

SCHEDULE - A**Name of work: Providing water treatment plant of 3000 Litre/Hr at Hotel Tamilnadu, Hogenakkal**

SL NO.	QUANTITY IN FIGURES	DESCRIPTION	TNDSS NO.OF NBC NO.	RATE IN FIGURES AND IN WORDS	UNIT IN FIGURES AND IN	AMOUNT
1	2	3	4	5	6	7
1	20 cu m (Twenty cubic metre)	Earthwork excavation for foundation in all soil and sub soils to full depth as may be directed (Hard stiff clay, black cotton soil, except in rock requiring blasting but inclusive of shoring, strutting and baling out water wherever necessary and refilling the sides of foundation with excavated earth other than sand in layers of 15cm thick well rammed and consolidated depositing the surplus earth within initial lead of 10m and lift of 2 m as shown by the departmental officers with initial lead and lift and leveling the same etc. complete complying with standards specification and as directed.			1 cu .m (One cubic metre)	
2	4.50 cu m (Four point five zero cubic metre)	Supplying and filling in foundation and basement with river sand in layers not more than 15cm thick well rammed, watered and consolidated etc. complete complying with standard specification and as directed.	24 & 25		1 cu .m (One cubic metre)	
3	4.50 cu m (Four point five zero cubic metre)	Plain cement concrete 1:5:10 (One cement five sand and ten aggregate) in foundation basement and flooring using 40mm gauge HBGS jelly for foundation including dewatering if found necessary and laid in layer of not more than 15cm thick, complying with standard specifications and as directed.	28 V, VI, S2 5,8		1 cu .m (One cubic metre)	

4	16 cu m (Sixteen cubic metre)	Random rubble masonry in cement mortar 1:5 (One cement and five sand) foundation and basement including curing finishing etc., complete as directed by the TTDC officers	35 H		1 cu .m (One cubic metre)	
5	15 cu m (Fifteen cubic metre)	Brick work using country brick of size 8 3/4" x 4 1/4" x 2 3/4 in cement mortar 1:5 (One cement and five sand) for foundation and basement and super structure complying with standard specification and as directed by the Officers.	31 31C V, VI VIII		1 cu .m (One cubic metre)	
6	43 sq.m (Forty three square metre)	Centering for sides and soffits including shuttering etc., for RCC slabs of plane surfaces like columns, beams, lintels and sunshades etc., including strutting upto 3.00 m height using mild steel sheets of size 90cm x 60 cm B.G 10 gauge stiffened with M.S angles of size 25mmx25mmx3mm laid over silver Oak (C.W) joists of size 10cmx6.5cm(spaced at about 90cm c/c and supported by casuarinas props of 10cm to 13cm dia (spaced of 75cm c/c) complying with standard specification and directed.	30 (s) 86 86AV, VI (S3) VII		1 sq m (One square metre)	

7	5 cu m (Five Cubic metre)	Reinforced cement concrete 1 :1 1/2 :3 (One cement and One and half sand : Three aggregate) using 20mm machine broken HBGS jelly for all RCC items of work excluding the cost of reinforcement grills and fabricating charges centering and shuttering but including laying concrete, vibrating with mechanical vibrators, finishing curing, etc., and providing fixtures like fan clamp in the RCC floor/roof slabs wherever necessary and bearing surfaces of walls, beams etc., shall be finished smooth with cement mortar 1:3 (One cement and three sand) and Kraft paper laid over it without claiming extra, etc complete as per standard specification and as directed.	30		1 cu .m (One cubic metre)	
8	500 kgs (Five hundred kilograms)	Supplying, fabricating and placing in position steel reinforcement using M.S rods,R.T.S or T.M.T rods for all RCC works as per the design given including cost of steel and binding wire etc., complete in all floors, complying with standard specifications and as directed.	86 & 86 AC, VI (S3) (S6) VII		1 kg (One kilogram)	
9	120 kgs (One hundred and Twenty kilograms)	Supplying and fixing mild steel grills for windows and ventilators (as per design given) including priming coat etc., complete as directed by the departmental officer.			1 kg (One kilogram)	

10	32 sq m (Thirty two square metre)	Special ceiling plastering in cement mortar 1:3 (one cement and three sand) 10mm thick and finishing the exposed surface of RCC items of work, such as slabs, beams, sunshades, facia, canopy slab, staircase waist slab, landing slab etc., including curing and neat finishing etc., complete complying with standard specifications and as directed corporation officers	44 G		1 sq m (One square metre)	
11	20 cu m (Twenty cubic metre)	Refilling in foundation and basement with excavated earth in layers of not more than 15cm thick well rammed, consolidated watering etc., complete			1 cu .m (One cubic metre)	
12	140 sq m (One hundred and forty square metre)	Plastering with cement mortar 1:5 (One cement and five sand) 12mm thick in all floors including curing with neat finishing etc., complete complying with standard specification and as directed.	56 & 57		1 sq m (One square metre)	
13	25 sq m (Twenty five square metre)	Finishing the top of flooring with a layer of CC 1:3 (One cement and three stones jelly) 20 mm thick Ellis pathon using 10mm and below granite stone Jelly (No sand to be added) and the surface rubbed smooth with neat cement etc., complete complying with standard specifications and as directed.			1 sq m (One square metre)	

14	2.50 cu m (Two point five zero cubic metre)	Weathering course concrete using best quality broken brick jelly of size 20mm uniform gauge in pure slacked lime (No sand to be used) the proportion of brick jelly to lime being 32: 12.5 by volume and laid over the RCC roof slab in a single layer and consolidated to the required designed and finished thickness by beating the concrete with wooden beaters of approved pattern, keeping the surface constantly wet by sprinkling lime jiggery water etc., complete as per standard specification and as directed by the departmental officers.	44		1 cu .m (One cubic metre)	
15	30 sq m (Thirty square metre)	Finishing the top of roof with one course of machine pressed tiles of size 200x200x20mm (average)thick of approved quality in CM 1:3 (One cement and three sand) 12mm thick mixed with water proofing compound conforming to ISS @ 2% by weight of cement used and joints pointed neatly to full depth of tiles with the same cement compound including curing etc., complete complying with standard specification and as directed by the departmental officers.	44 D		1 sq m (One square metre)	

16	3 Rm (Three Running Metre)	Providing and fixing in position best approved ISI quality PVC RAIN WATER DOWNFALL pipe of size 110mm dia with the working pressure of 4 kg/sq.m including cost of necessary teak wood plugs, pvc shoe, pvc bend, other special clamps, brass screws, nails, etc., and fixing of cast iron gratings at junction of parapet and the RCC roof slab including finishing neatly etc., complete. The rate shall inclusive of cost of removable iron grating.. The pvc pipe shall be fixed with teak wood plugs by means of specials clamps and brass screws. Special type of "U" clamp at the centre of the pipe line shall be fixed in addition to those for not more than 3.0 m pipe length complying with standard specification.	97		1 Rm (One Running metre)	
17	3.50 sq m (Three point five zero square metre)	Supplying and erecting pull and push type rolling shutter with ISI make of approved size and section using 18 gauge GI sheet. The shutter shall be painted with one coat of red oxide primer. The rate is inclusive of hood covers transportation charges loading and unloading etc., complete.			1 sq m (One square metre)	
18	172 sq m (One hundred and Seventy two square metre)	Painting two coats with approved cement paint over one coat of primer, including cleaning, preparing the surface and curing etc., complete complying with standard specification and as directed by the departmental officers. (The cement paint should be got approved by the corporation officers before use on works)	56 & 57		1 sq m (One square metre)	

19	5 sq m (Five square metre)	Painting new iron work for windows with two coats of best approved first quality and colour of synthetic enamel paint over the priming coat in all floors etc., complete complying with standard specification and as directed (The Synthetic enamel paint should be got approved by the corporation officers before use on works)	66		1 sq m (One square metre)	
20	3 Nos (Three numbers)	Supply and delivery and fixing of HDPE tank 1000 litres capacity as per IS 12701/1996 including loading, unloading, transportation and labour charges for fixing of the heavy GI pipes and specials for pipe connection works including cutting, threading and fixing charges as directed by the Departmental officers.			1 No. (One number)	
21	1 set (One Set)	Supply and fixing the best quality 1 HP Mono block pump, foot valve and rain guard cover (CRI make or equivalent) including fixing etc., complete and as directed by the Departmental officers.			1 set (One set)	

22		<p>Supplying laying and jointing G.I. Pipes of approved quality and best variety of B class pipe of the following sizes including fixing G.I. specials but including cost of such specials cutting threading of pipes and fixing to wall with necessary teak wood plugs, clamps and screws making holes on the wall or drilling holes in roof and making good the dismantled portions to original conditions with necessary brick work and concrete and plastering where ever necessary with necessary scaffolding charges. The pipes are to be painted with two coats of good variety and best approved quality of synthetic enamel paint over a priming coat of red-oxide prime etc., complete. (Internal water supply G.I.Pipes, above ground level)</p>				
a)	25 Rm (Twenty five running metre)	1" (25mm) dia GI pipe	SS		1 Rm (One Running metre)	

23		<p>Supplying laying and jointing G.I. Pipes of approved quality and best variety of B class pipe of the following sizes including fixing G.I. specials but including cost of such specials cutting threading of pipes and fixing to wall with necessary teak wood plugs, clamps and screws making holes on the wall or drilling holes in roof and making good the dismantled portions to original conditions with necessary brick work and concrete and plastering where ever necessary with necessary scaffolding charges. The pipes are to be painted with two coats of good variety and best approved quality of synthetic enamel paint over a priming coat of red-oxide prime etc., complete. (Internal water supply G.I.Pipes, above ground level)</p>				
a)	6 Rm (Six running metre)	2" (50mm) dia GI pipe	SS		1 Rm (One Running metre)	

24	5 sq m (Five square metre)	<p>Supplying and fabrication and fixing in position of anodized aluminum natural colour matt finish with open able window with excluded aluminum section of the outer frame 38x33x21x2.4mm. Shutter sectioning top and bottom 38.5x33x24.5x3 and 4 mm. Interlocking vertical section 59x33x25x2.5mm with necessary accessories such as Rubber beadings best quality of lock, handle and fixing 4mm thick plain/frosted/thin ended glass 'L' glazing clips including cost of all materials including dismantling making holes in RCC columns, beams, masonry wherever necessary with power drill to the extent required and made good to the original conditions after fixing as clips, rubber beading as directed by the departmental officers. The Alumn. surfaces is to be anodized with matt finish using electrically controlled condition in accordance with ISI 1868/1962 specification for an average anodic film thick not less than 15 microns. (All materials should be got approved by the Project Engineer before fixing in position) Aluminium window of size 1.20 m x 1.35 m</p> <p>Frame bottom track 38x33x21x2.4mm. @ 0.0615 kg/m</p> <p>Shutter sections Bottom and top 38.5x33x34.5x3 & 4mm @ 0.706 kg/m</p> <p>Interlocking vertical 59x33x25x2.5mm @</p>			1 sq m (One square metre)	
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Dated, Signature of
The Tenderer / Contractor

PROJECT ENGINEER

PART - II

Name of work: Providing water treatment plant of 3000 Litres/Hr at Hotel Tamilnadu, Hogenakkal

SL NO.	QUANTITY IN FIGURES AND WORDS	DESCRIPTION	TNDSS NO.OF NBC NO.	RATE IN FIGURES AND IN WORDS	UNIT IN FIGURES AND IN WORDS	AMOUNT
1	2	3	4	5	6	7
1	1 Set (One set)	Supplying and erection of water treatment plant of 3000 litres/Hr capacity R.O system with all fittings including transportation charges etc., complete SPECIFICATION FOR R.O.SYSTEM (RAPID SAND PRESSURE FILTER)	SS		1 Set (One set)	

LIMITING FACTORS

P.H. value of water
Turbidity of water
Total dissolved solution of feed water
Organic content
Presence of Fe₃
Presence of oil and Grease
Chlorine content
Temperature
Silica content

PERMISSIBLE LIMIT

6.5 to 7.0
< 5NTU
< 2000 parts per million (ppm)
NIL-
<0.1 parts per million (ppm)
NIL-
NIL-
45 degree centigrade (max)
< 20 parts per million

OPERATING PARAMETER FOR REVERSE OSMOSIS SYSTEM

Feed capacity 6.70 m³/ hour
Feed quality TDS 250ppm
output capacity 3.0 m³/hr
output quality colourless crystal clear < 20ppm
System recovery 45(+) or (-) 2%
Reject flow rate 3.7 m³/hr
Operating pressure 350psi

TREATMENT COMPONENTS

Feed pump - 1set
Rapid sand pressure filter - 1 set
Activated carbon filter - 1 set

Tenderer's Scope
Tenderer's Scope
Tenderer's Scope
Tenderer's Scope

Chemical Dosing pump	- 1 set	Tenderer's Scope
Micron cartridge filter	- 1 set	Tenderer's Scope
High pressure pump	- 1 set	Tenderer's Scope
reverse Osmosis system	- 1 set	Tenderer's Scope
Chemical cleaning unit	- 1 no	Tenderer's Scope
Ozone water purifier unit	- 1 no	Tenderer's Scope
Transgering pump set	- 1 no	Tenderer's Scope
U.V. Disinfection unit	- 1no	Tenderer's Scope
S.S micron housing	- 1no	Tenderer's Scope
Permeable water storage tank	- 1no	Departmental scope
Feed water Tank	- 1no	Departmental scope

COMPONENT/EQUIPMENT WISE TECHNICAL PARAMETERS

A. Feed pump - 1no

Type	- centrifugal
Capacity	- 2HP
Discharge capacity	- 7 m3 / hr
Make	- ISI Approved best make

B. Multigrade rapid sand pressure filter - 1 no

Output capacity	- 7 m3/hr
Treatment/ vessel size	- Down flow
Operating pressure	- 3.5 kg/cm2
MOC of vessel	-MSRL with multiport valve
Filter media	_Multigrade sand and pebbles

C. Activated carbon Filter - 1no

Output capacity	- 7 m3/hr
Treatment/ vessel size	- Down flow
Operating pressure	- 3.5 kg/cm2
MOC of vessel	-MSRL with multiport valve
Filter media	_Activated Carbon Granules

D. Chemical Dosage unit

Dosing pump	- 1 set
Type	- Electronic

Capacity - 5LPH (max)
Make - ISI Approved best make
Dosing chemical - Silica based/ controlled chemicals

E. Micron Filter - 2nos

Capacity - 7m³/hr
No. of cartridge - 2nos PP would 20" length
MOC Housing - ISI approved / imported best make
Operating pressure - 2-3 kg / cm²

F. Reverse Osmosis system - 1 unit

Capacity - 3000l/hr
Membrane - ISI approved / best imported make spiral wound(Teflon coated)
Make - Best ISI Approved first quality widely used (Time tested)
Number of membrane - 3nos (Three only)

G. No. of membrane housing unit - 1 unit

MOC membrane housing - FRP
Size of membrane housing - 8" dia x 120" and 40" long

H. Higher pressure pump - 1 no. of SS304

Make - ISI approved/ Time tested/ widely used.
Inter connecting piping - High grade imported approved PVC
Motor for pump - 10 HP/3 phase

J. Pressure Guage unit - 2nos

Flow meter - 2nos
TDS meter - 1no

K. High and low pressure switch - 1set (2nos)

Electronic control panel - 1 no
Instrument panel - 1 no
Control Valve - 1no

L. Chemical cleaning system - 1 no

CIP Tank - 1 no
MOC Tank - HDPE

Tank Capacity - 250 lit
Piping - High CPVC and SS from RO permeator to storage tank (DEPT. scope)
M. Treated water storage tank - 1 no (Dept scope)
Capacity of ozone generator - 3 GMS / 1

N. Transferring pump - 1 no

Type - centrifugal
Capacity - 1 HP (SS)
Dischargecapacity - 3m³/hr
Pump make - ISI approved/ best time tested

P. Ultraviolet water Disinfectant unit of 3000LPH in SS body - 1no

Must be : sturdy, Environmental friendly and long lasting.

Q. Post micro filter - 1no

Capacity - 3m³/hr
No. of cartridge - 3nos 20" length
MOC Housing - SS304
Operating pressure - 2-3 kg/cm²

**Dated, Signature of
The Tenderer / Contractor**

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