## SCHEDULE
## PART I
### Name of work: Providing sewerage treatment plant of 50KLD cpacity at Hotel Tamilnadu at Yercaud

| 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 | 105 cu.m (One hundred and five 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 | 23 & 24 V VI (S2) VI-9 | | 1 cu m (One cubic metre) | |
| 2 | 9.50 cu m (Nine 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) | |

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|---|---|---|---|---|---|---|
| 3 | 9.50 cu m (Nine point five zero cubic metre) | Plain cement concrete 1:4:8 (One cement four sand and eight 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 | | 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. | | | | |
| 4a | 260 sq.m (Two hundred and sixty | For Vertical walls | 30 (s) 86 86AV, VI (S3) VII | | 1 sq m (One square metre) | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 5 | 35 cu m (Thirty five cubic metre) | Reinforced cement concrete 1 :1 1/2 :3 (One cement and One and half sand and 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) | |
| 6 | 3500 kg (Two thousand eight 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) | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 7 | | Brick work using country brick of size 8 3/4" x 4 1/4" x2 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. | | | | |
| 7 (a) | 9.50 cu m (Nine point five zero cubic metre) | For Super structure | 31 31C V, VI VIII | | 1 cu m (One cubic metre) | |
| **8** | 160 sq m (One hundred and sixty square metre) | Plastering with cement mortar 1:3 (One cement and three sand) 12mm thick mixed with water proofing compound @ 2% by weight of cement over the concrete floor including curing and neat finishing etc., complete complying with standard specification and as directed. | 56 & 57 | | 1 sq m (One square metre) | |
| 9 | 35 sq m (Thirty five square metre) | Plastering with cement mortar 1:3 (One cement and three sand) 20mm thick mixed with water proofing compound @ 2% by weight of cement over the concrete floor including curing and neat finishing etc., complete complying with standard specification and as directed. | 56 & 57 | | 1 sq m (One square metre) | |

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|---|---|---|---|---|---|---|
| 10 | | Supplying laying and jointing PVC pipes for sewage and waste water line (6kg/sq cm) of approved quality and best variety conforming to ISS and with ISI mark, of adhesive but excluding cost of such specials and fixing to wall with necessary teak-wood plugs, PVC clamps and screws, making good the dismantled portions to original condition with necessary earthwork jointing the materials etc., complete | | | | |
| a) | 6 Rm (Six running metre) | 4" dia PVC pipe | SS | | 1 Rm (One Running metre) | |
| 11 | | Supplying and fixing in position PVC specials such as plain bend door bend, plain tee, door tee, offsets, y-junction, plain or with door of various sizes best quality confirming to ISS and providing leak proof joints including fixing to wall and giving connection to the PVC soil stacks, dismantling the brick masonry or RCC floor or Roof slab and redoing the dismantled portion to original condition etc., complete complying with standard specifications. | | | | |
| a) | 6 Nos (Six numbers) | 4" dia PVC pipe | SS | | 1 No (One number) | |
| b) | 6 Nos (Six numbers) | 4" 110mm dia PVC door bend | SS | | 1 No (One number) | |
| c) | 6 Nos (Six numbers) | 4" 110mm dia PVC door tee | SS | | 1 No (One number) | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 12 | 0.50 cu m (Zero point five zero cubic metre) | Supplying and filling with 40mm size HBGS Jelly including cost and conveyance of materials etc., complete complying with standard specification. | | | 1 cu.m (One cubic metre) | |
| 13 | 0.50 cu m (Zero point five zero cubic metre) | Supplying and filling with 20mm size HBGS Jelly including cost and conveyance of materials etc., complete complying with standard specification. | | | 1 cu.m (One cubic metre) | |
| 14 | 12 sq m (Twelve square metre) | Supplying and fixing in position of 50mm dia GI pipes of approved quality B class variety for handrails including cutting the GI pipes to required length and closing the side opening in GI pipe ends by welding if necessary etc., complete complying with standard specification. | SS | | 1 sq m (One square metre) | |
| 15 | 100 sq m (One hundred square metre) | Painting two coats with approved cement paint over white washed wall surface, 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) | |
| 16 | 1No (One number only) | Supply and delivery and fixing of HDPE tank 1000litres capacity as per IS 12701/1996 including loading, unloading, transportation and labour charges for fixing of the GI pipes and specials for pipe connection works including cutting, threading and fixing charges as directed by TWAD Board Officers etc., | SS | | 1No (One number ) | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 17 | 1set (One set only) | Supplying and fixing the best quality 1HP Mono block pump, Footvalve and top cover CRI make or Equivalent including fixing etc., complete | SS | | 1set (One set only) | |
| 18 | 100 Rm (One hundred running metre only) | Supply and fixing the best quality 1" (25mm) DIA GI pipe including specials cutting threading etc., complete | | | 100 Rm (One hundred running metre only) | |

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

## PART - II

**Name of work: Providing sewage treatment plant of 50 kilo Litres/Hr at Hotel Tamilnadu, Yercaud**

| 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 fixing of equipments for sewage treatment plant with 50 kilo liter capacity with all fittings including transportation charges etc., complete | SS | | 1 Set (One set) | |

**SPECIIFICATION FOR EFFLUENT TREATMENT PLANT FOR 40 KLD**

Common parameters for average value sewage effluent characteristics.

| Sl.no | Description | Permissible limiting factor |
|---|---|---|
| 1 | pH | 6.5 - 7.5 |
| 2 | Total suspended solid | 250-350 mg/ l |
| 3 | Oil and grease | 20-30 mg/l |
| 4 | Oxygen | 600-700 mg/l |
| 5 | Bio chemical oxygen demand | 250-350 mg/l |

**Expected treatment system**

i Primary Treatment ( Physical treatment)
ii Secondary treatment ( Activated sludge process)
iii Tertiary Treatment ( Filtration and Absorption)

| Sl. No | Description | Components involved |
|---|---|---|
| 1 | Primary Treatment ( Physical treatment) | I Screen chamber ii Collection and Balancing iii Oil skimmer To |
| 2 | Secondary treatment ( Activated sludge process) | I Activated sludge process ii Secondary settling process iii Sludge Drier |
| 3 | Tertiary Treatment ( Filtration and Absorption) | I On line chlorination ii Pressure rapid sand filter iii Activated carbon filter |

CIVIL WORK (DEPTL. SCOPE)

1 M20 grade RCC Screen chamber - 1x0.5mx1.50m
2 M20 grade Oil skimmer Tank - 1x0.5mx1.50m
Balancing cum collection Tank -
3.5mx4.0mx3.0mTD Holding capacity of 42KL for
3 retention period of 20 Hrs
4 Aeration Tank - 3.0mx4.0mx4.0m TD Holding capacity of 40KL for retention period of 20 HRs
5
Secondary Settling Tank - 2.0x3.0x3.0 TD Holding capacity of 18KL for retention period of Hrs
6 Treated water collection tank - 2.0x3.0mx2.5x
SWD holding capacity of 15 KL
Sludge Drying Bed for area of 10m2
(1.5x1.5x1.2m -4 Nos) for dewatering with filter
7 medium of standard sieve sizes.

EQUIPMENT REQUIREMENT FOR ETP

A BAR SCREEN
No. of unit - 1no
Bar spacing - 10mm for I, 5mm for II

Dimension - 1x0.5m (water depth (h) x 1.0m total depth (H)
Angle of installation - 45 degree
MOC -SS304, bar thickness 8mm
Scrapper - Scraparm 1.75m long,
4fingers (Bar spacing to suit screen thickness)
Screen Drying - 5mm holes.

B Effluent transfer pump
type - Non clog open impeller
Make - Best ISI approved (Time tested)
Capacity - 2m3/hr
Head - 20m
Capacity - 1.0 HP
**No. of unit - 1no**
**(To transfer the raw effluent from collection and Balancing tank to Aeration tank)**

**C floating Aeration system**
Type - Surface floating
Capacity - 3.0 HP
Motor type - Flange
**Make - Best ISI approved (Time tested)**
RPM - 1440
MOC - FRP
**Packing - PUF**
**S**haft - SS -304
(To transfer settled bio mass from secondary
settling tank to aeration tank for maintaining
MLSS in aeration tank.

**D** RETURN SLUDGE PUMP
Type - Non clog open impeller
**Make - Best ISI approved (Time tested)**
Capacity - 1m3/hr
Head - 20m

No of unit - 1 no

(To transfer settled bio mass from secondary settling tank to aeration tank for maintaining MLSS in aeration tank.

**E FILTER FEED PUMP**

Type - monoblock

**Make - kirloskar**

**Capacity - 1.5m3/hr**

Head - 30m

Capacity - 1 HP

No of unit - 1 no

**To pumpout treated water from sump to sand filter through ACF**

**f** PRESSURE RAPID SANDFILTER

**Size** - 0.40m dia

**HOC -1.5m**

**MOC**- MS

**T**hickness - 6mm (shell), 10mm (Dish

**Capacity of nominal flow** - 2m3/hr

max pressure - 3 kg/cm2

operationg pressure - 2 kg/cm2

**F**ilter medium - sand pebbles and silica standard sieves

back wash duration - 10 minutes.

**F P**ressure drop across unit - 0.5 to 1 kg/cm2

Quantity - 1n0

To remove organic traces colour etc.,

**ANTICIPATED QUALITY OF TREATED EFFLUENT**

| SLNO | Descrition | Value |
|---|---|---|
| **1** | pH | 7-7.5 |
| **2** | **TDS** | 1500-1800 |
| **3** | TSS | <5-<4 |
| **4** | **BOD** | <5-<4 |

| | | |
|---|---|---|
| **5** | **COD** | <50 |
| **6** | **T**urbidity | <5 |
| **7** | **Total hardness** | <150 |

**Note A**ll unit are expressed in mg/l except pH for sl.no.1

**Dated, Signature of**

**The Tenderer / Contractor** **PROJECT ENGI**