

PROPOSED METHOD FOR SEWAGE TREATMENT

Miss. Sathe Pooja Ramchandra

P.G Student Civil Engineering Department
G.H. Raisoni College of Engineering & Management
Chas, Ahmednagar, Maharashtra, India
poojasathe55@gmail.com

Mr. Kakade Vishal Dhananjay

P.G Student Civil Engineering Department
Dr. Vitthalrao Vikhe Patil College of Engineering, Vilad
Ahmednagar, Maharashtra, India
v.d.kakade@gmail.com

Abstract— The aim of the study was to invent the new system for treating the waste water to minimize the problems occurs due to the sewage water. And as the existing system faces so many problems; few of them eventually not in working position. So the money requires to operate and maintain the existing plant is more over than expecting so the newly proposed system is beneficial in this case. The newly invented system consist of the weight unit in which the sewage is probably separate out. In weight unit we use the rod and plate and it operate automatically when the waste water is passed through it and then the sewage is separated. While designing the newly invented sewage system the discharge of the sewage taken in account and the sewage characteristics decide what type of filter should use to filter the water.

Keywords—STP;Sewage Water;Primary Treatment ; Secondary Treatment.

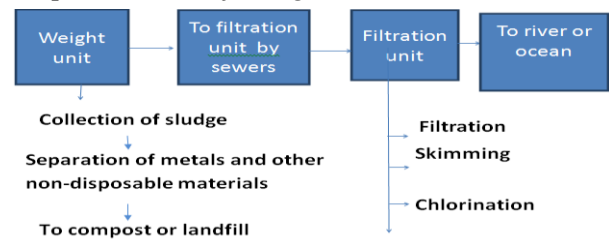
I. INTRODUCTION

Sewage is the liquid-waste generated by community i.e., discharges from urinals, latrines, stables and also the industrial waste water. The sewage both domestic and industrial is required to be treated, before either, it is recycled (for industrial processing) or it is allowed to flow into a surface stream. Sewage is a major carrier of disease (from human wastes) and toxins (from industrial wastes). The safe treatment of sewage is thus crucial to the health of any community. This article focuses on the complex physical and biological treatments used to render sewage both biologically and chemically harmless.

II. METHODOLOGY

Sewage treatment is the process of removing contaminants from waste water preliminary from house hold sewage. It includes physical, chemical, biological process to remove these contaminants and produce environmentally safer treated waste water. Weight unit is the type of unit which carries the preliminary and primary treatment in sewer line. It separates the sludge in pipe only. It does not separately placed it will place in sewer line. i.e., the sewage is come from the sewer line and then by the use of weight unit the sewage is separate out in sewer line only then this sewage is passed to the sludge tank and then the remaining water then passed to the filter unit. The design of the filter is totally depend upon the type of area and the type of the sewage generated. The sludge which is stored in the sludge rank is then drag out with the help of the suction pipe.

A. Proposed method of sewage treatment



As shown in above flow chart we design a unit called weight unit. The function of these unit is to separate sludge from sewer water in sewer lines only. The main advantage of this unit is that it requires very less land for its operation.

It is constructed in sewer line only so it not requires separate land for its operation. Also this is constructed underground so odour problem is not serious and chances of mosquitoes are also very less. After weight unit sewer water is passed to filtration unit. Filtration unit contains nano filters which are able to remove soluble impurities like chemicals, oils , grease, also suspended particles like small sized sand particles. Filtration unit is designed in such manner that it adsorbs these impurities. The main advantage of this unit is that it is installed where sewer water enters in to river. Also it is easy to maintain, no skilled labor required, no electric power required for filtration operation. It is totally physical action. Filtered water allowed to flow in natural stream and by self-purification action remaining impurities are removed and water is fully purified.

At this stage we are designing filter unit by using nano technology. Before allowing flowing the water into natural stream we perform some tests on treated water which are important to take. These test are pH , BOD , COD etc.

II. PROPOSED MODEL FOR SEWAGE TREATMENT



A. Inlet

Inlet is nothing but sewer line which passes the sewage from the area to the plant. Inlet pipe are of concrete pipe or PVC pipe.

B. Valve

- Valve having a specific purpose is that to stop the water while sludge/sewage is passing to sludge tank. It is most important part of sewage treatment plant as it control the pressure of water so it is essential that the valve is made up of strong material to resist the waste water force.

C. Weight Unit

In this system weight unit is act as separation unit which separate the sludge from water. Then the sludge which is separated will go the sludge tank with the help of sliding portion which is connected to the sludge tank. Then according to type of area, population, discharge of water we design size of plant. Weight unit is very easy to construct. Here weight is applied on base plate of unit. Load of that weight is transferred from base plate to side plate with the help of connectors.

As load transfer it exerts force on side plate and it starts motion. The plate leave its position and goes to meet its opposite plate.

These two plates are connected together so that one plate move with the other one and a plate is attached to its one side which will stop the flow of water which is coming from that pipe.

Weight exerted because of sludge collected on plate. As one plate moves from one position it automatic clean the plate and removes the load from it. This sludge is collected in a chamber which is attached to unit.

D. Sludge Tank

Sludge tank is used to collect sludge/sewage. It is made up of concrete or steel structure. The size of tank depends on the size of area.

E. Filtration Unit

The filter unit is use to filter the sewage water comes from the weight unit and then the filtered water is again pass to the river or for any irrigation purpose.

As we design the weight unit according to the area, population and discharge of the sewage the filter unit is also designed according to the type of sewage for e.g. residential area, commercial area, industrial area etc.

As the residential area having the domestic sewage it does not include more no. of chemicals so we can use the filter according to the characteristics of the sewage but the industrial area having the more chemicals content in the sewage.

III. FILTRATION UNIT

Filtration unit consist of following procedure:

A. Screening

Screening is first operation at any waste water treatment works. This process essentially involves the removal of large non-biodegradable and floating solids that frequently enter a waste water works such as rags, papers plastics, tins, containers.

Screening is used to remove objects such as rags, papers, plastic and metal to prevent damage and clogging of downstream equipment, piping and appurtenances.

B. Skimming.

Skimming tank is a chamber so arranged that the floating matter like oil, fat, grease, etc. rise and remain on the surface of the waste water until sewage remove, while the liquid flows out continuously under partitions or baffles.

C. Chlorination

Chlorination is by far the most common method of waste water disinfection and is used worldwide for the disinfections of the pathogens before discharge into receiving streams, rivers or oceans. Chlorine is known to be effective in destroying a variety of bacteria, viruses and protozoa. Water is treated with chlorine kills all type of bacteria.

D. Aeration

Aeration brings water and air in closed contact in order to remove dissolved gases such as co2 and oxidizes dissolve metals such as iron, hydrogen sulphide and volatile organic chemicals. Aeration is often the first major process at treatment plant.

E. Outlet

Outlet is essential to passed out the clean water from filter unit to the definite stream, river or ocean.

F. Design Criteria

Design parameters of prototype are as follows ;

1. Size of base plate = 4.5"x5"
2. Size of side plates = 5"x5"
3. Size of center rod = 6"
4. Size of connected rod (rod connected to plate) = 6"
5. Size of sub connected rods = 12"
6. Size of middle box = 3"x5.5"x6"
7. Size of pipe used = 2.5"
8. Slope of tank = 3"
9. Tank dimension = 6"x 6"

The material use for restoring action is rubber.

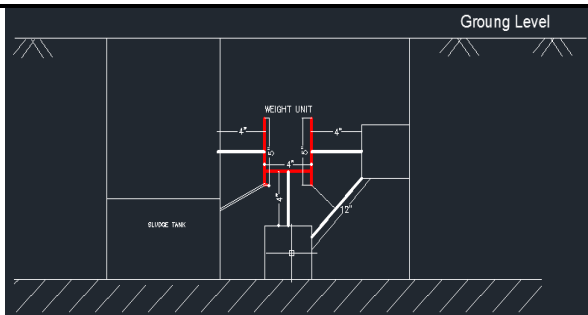


Fig. 1. AutoCAD Drawing

NAME OF PLANT	CAPACITY (MLD)
Koregaon park (Naidu hospital) existing)	90
Erandwane (2004)	50
Bhairabanala (2003)	130
Tanaiiwadi (2004)	17
Bhopodi (2003)	18
Naidu hospital extension (work in progress)	115
Vithhalwadi (work in progress)	32
Baner	30
Mundhwa	45
Kharadi	40

ACKNOWLEDGMENT

many people have contributed with encouragement and technical advice. I have taken efforts in this project. However it could have been possible without the kind support and help

of many individuals and organizations. I would like to extent my sincere thanks to all of them

REFERENCES

- [1] ALOO BECKY NANCY, MULIE JOSEPHINE, MWAMBUIRIALOUCH LIZZY (2014) : “Slow Sand Filtration of Secondary Sewage Effluent: Effect of Sand Bed Depth on Filter Performance”
- [2] Dr. B. Sengupta, Mr. P. M. Ansari: “Status of Sewage Treatment in India”
- [3] DR.GIANCARLO RIVA “Sewage and Wastewater Odor Control”
- [4] GAIL MASUTANI & MICHEL K. STENSTROM: “ A review of surface tension measuring techniques, surfactants and implications for oxygen transfer in waste water treatment plants”
- [5] G.VIJAYARAGHAVAN, T. SIVAKUMAR, A.VIMAL KUMAR, “Application plant based coagulants for waste water treatment”:
- [6] J.M.MOUSKAR: “Evaluation Of Operation And Maintenance Of Sewage Treatment Plants In India-2007 CENTRAL”
- [7] K. SUNDARA KUMAR , P. SUNDARA KUMAR , Dr. M. J. RATNAKANTH BABU : “ Performance evaluation of waste water treatment plant”
- [8] KENTAN DANAS, BAN KURDI, MAGGIE STARK, AHMED MUTLAK “September 18th 2012:“Climate Change Effects on Waste Water Treatment”
- [9] MR. NOEL BOURKE, MR. GERRY KARTY DR.MATT CROWE AND MS. MARION LAMBERT: “WATER TREATMENT MANUALS FILTRATION”
- [10] M. ANNANMAKI, T. TURTIAINEN 1, H. JUNGCLAS, CH. RAURE: “ Disposal of radioactive waste arising from water treatment:Recommendations for the EC”
- [11] N. GROZA, R. RADULESCU, E. PANTURU, A. FILCENCO-OLTINUE, R.I. PANTURU : Zero-Valent Iron Used for Radioactive Waste Water Treatment.