

Drainage System Maintenance toward Promoting Healthy Environment (A Case) Study of Federal Capital Territory (FCT) Metropolis Abuja

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Abstract

One of the most important aspects of the design of road is the provision made for protecting road from surface water and pavements usefully solos own traffic and contributes to accidents from hydro planning and loss of spray. If water is allowed to enter the structure of the road, the parliament and sub-grade will be weekend and it will be much more susceptible to damage by the traffic. Water can enter the road as a result of rain penetrating the surface. Or as a result of the infiltration of ground water when the roads fail, which is usually due to inadequate drainage that Financially lead to un healthily Environment when proper maintenance is not Introduced. This study was conducted in selected areas Abuja metropolis. The areas are Mararaba, Nyanya, Dutse, Kuje and Bwari. The purpose of the study was to identify the Courses of drainage problems and recommend solutions. A Survey was conducted and appraised, which finally provided the lack of Improper and Comprehensive drainages management systems in the metropolis.

Key words: - Drainage system, problems, flood, Healthy environments, maintenances

Introduction

Drainage is generally defined as the orderly removal and also disposal of excess waste water from the surface and subsurface of any band through the improved natural channels or constructed ditches. A gun Wanba (2000) defines drainage as the disposal of excess waters on land before they enter the streams and rivers. Persona and Abraham (1992) defined drain are as a form applied to systems of dealing with excess water before it reaches streams, rivers or lakes. Flood is generally known to be the major component of any excess water which has caused a lot of damage to lives and properties in many countries of the world. Examples of flood occurring places in Nigerian are Kano, Lagos, Anambah state, Bauchi State, Kebbi State, Benue State, and other states not mentioned in this paper.

Functions of drainage

The drainage system has four main functions.

These are:-

- i. To convey storm water from the surface of the carriage way to out falls

- ii. To control the level of the water table in the sub-grade beneath the carriage way
- iii. To intercept ground water and surface water flowing towards the road
- iv. To convey water across the alignment of the road in a controlled fashion.

The first three functions are performed by longitudinal drainage components in particular side drains, while the fourth.

Function requires across-drainage structures such as culverts, fords, drifts and bridges.

General drainage problems

The general drainage associated problems are:-

- i. Destruction of road pavements through infiltration of rain water
- ii. Soil erosion by run-off from storms and aquifers
- iii. Flood which usually occurs when the volumes of rain water generated becomes more than the capacity of the channels provided to discharge run-off.
- iv. Structural failures of buildings
- v. Exposure of water pipes laid under the ground and

- vi. Sedimentation causing blockage of the drainage channels (Schwab 1979)

Approach methodology

The approach methodology for this study was conducted in five major satellite towns in Abuja, the federal capital territory, these satellite towns are:-

- i. Mararaba
- ii. Nyanya
- iii. Dutse
- iv. Bwari

The first step was to conduct reconnaissance survey to this major metropolis, and to have a proper understanding on the drainage system construction and its operation during the rainy season, especially on the days of heavy down fall of rains.

The mass media and the news paper information on poor drainage system and users contribution to available drainage provision in the above satellite towns within Abuja (FCT)

Discussion

The residents of Mararaba, Nyanya, Dutse, Kuje and Bwari which are generally known to be major satellite towns in Abuja usually count their loses after any heavy down fall of rains within the said metropolis mentioned above the rains is usually accompany by heavy flood that normally bock the highways. The Aurcylisis in each of the satellite towns is briefly summarized below:

Mararaba: - it is a satellite town that host very close to thousands of people who work in the city center. It is also a link to the states north east of the city. It has however become a flash point of flooding which professionals blame on the poor drainage system within the satellite. The provided drainages in this satellite town are completely blocked, which is the major cause of flood, with the addition of dumping of refuse in the drainages, which also does not allowed the free flow of water all the year round,

Nyanya: - this is the boundary between the FCT and Nasarawa state to Masaka. The highways along this route has no provision of drainages, which is the major reason why the for human's benefit.

occurrence of flood along this highway is easy to over take the highways, since there are no proper drainages provided.

Dutse: - the situation in Dutse generally is usually caused by continuous down power of rains, which usually result into heavy flood thereby allowing inner axis of Dutse to become barely possible

Bwari: - the situation in Bwari is associated by poor drainage and mostly untarred roads, couple with the attitude of residents who usually dumped wastes on the road and those who built on erosion channels.

The causes of drainage problems covering the above satellite towns are due to the following summarized the factors:-

- i. Dumping of refuse and emptied their refuse into waterways
- ii. Poor drainage maintenance
- iii. Total absence of drainage system on the highway passing through some satellite towns
- iv. Continuous down pour of rains
- v. Absence of erosion channels

Recommendation

To savage the situation within these four satellite towns, the following are recommended:-

- i. Adequate provision of drainage systems for the highways
- ii. National monthly environmental sanitation which should be carry out with proper supervision
- iii. Launching of the clean and green campaign that will eliminate the menace of open defecation of plastic and polythene bags
- iv. Installation of automated web- based flood early warning equipment in flood prone communities'
- v. Constant maintenance of drainage system in the concerned satellite towns.

Conclusion

Drainage problems are common all over the world. They are more frequent in developing countries than in advanced drainage problems are many and may also be similar in nature. In Nigeria, it is a major nuisance and if properly managed, it will improve the quality of life and also protect the environment

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