

## Flood Control Technique

Dipti Ghag<sup>1</sup>, Tejal Borkar<sup>2</sup>, Vrushali Chavan<sup>3</sup>, Shivali Kini<sup>4</sup>

<sup>1</sup>Department of CE, VIVA Institute of Technology, Virar(e)  
Email: deeptighag@gmail.com

<sup>2</sup>Department of CE, VIVA Institute of Technology, Virar(e)  
Email:tejalborkar1111@gmail.com

<sup>3</sup>Department of CE, VIVA Institute of Technology, Virar(e)  
Email: vrushalichavan2699@gmail.com

<sup>4</sup>Department of CE, VIVA Institute of Technology, Virar(e)  
Email:Shivali.kini@gmail.com

**Abstract**—Natural floods are phenomena caused by exceeding surface flow generated from an intense rainfall. The urbanization of a basin generally tends to aggravate the floods as it promotes original vegetation covering removal, imperviousness increasing, canalization and occupation of the near river zones. Causes of floods are due to natural factors such as heavy rainfall, high tides, etc. and human factors such as blocking of channels or aggravation of drainage channels, improper land use, deforestation in headwater regions, etc. Population increases results in more urbanization, more impervious area and less infiltration and greater flood peak and runoff. Problems become more critical due to more severe and frequent flooding likely caused by climate change, socio-economic damage, population affected, public outcry.

Many techniques are available for evaluating flood control projects, but it is difficult to formulate and select the best alternative methods to solve the problem of flooding. Some structural and non-structural measures are available. Flood loss prevention and mitigation includes structural flood control measures such as construction of dams, reservoirs or river dikes and nonstructural measures such as flood forecasting. The use of underground space can also be done for flood protection due to greater traffic congestion, air pollution and lack of green space.

**Keywords**—Flood protection, Flood control project, structural and nonstructural measure, Urbanization, underground space

### I. INTRODUCTION

Flood can be defined as a temporary covering of land by water outside its normal confines. It is a naturally reoccurring event. Growing cities are increasingly suffering from urban floods as a consequence of the urbanisation process itself. The fast urban development experienced after the industrial revolution was responsible for several significant changes in the urban water cycle, mainly due to the vegetation removal, the suppression of natural retention areas, and the high impervious rates.

Techniques for evaluating minor and major urban drainage and flood control projects are upcoming to overcome the problem. The location selected for our project is new VIVA collage where the area is in urgent need of flood control measures. The planning defines the flood control for regulations purpose and providing definite guidelines for managing future development affecting the drainageways and associated flooding. Flood protection measures may reduce the frequency of inundation losses. In an effort to address the challenges of climatic uncertainties and continuous growth in flood plain, flood control project is

implemented. Some techniques for evaluating flood problems are included in the report.

The primary environmental effect of urbanization is alteration of natural drainage patterns. Public works management seeks the best solution to the problem of flooding. It is difficult to formulate and select the best alternative methods to solve these complex problems. Many techniques are available for controlling flood and structural measures can be taken for flood control such as construction of dam, reservoir, levees and alter the characteristics of flood and reduce the probability of flooding in location of interest. Nonstructural measures alter the impact or consequences of flooding and have little to no impact on the characteristics of flood.

### 1.1 PURPOSE

- To reduce flooding in New VIVA college area.
- To divert and store water.
- To study, analyse and design underground space.

## II. MATERIAL AND METHOD

### 2.1 PROPOSED WORK

#### 2.1.1 AREA SELECTION

The site selection for the construction of underground structure lies in Virar west. Ground of New VIVA college is selected for our project.



**Figure No. 1 Ground of New VIVA collage**

#### 2.1.2 LAND SURVEY

Survey was conducted in new VIVA collage on October 03, 2019 . Total station were used for surveying and site plan is prepared.

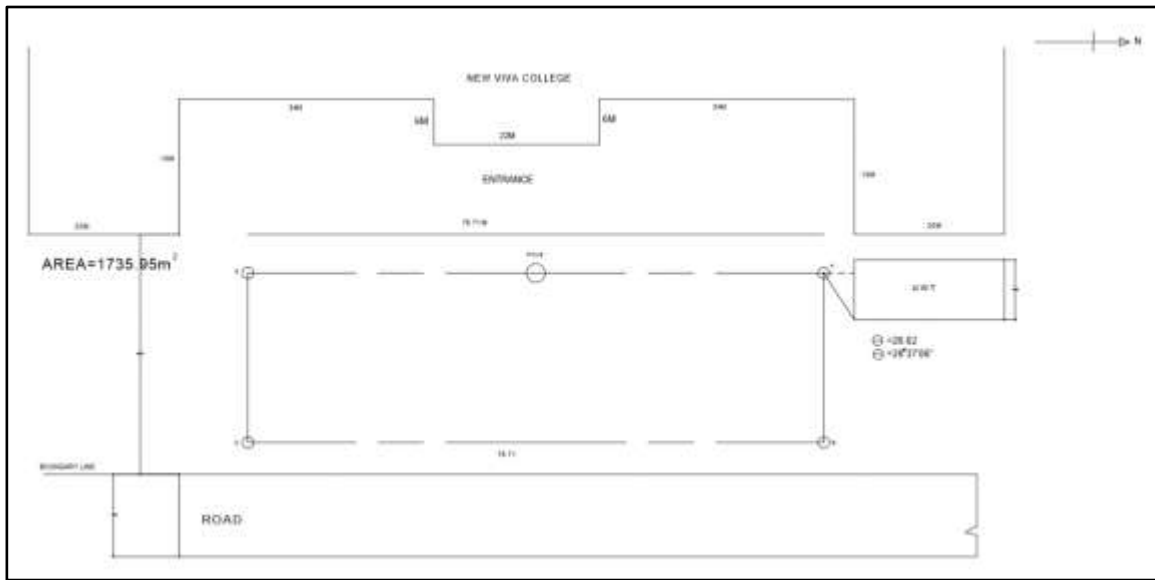


Figure No. 2 Ground Plan of New VIVA college

### 2.1.3 RESULT OF TESTS CONDUCTED ON FLOOD WATER

Sr.No	Parameter	Result	Limits	Units
01.	p <sup>H</sup>	5.8	6.5 to 8.5	---
02.	Turbidity	---	Max. 1	NTU
03.	Total dissolved solids	27	Max. 500	Mg/L
04.	Chloride as cl	20	Max. 250	Mg/L
05.	Sulphate as So <sub>4</sub>	---	Max. 200	Mg/L
06.	Total Hardness as CaCO <sub>3</sub>	50	Max. 200	Mg/L

### 2.1.4 OUTLET DISCHARGE

Water collected in underground structure will be discharged in back side of the collage. .



**TABLE 1**  
**COMPARISON BETWEEN MAIN METHOD**

Sr. No.	Paper Name	Advantages	Disadvantages
01.	Hydrological design of urban flood control detention pond	Use of design storm approach, continuous simulation approach, analytic probabilistic approach	Takes a lot of time to construct the database of the entire program.
02.	On site stormwater detention as an alternative flood control measure in ultra-urban environments in developing countries	Smaller commercial dimension reservoir volumes, aiming at contributing to minimizing the flood problem.	Requires adequate spaces to place these measures in developing countries.
03.	The Malaysian flood hazard management program	Use of new technologies such as use of remote sensing in flood forecasting, telemetry and automatic warning gadgets in flood warning.	New technologies are proved to be costly so not useful for small countries.
04.	Flood Control using Urban underground space	Large use of underground space, no disturbance on ground during flood	Not economical for small countries, no availability of large underground space in some countries..

### III CONCLUSION

In this report planning for designing and storing flood water is been done. For this we have done survey in the ground of new VIVA college. For this survey we referred total station. Calculation for actual area of the ground and underground structure have been dealt with it. Since we are dealing with design of underground structure in VIVA ground. The design of underground structure will be done as per the IS requirements and rainfall data available from metrology department in Virar with detail study and research.

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