

UNDER WATER MANHOLE DETECTION SYSTEM

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Abstract

The underground drainage system is an important component of the urban infrastructure. It is considered to be the lifeline from the city center. The majority of the executive board, through the tunnel, the drainage is in the manual, so it is not very efficient in order to have a clean and smooth surface and underground system in the large cities, with the government's people find it hard to get the exact manhole, that is the problem. Most of the cities and towns which have adopted an underground sewer system, and it is the responsibility of the station manager, and the carrier-to-maintain the location of the towns and cities. If the drain is used improperly, water will pollute the water and infectious disease and can spread it. The Drainage is blocked during the rainy season this will lead to problems in everyday life, for example, the traffic may be blocked, and the environment will be polluted, and this is totally going wrong in the society. A smart city is the future goal to have cleaner and better amenities for the society. Smart underground infrastructure is an important feature to be considered while implementing a smart city. Drainage system monitoring plays a vital role in keeping the city clean and healthy. Since manual monitoring is incompetent, this leads to slow handling of problems in drainage and consumes more time to solve. The proposed system is low cost, low maintenance, IoT based real time which alerts manhole crosses its threshold values. This system reduces the death risk of manual scavengers who clean the underground drainage and also benefits the public.

1. INTRODUCTION

An integral part of any drainage system is the access points into it when it comes to cleaning, clearing, and inspection. Metropolitan cities have adopted

underground drainage system and the city's municipal corporation must maintain its cleanliness. If the sewage maintenance is not proper, ground water gets contaminated causing infectious

diseases. Blockages in drains during monsoon season, causes problems in the routine of the public. Hence, there should be a facility in the city's corporation, which alerts the officials about blockages in sewers, their exact location and also if the manhole lid is open automatically. Drainage system plays a very important role in big cities where the population is very large. In most of the cities the drainage management system is monitored manually which is incompetent and need a lot of persons who are only able to record limited report with inefficient accuracy, also it becomes inconvenient for the government persons to detect the accurate location of the manhole which is facing issues such as blockage arising due to unwanted waste materials, a abrupt increase in the level of water.

2. RELATED WORK

Manholes are essential aspects of a city's infrastructure. Damaged manholes are posing a threat to commuters in city. Some of the damaged manholes can be seen on the busiest road of the city. Many of them are not properly closed and can cause serious accidents. Fatal accidents caused due to open potholes are upsurging day by day. Passersby are at a high risk of facing hazards while crossing these manholes that are either damaged or kept open by the sanitation workers. In a recent survey

conducted by National Crime Records Bureau 780 people have died on account of accidental fall into open manholes. Uncovered, unprotected open manholes have killed as many as 167 persons and injured five in 2018. Besides being a threat to pedestrians, the uncovered manholes and pothole-riddled roads are posing serious threats to motorists. According to the Environmental Protection Agency, there are approximately 12 million sewer or storm water manholes across the nation. The surprising fact is that out of these nearly 12 million manholes, the Public Works Magazine estimates 80% need some level of maintenance or rehabilitation. Measures are not being taken for closing such manholes and other death traps or barricading them. This is simply due to the lack of accountability, absence of safety consciousness and sheer insensitivity to human tragedy. One of the major reasons for open potholes is the theft of the manhole covers leaving the manhole chambers open and unattended. Despite placing warning flags on the manhole covers, In floodwaters a person may not see the open drains and so risks falling in.

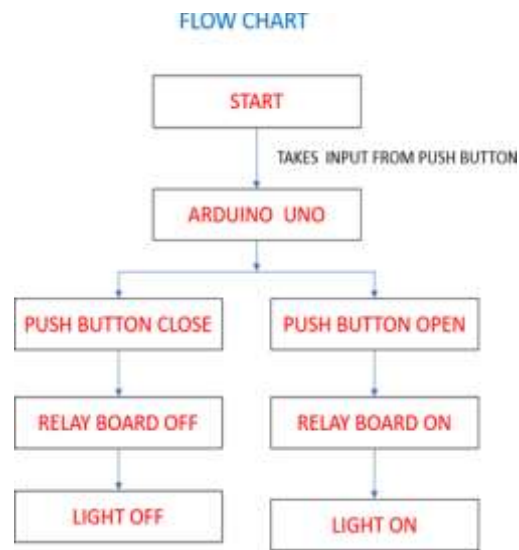
3. IMPLEMENTATION

Manholes are essential aspects of a city's infrastructure. Damaged manholes are posing a threat to

commuters in city. Some of the damaged manholes can be seen on the busiest roads of the city. Many of them are not properly identified and can cause serious accidents due to many issues. The main objective of the “**UNDER WATER MANHOLE DETECTION**

SYSTEM” is Most of the drainage systems are not computerized due to which it is hard to know if the blockage is occurring in particular location and also the early alerts of the blockages are not received, hence detection of the blockage and its repair becomes time-consuming. Such problems can cause issues in the daily routine of the city. The manual monitoring of the drainage is quite difficult and inefficient which may lead to blockages, therefore, the system propose a method for proper monitoring and management of the underground drainage system. The system describes various applications such as manhole identification and its status in real time. Thus, the unnecessary trips that are done to check the status of the manholes can be avoided and can only be done as and when required. Today's drainage system is a high-tech. So whenever there is blockage it is difficult to figure out the exact location of

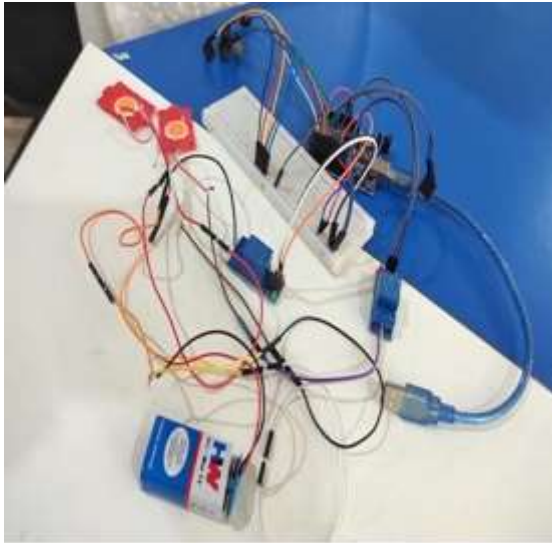
the blockage. Also, early alerts of the blockage are not received. Hence detection and repairing of the blockage become time consuming. It becomes very inconvenient to handle the situation when pipes are blocked completely. Due to such failure of drainage line people face lot of problems.



4. EXPERIMENTAL RESULTS

Whenever the water is accumulated on the roads, it is hard to find opened manholes. so our project will detect the opened manholes even under the water and gives us indication .so that the persons who are going through it can avoid the danger by seeing the indication. The push buttons are placed under the top of the manhole covering plate. whenever the plate is correctly placed the buttons are pushed. but if manhole covering plate goes aside or totally removed the buttons are not pushed. Thus, the bulb glows even if 1

button was not pushed. Thus, indication was given.



5. CONCLUSION

Through all of these capabilities, utilities can gain efficiency in their operations and potentially save lives. Long term active monitoring of manholes facilitates development of preventative maintenance programs that provide for planned infrastructure refurbishment and replacement, while still being able to react quickly to unplanned issues prior to

events occurring. The capabilities of active monitoring continue to evolve, and will increase safety and productivity for utility field technicians by eliminating the increased chance of manhole events and handling issues before they occur. Monitoring of surface water drainage is a complex task. Various methods used for monitoring and control of an underground sewage system for this project. It explains the various uses, such as subsurface drainage, as well as real-time, manhole identification we are able to control the whole of the sewer system in real-time to detect a problem with the water drainage system. By doing so, we can have some action on the matter, if we are to receive early warnings of the block, as well as changes. This article may be used for the development of the property the effect of drainage and monitoring system as also, to solve the problems.

6. REFERENCE

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