steel hollow section in trusses, poles, purlins, etc riveted/bolted, screwed including cutting, hoisting, cost of bolts placing in position all complete conforming to IS4923 YST 210 grade. The minimum galvalization for same shall be 450 GSM per sqmtr. The factory test certificate along with testing during execution shall be provided by contractor free of cost to department.	Kg	26446.3	102.90	27,21,324.27
14/NS	Providing and fixing stainless steel mesh 40 x 40 lining per inch & operature 0.19mm, conforming to SS grade 316 L including wastage, straightening , cutting, fixing/screwing etc complete in all aspects for preventing insects etc from entering the screen house. The SS mesh should also conform to guidelines by Department of Biotechnology for screen houses. The factory test certificate for same should be provided. The cost of aluminium profile, structural steel shall be paid separately. Payment should be made for measured area on walls, roof without any overlapping of SS mesh. Overlaooing, wastage is deemed to be included in rates.				
		sqm	3090.096	638.92	19,74,311.85
15	15 mm cement plaster on the rough side of single or half brick wall of mix : 1:4 (1 cement: 4 fine sand)				
13.2.1		sqm.	1745.012	242.05	4,22,380.15

16/16.18.1	Fencing with angle iron post placed at required distance embedded in cement concrete blocks, every 15th post, last but one end post and corner post shall be strutted on both sides and end post on one side only and provided with horizontal lines and two diagonals interwoven with horizontal wires, of barbed wire weighing 9.38 kg per 100 m (minimum), between the two posts fitted and fixed with G.I. staples, turn buckles etc. complete. (Cost of posts, struts, earth work and concrete work to be paid for separately). Payment to be made per metre cost of total length of barbed wire used.				
	With G.I. barbed wire	sqm	847.5	12.95	10,975.13
17/10.1	Structural steel work in single section, fixed with or without connecting plate, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete.				
		Kg	293.940	67.7	19,899.74
18 21.1	Providing & fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/appropriate Z section and other sections of approved make conforming to IS:733 and IS: 1286, fixing with dash fasteners of required dia and size, including necessary fitting up the gaps at junctions i.e. at top, bottom and sides with required EPDM rubber/neoprene gasket etc. Aluminium sections shall be smooth, rust free straight, mitred and jointed mechanically wherever required including cleat angle. Aluminium snap beading for glazing/paneling, C.P. brass/stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge.(Glazing, paneling and dash fasteners to be paid for separately).				
-	For shutters of doors, windows & ventilators including providing & fixing hinges/pivots and making provision for fixing of fittings wherever required including the cost of EPDM rubber/neoprene gasket required(fittings shall be paid for separately).				
21.1.2.2	anodised coated aluminium(minimum thickness of powder coating 15micron).				
		Kg	2350.31	405.9	9,53,992.05

			3		
19/DSR	Extra for applying additional anodic coating AC 25 instead of AC 15 to aluminium extruded sections				
	For shutters of doors, windows & ventilators	KG	2350.313	11.6	27,263.63
20/DSR	Providing and fixing ISI marked aluminium butt hinges anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade with necessary screws etc. complete:				
	125x75x4 mm	each	36	108.85	3,918.60
21/9.97	Providing & fixing aluminium tower bolts, ISI marked, anodized(anodic coating not less than grade AC 10 as per ISI: 1868) transparent of dyed to required colour or shade, with necessary screws etc. complete.				
-	150x10 mm	Each	24	65.35	1568.4
22/9.3	Providing and fixing aluminium hanging floor door stopper, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour and shade, with necessary screws etc. complete				
-	Single rubber stopper	each	12	37.5	450.0
23/9.1	Providing and fixing aluminium handles, ISI marked, anodised (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :	Each	24	69.8	1675.2
	125 mm				
24/DSR	Providing and fixing aluminium extruded section body tubular type universal hydraulic door closer (having brand logo with ISI, IS : 3564, embossed on the body, door weight upto 36 kg to 80 kg and door width from 701 mm to 1000 mm), with double speed adjustment with necessary accessories and screws etc. complete.	Each	12	1043.6	12523.2
22/ 9.76	Providing & fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	Each	6	564.4	3,386.40
23/NS	Providing & fixing of 6 mm thick polycarbonate sheet of double wall section approx.weight 1.3 KG/m2 with light & solar transmission of 75-80%, U value 3.56 W/msq K, self extinguishing, UV & chemical resistant of colour including cutting, hoisting, sealing with appropriate sealant etc. The aluminium profiles to be used shall be paid separately.				

		sqm	237.5	658.26	1,56,335.93
24	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade in metal or wall fninishing:				
13.61.1	Two or more coats on new work.	Sqm.	103.5	74.4	7,700.40
25/DSR	Finishing with Deluxe Multi surface paint system for interiors and exteriors using Primer as per manufacturers specifications :				
	Two or more coats applied on walls @ 1.25 ltr/10 sqm over and including one coat of Special primer applied @ 0.75 ltr /10 sqm	sqm.	319.2	100	31,920.00
26/DSR	Providing and applying white cement based putty of average thickness 1mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	sqm	319.2	89.65	28,616.28
27/8.2.2.1	Providing and fixing 18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias, steps, risers and similar locations of required size, approved shade, colour sills , facias and similar locations of required size, approved shade, colour coarse sand), joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edges to give high gloss finish etc. complete at all levels.				
	Udaipur green marble				
	Area of slab upto 0.50 sqm	sqm	11.4	2341.55	26,693.67
28/8.3	Providing edge moulding to 18 mm thick marble stone counters, Vanities etc., including machine polishing to edge to give high gloss finish etc.complete as per design approved by Engineer-in-Charge.				
	Marble work	rmt	15.0	136.1	2,041.50
	SUB-TOTAL OF CIVIL WORKS (A)			Total	**85,37,456.34**
S.No.	**Description.**	**Unit**	**Qty.**	**Rate**	**Amount**
	PART- B (PUBLIC HEALTH WORK)				
29/ 18.12	Providing & fixing G.I. pipes complete with G.I. fittings in trenching including filling etc.				
	External work				
a	40 mm dia nominal bore	Rmt.	112	334.15	37,424.80
	32 mm dia nominal bore	Rmt.	30	281.05	8,431.50

	25 mm dia nominal bore	Rmt.	20	257.3	5,146.00
	20 mm dia nominal bore	Rmt.	40	209.95	8,398.00
	15 mm dia nominal bore	Rmt.	30	186.25	5,587.50
30/18.18	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete :				
a	15 mm nominal bore	each	7	288.50	2019.50
b	20 mm nominal bore	each	3	409.90	1229.70
c	25 mm nominal bore	each	2	449.95	899.90
d	40 mm dia nominal bore	each	2	475.00	950.00
31/18.32.1	Constructing masonry chamber 30x30x50cm inside, in brick work in cement mortar 1:4(1cement: 4 coarse sand) for stop cock, with C.I. surface box 100x100x75mm(inside) with hinged cover fixed in cement concrete slab 1:2:4 mix(1cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size) i/c necessary excavation, foundation concrete 1:5:10(1cement: 5 fine sand: 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 cement (1cement: 3 coarse sand) 12 mm thick, finished with a floating coat of neat cement complete as per standard design.				
	-With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	Each	4	1157.75	4631.0
32/18.48	Providing & placing on terrace (at all floor levels) polyethylene water storage tank, ISI:12701 marked, with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank.	Ltr.	8000	6.3	50,400.00
33/NS	Providing & fixing wash basin with C.I. brackets, 15mm Stainless steel pillar taps, 32mm C.P. brass waste of standard pattern, including S.S. 15 mm bare angle cock/ painting of fittings and brackets, cutting and making good the walls wherever require.				
	White Vitreous China wash basin size 500 length, 400 width with 15 mm pillar tap & other above accessories completed all as directed at site.	Each	4	4606.0	18,424.00
34/NS	Providing ,laying & testing of 100 mm OD PVC pipes, bends etc capable of 6 Kg/sqcm pressure capacity including cutting, jointing with suitable solvent etc complete to the satisfaction of Engineer- In Charge		143.25	357.4321	51,202.14
-	100 mm diameter 6 Kg pressure	Rmt.			
35/NS	100 mm diameter coupler	each	21	130.927	2749.48

				5	
36/NS	Providing & fixing of SWR floor drain (4" dia)along with SS cover plate complete in all respects complete to the satisfaction of Engg-in-charge	each	8	635.900	5087.20
37/19.6.7	Providing and laying non-pressure NP3 class (medium duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete :		6	1920.5	11523.00
-	450 mm dia RCC pipes.	Rmt.			
38/18.13	Making connection of G.I. distribution branch with G.I. main of following sizes by providing and fixing tee, including cutting and threading the pipe etc. complete :				
a	25 to 40 mm nominal bore	each	1	367.75	367.75
b	50 to 80 mm nominal bore	each	1	761.10	761.10
	SUB-TOTAL- PART-B			**Total**	**2,15,232.57**
PART-C (DRIP IRRIGATION)					
S.No.	**Description.**	**Unit**	**Qty.**	**Rate**	**Amount**
38/NS	**Supply , Installation, testing & commissioninf of the following:-**				
a)	P.V.C. pipes ISI marked 63 mm(IS:4985)	Rft.	630.58	72.0	45401.76
b)	LLDPE Lateral ISI marked C12 (IS:12786)16mm	Rft.	4093.44	15.64	64021.40
39/NS	**Supply , Installation, testing & commissioning of the following:-**				
a)	G.M. control Valve 2"	No.	26	1912.5	49725.0
c)	Control Ball valve 63 mm	Nos.	6	618.75	3712.5
d)	Flush valve 63 mm	Nos.	8	135.0	1080.0
e)	By pass Assembly 2x2"	No.	4	2362.5	9450.0
g)	Air release valve 1".	No.	10	1068.75	10687.5
h)	Non return valve 2".	No.	4	1687.5	6750.0
i)	Nozzle along with 0.9 mtr lateral pipe 4mm	nos	480	45.0	21600.0
j)	Ventury Assembly/Maneford 2"	nos	2	3375.0	6750.0
40/NS	Prefilter (Screen Filter) 200 mm sq./Hr.	nos	1	3937.50	3937.50
41/NS	Supply , Installation, testing & commissioning of manual water softner system of flow rate capacity up to 10,000 ltrs/hour, minimum soft water output of 1,25,000 ltrs and treated water hardness less than 5 ppm including resins, container body, accessories,	each	Job		204399.33

	regeneration salt of 288 Kgs complete to the satisfaction of Engg-in-charge.				
	SUB-TOTAL PART-C				**427514.99**
	NET TOTAL FOR CIVIL, PH & DRIP IRRIGATION				**91,80,203.90**

PART-C: - ELECTRICAL WORK

S.No	CPWD DSR E&M - 2014 Item No.	Item description	Unit	Qty.	Rate (in Rs.)	Amount (in Rs.)
	NS	SUPPLY, INSTALLATION, TESTING & COMMISSIONING (SITC) of following type of light fixtures/exhaust fan /wall fan including connections etc. complete as required at site:				
42	NS	2x20Watt LED Water proof light fixture with 20W LED tubes of approved make complete with all fittings, accessories etc. including fixing arrangement as per the site requirement.	nos.	4	3903.91	15615.62
43	NS	30W LED Flood light of approved make complete with all fittings, accessories etc. including fixing arrangement as per the site requirement.	nos.	20	4378.74	87574.80
44	NS	2x36Watt Water proof light fitting of approved make complete with luminaire and lamp including fixing arrangement as per the site requirement.	nos.	60	3246.68	194800.80
45	NS	450 mm sweep, 1400rpm, single phase supply, heavy duty metallic exhaust fan of approved make with aluminium louvers	nos.	2	5027.74	10055.49
46	NS	400mm sweep, 1300-1400rpm wall fan of approved make	nos.	2	2218.12	4436.24
47	NS	Supply and laying of 3Cx2.5sq.mm PVC insulated,1100V grade Copper Flexible cable of approved make including connections etc. in steel conduit or on surface as required at site	mtr.	600	66.41	39847.48
48	NS	Supply and laying of 3Cx1.5sq.mm PVC insulated,1100V grade Copper Flexible cable of approved make including connections etc. in steel conduit or on surface as required at site.	mtr.	350	44.51	15579.86

49	NS	Supply and laying of 4Cx16sq.mm XLPE insulated,1100V grade Aluminium conductor, strip armoured cable of approved make direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc. as required at site	mtr.	350	281.81	98633.68
50	1.20	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.				
	1.20.2	25 mm	mtr.	1000	142.00	142000.00
51	2.4	Supplying and fixing following way, horizontal type, three pole and neutral, sheet steel, MCB distribution board, 415 volts, on surface/ recess,complete with tinned copper bus bar, neutral bus bar, earth bar,din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)				
	2.4.4	4way (4+12), double door	each	2	2175.00	4350.00
52	2.10	Supplying and fixing 5 amps to 32 amps rating, 240/415 volts, "C" curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
	2.10.1	Single Pole	each	24	169.00	4056.00
53	2.15	Supply and fixing following rating, four pole, (three phase and neutral), 415volts, residual current circuit breaker(RCCB), having a sensitivity cuttent upto 300mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
	2.15.1	25 amps	each	2	2088.00	4176.00
54	4.1	Supplying and installing following size of perforated pre-painted M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts,suspenders etc as required.				
	4.1.2	150 mm width X 50 mm depth X 1.6 mm thickness	metre	20	520.00	10400.00

55	5.4	Earthing with GI earth plate 600 mm x 600 mm x 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	set	8	4490	35920.00
56	5.11	Providing and fixing 25 mm x 5 mm GI strip in 40 mm dia G.I. pipe from earth electrode including connection with GI nut, bolt, spring, washer excavation and re-filling etc. as required.	mtr.	80	421	33680.00
57	5.15	Providing and Fixing 25x5mm GI strip on surface or in recess for connections etc. as required.	mtr.	50	142	7100.00
58	5.16	Providing and fixing 6SWG dia GI wire on surface or in recess for loop earthing as required.	mtr.	40	35	1400.00
59	NS	Installation, Testing & Commissioning of existing single phase, 1HP Monoblock pump including the protection/covering of pump and starter, connections etc.as per the site requirement.	set	1	2000.00	2000.00
60	NS	Supply, Installation, Testing and Commissioning of AIR CURTAIN along with the sensor for automatic ON-OFF function(as per the door position) of following size and of approved make: 1800mm long (Air velocity: 20-21m/sec)	nos.	2	29008.58	58017.16
61	9.1	Supplying and making end termination with brass compression gland and aluminium lugs for following size of PVC insulated and PVC sheathed/XLPE aluminium conductor cable of 1.1 kV grade as required.				
	9.1.33	4x16sq.mm (28mm)	each	4	245	980.00
62	7.10	Supplying and fixing cable route marker with 10cmx10cmx5cm thick GI plate with inscription thereon, bolted/welded to 35mmx35mmx6mm angle iron, 60cm long and fixing the same in ground as required	each	20	288	5760.00
63	1.10	Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm. FRLS PVC insulated copper conductor single core cable etc. as required.				
	1.10.3	Group C	point	10	718	7180.00

64	1.31	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 amps modular socket outlet and 5/6 amps modular switch, connection etc. as required. (For light plugs to be used in non- residential buildings).	each	4	303	1212.00
65	1.32	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 amps modular socket outlet and 15/16 amps modular switch, connection etc. as required.	each	4	395	1580.00
66	1.12	Wiring for light/power plug with 2x4sq.mm FRLS PVC insulated copper conductor single core cable in surface/recessed medium class PVC conduit alongwith 1no. 4sq.mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	mtr.	40	162	6480.00
		Sub- Total Amount for Electrical Work (D)				**792835.12**

GRAND TOTAL AMOUNT IN INR FOR CIVIL, PUBLIC HEALTH, DRIP IRRIGATION AND ELECTRICAL WORKS = Rs 99, 73,039.02

ADD 1% FOR LABOUR CESS PAYABLE= Rs 99,730.39

NET ESTIMATED AMOUNT = Rs 1, 00, 72,769/-

NOTE: - Payment shall be released item wise based on actual measurement examined at site by Engineer- In- Charge.

Signature/Stamp of Bidder