##### DESIGN AND IMPLEMENTATION OF INTELLIGENT MANHOLE COVER MONITORING SYSTEM BASED ON NARROW BAND (NB-IOT)

***SUBMITTED BY***

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**ABSTRACT**

Study on RFID Based Book Tracking and

Library Information System

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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. To mitigate all these issues, the system using a wireless sensor network, consisting of sensor nodes is designed. The proposed system is low cost, low maintenance, ZIGBEE based real time which alerts transmit the managing station when any manhole crosses its threshold values. This system reduces the death risk of manual scavengers who clean the underground drainage and also benefits the public. Manhole opening  
detection and alerting is mainly based on detecting the manholes  
which are opened due to overflow of sewage / rain water during  
heavy rainfall and alerting. When a manhole opening is detected  
either due to overflow of sewage water, increase in pressure or  
temperature, it leads to the breakage of the manhole lids. To  
avoid such incidents even before it could affect the public, an  
alerting system is built wherein the buzzer alerts the surrounding  
and sends the sensed data to the managing authorities using GSM  
techniques. So, they can take precautionary action to close the  
manhole considering public safety