

# ADVANCED DRAINAGE SYSTEM FOR DEVELOPING COUNTRIES

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## Abstract

*The effective design of the advanced drainage system can eliminate the solid as well as plastic wastes from the drainage. Our design is mostly needed for developing countries. Some salient features are provided in this system. The sharp corners are avoided by using construction of sliding path drainage system. Because the average flow of contaminated water is possible. The elimination of solid wastes are achieved by using buckets which are attached with the adjustable pins. The motion of pins and buckets are directly proportional to each other. The pins expanded then buckets also expanded by using curved shape. A number of holes were provided for removing the contaminated water in the buckets. The single wheel and track is provided for identifying and eliminating wastes through the buckets. The double wheel and track is provided for carrying the eliminated wastes for a certain distance. After the eliminating of solid wastes, they are collected by the corporation vehicle and they are recycled with respect to our requirement and preparation. The elimination of solid wastes can be achieved through flow of the contaminated water and further recycling which is free from pollution.*

**Key words** *Sliding corners, wheel, track, adjustable pins, buckets, drainage, electric motor.*

## 1. INTRODUCTION

The ancient drainage system is specially constructed for the removal of waste water only. The main source of contaminated water is derived from industries, hospitals, hotels and residential areas. The flow of contaminated water is carried out in drainage after certain distance and it will be recycled by using waste water treatment. But now a days most of the drainage systems not carries the wastes properly. The reason is some wastes occupies the drainage such as electronic and electrical components, medical handling equipment, house hold wastes and toilets over flow through the drainage. The lack of contaminated water flow will create many problems in our environment such as viral fever, population of virus, air and water pollution occur. In most of the industries they don't completely recycle the contaminated water after the requirement. The chemical laboratories also eliminates the expired acids with water. The effect of acids that reacts with human and natural wastes will create a smell in the surrounding. So the atmospheric air also polluted. The above problems are reduced that various governmental and non governmental organizations are involve to create awareness about the pollution.

## 2. LITERATURE REVIEW

There are many equipment and machines are available in our surrounding. But only few machines are helpful to remove the wastes in drainage such as cranes, etc. The disadvantage of the machine is that it can remove the wastes in short distance only. Because the extension of the rod is only short distance. But the drainage carries the contaminated water for long distance. If any solid waste placed at intermediate distance can affect the flow of contaminated water in the drainage. The total distance of the drainage can not be cleaned by the manpower. The machines can only eliminate the wastes from short distance. The above mentioned main reasons are the causes of lack of waste water flow in a drainage. The proper drainage system will reduce the air and water pollution.



**Fig 2.1 and 2.2 lack of flow in drainage**

### 3. OBJECTIVE

To prepare a component for completely removal of the electronic ,electrical,medical and residential wastes from the drainage.The preparing design is very helpful for various places of recycling plastics,polyethylene bags.The advanced drainage system is to reduce the man power of working this situation and the main aim is control air and water pollution from the waste contaminated water.This simple modification very helpful to further recycling process and to reduce the population of virus.

### 4. FEATURES

The existing drainage systems has perpendicular edges which can stop the solid wastes for a certain places.So the flow of contaminated water is automatically stopped.The outcome of effect is very dangerous to the surrounding and human.The solid wastes can be removed by the cranes and other machines in a side of road for a short distance only.The remaining total distance of the drainage completely recovered by the man power.The above mentioned problems are concluded by the innovative design of drainage is very helpful to minimize the problems. Our design totally consists of four features such as construction of modified drainage path,track for total distance,track for total length and the buckets for removal of wastes.

#### 4.1 Sliding path

The ancient drainage system are normally constructed by the perpendicular edges.These edges will be reduce the flow of solid wastes with the contaminated water.So the unwanted storage wastes are possible for that location.It can be reduced that in our constructional design of drainage is increase the sliding flow of solid with contaminated water wastes.The construction time of path ways is take more time when compared to existing method.

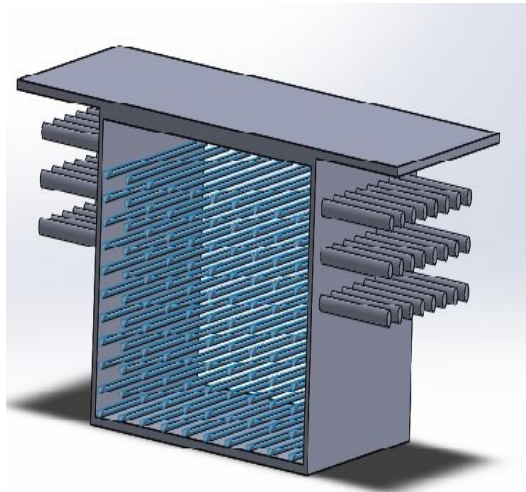


Fig 4.1.1 existing design

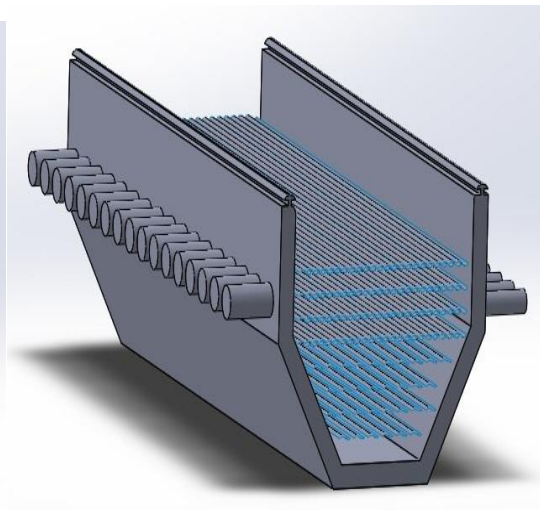


Fig 4.1.2 new design

### 4.2 Length movement

The top of the drainage pillar, has two track is provided for movement of the total innovative design. The track is provided for carrying the total setup in start to end of the drainage. It will carry the wastes after taking the drainage to supply for a corporation vehicle. The vehicle can separate and recycle the wastes. The design is possible for very short distance as well as long distance. The rotary wheels are attached with the track. The wheels are rotated with the help of electric motor or compact diesel engine. The track transfers the drainage wastes from one place to another place.

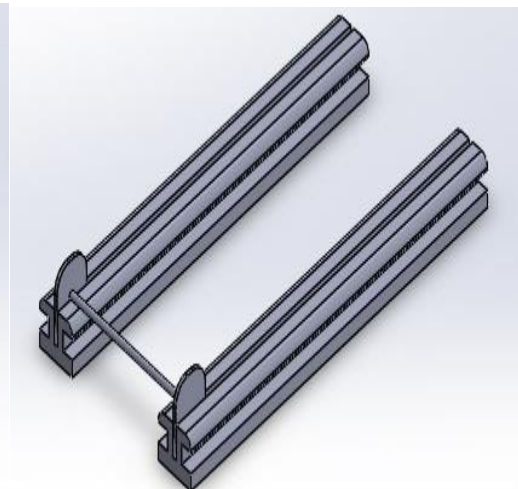
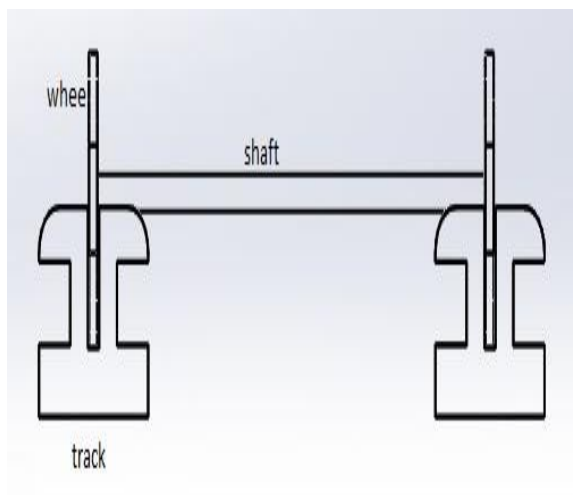


Fig 4.2.1 and 4.2.2 front view and isometric view of length movement

### 4.3 Distance movement

The third part consists of one track and wheel. The intermediate distance is reachable by this design. The center of the wheel is attached with the shaft. The bottom of the two buckets are fixed with the shaft by using adjustable pins. The horizontal motion of the design is possible to intimate the location of the buckets. The wheel is rotated with the help of electric motor. The total setup can be operated both manually and remote control. In the horizontal motion very helpful to locate the performance of the system.

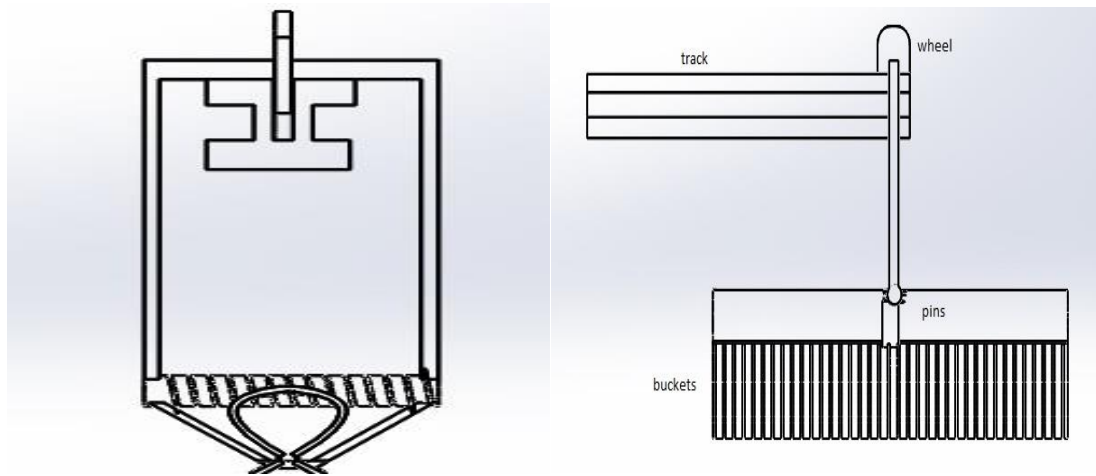


Fig 4.3.1 and 4.3.2 front and side view of the Distance movement

#### 4.4 Waste weight lifting device

The two buckets are attached with the shaft by using adjustable pins. The pins are to be compressed then the buckets are attached with one another at the angle of inclination. The adjustable pins and connecting rods are not interacted with one another. The top of the pins are expanded then the buckets also expanded. The process is carried by eliminating the solid and plastic wastes in the drainage. The maximum number of holes are provided for the bucket is remove the contaminated water through the holes.

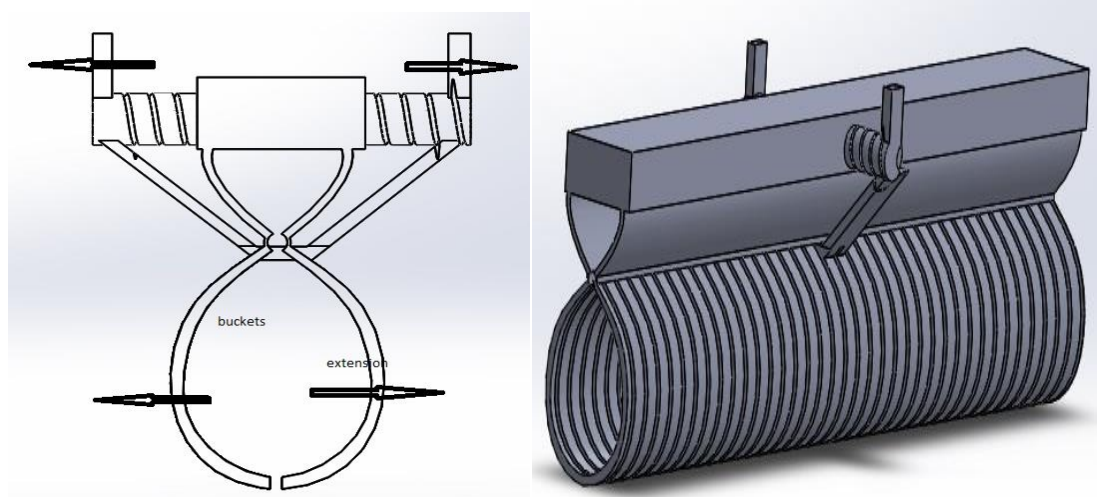


Fig 4.4.1 and 4.4.2 front and isometric view of the bucket

## 5. COMPLETE DESIGN

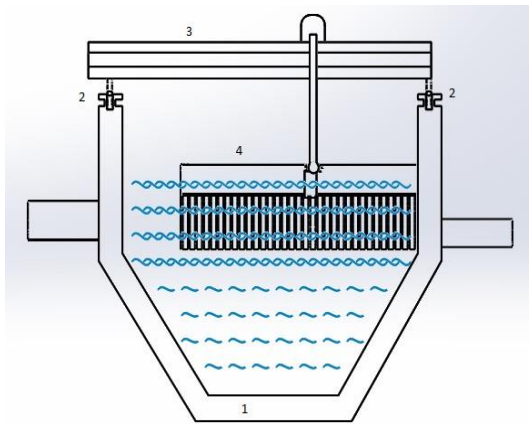


Fig 5.1 layout of design

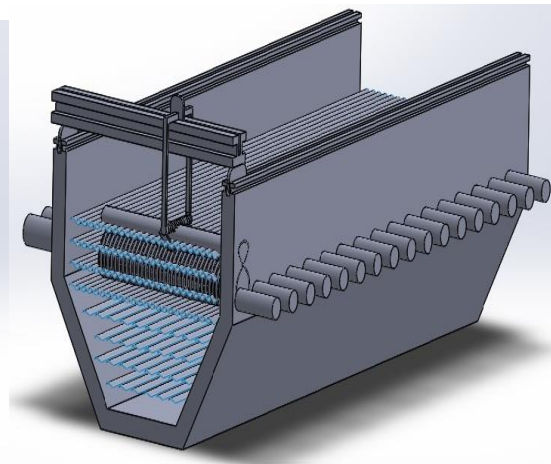


Fig 5.2 isometric design

## 6. CONCLUSION

The design of drainage system will increase the recycling of contaminated water by using some of the waste water treatment. Our ultimate aim is to remove the solid as well as plastic bags in the drainage system and reduce the man power of working at that location. The perfect process of above system can be adoptable to the environment and easy to separate the wastes as possible. This system can reduce the air and water pollution from the surrounding.

## 7. RERERENCE

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[2] "Highway Surface Drainage System & Problems of Water Logging In Road Section" by Dipanjan Mukherjee.