

STUDY ON CIJAHE HOUSING DRAINAGE PROBLEMS IN CIJAHE IV ROAD, BOGOR BARAT DISTRICT

Syarief Muhammad Bunayya Agil¹, Syaiful²

Universitas Ibn Khaldun

¹ fcnbun@gmail.com, ² syaiful@ft.uika-bogor.ac.id

Abstract

In the field of civil engineering, drainage is one of the technical efforts by making waterways or drainage lines to reduce excess water from rainwater, seepage, and excess irrigation water from an area or land. The drainage problem on Jalan Cijahe IV is a problem that has been occurring for a long time, it happened because the drainage was not properly maintained since the beginning of construction. During heavy rains, the water and sediment from the drainage will overflow onto the road due to a large amount of sediment at the end of the cijhae IV road drainage. This study aimed to identify and provide an overview of drainage problems which in the end an improvement solution is obtained.

Keyword: Drainage, Sediment, and Problems

INTRODUCTION

The city of Bogor is astronomically located between 106°48' east longitude and 6°26'LS. Meanwhile, geographically, Bogor City is located in the middle of the Bogor Regency area. The area of Bogor City is 118.5 km² consisting of 6 sub-districts and 68 urban villages. Bogor City is one of the supporting cities for the capital city with the distance between Bogor City and DKI Jakarta is approximately 60 km, while the distance between Bogor City and Bandung City is about 120 km. Known as the City of Rain, Bogor City has an average monthly rainfall of around 267.9 - 385.3 mm. The slope of Bogor City is quite high and the type of soil in the Bogor City area is reddish brown *lotosil* with a fine soil texture and is somewhat sensitive to erosion. (Regional Infrastructure Development Agency, n.d.)

In the field of civil engineering, drainage is one of the technical efforts by making waterways or drainage lines to reduce excess water from rainwater, seepage, and excess irrigation water from an area or land. If the handling of drainage is not good, it will result in inundation of the environment around the drainage channel which in turn causes environmental pollution. (procurement, 2020)

Drainage has meaning of draining, draining, dumping or diverting water. In general, drainage is defined as a series of water structures that function to reduce and/or remove excess water from an area or land, so that the land can be used optimally. Drainage is also defined as an attempt to control groundwater quality in relation to salinity. (Suripin, 2004)

Roadside drainage is drainage made on the left and right sides of the road that functions as a reservoir and discharger of water from the road surface or from the surrounding drainage area. (Syapawi, 2013)

When heavy rains pour down the city of Bogor, especially on Jalan Cijahe IV, water

and sediment from the drainage will rise to the road surface. This causes the road to be more slippery, not to mention two-wheeled vehicles and four-wheeled vehicles that often pass quickly can cause accidents and will also fall due to slippery roads.

The drainage problem on Jalan Cijahe IV is a long-standing problem, it occurs because the drainage has not been properly cared for since the beginning of construction. After observing the Cijahe IV road, the increase in water and sediment occurs due to the accumulation of sediment at the end of the Cijahe IV road drainage, so that water and sediment will rise to the road surface and flow towards the river on the other side of the road.

The aims of this case study are:

1. Identify drainage problems (side channel) along Jalan Cijahe IV.
2. The purpose of the study is to provide an overview of drainage problems which in the end a solution for improvement is obtained.

METHODOLOGY

The location of this study is in the area of Jalan Cijahe IV along \pm 50 m. This study was conducted by means of a direct survey to the drainage site. The equipment used for the survey, namely:

1. Meter for measuring drainage dimensions.
2. Camera for for documentation

Identification is carried out on parts that are considered to have severe drainage problems. Analysis of theoretical theories from several literatures regarding problems in a roadside drainage related to Cijahe IV road drainage.

Data collection is obtained from primary data, where primary data is a direct field observation. Namely: Taking drainage dimensions on Cijahe IV road and reviewing the condition of Cijahe IV road drainage. As for the secondary data that is supportive and completes the primary data. Namely: road location data obtained from Google Earth. The location under review is shown in Figure 1.



Figure 1. Location Map of Cijahe IV
Google Earth Source

RESULTS AND DISCUSSION

The results of the identification of the side drainage on Jalan Cijahe IV from the earliest house to the last house, namely:

The drainage in the northern part of the last house is no longer functioning because it is blocked or clogged with sediment, causing water and sediment to rise to the road. This causes the roads to become flooded and slippery, of course, it will disturb residents and can cause accidents.

Not only are canals that have been damaged and are not treated at the endpoint of Cijahe IV road, but there is also a pile of sediment and garbage which causes the drainage of Cijahe IV road to not be connected to the drainage of Cijahe I road.

Sediment on the drainage link between Jalan Cijahe IV to Jalan Cijahe I has accumulated so much that it does not appear that it is drainage. This happened because the DPT (soil retaining wall) was not strong enough to withstand the load of the soil and a landslide occurred 2 years ago.

A road must be designed to have the capacity to drain the flow of rainwater that falls on the road body to the disposal site. This drainage system can help reduce the risk of flooding in certain places.

The purpose of making road drainage, among others, are:

1. Prevent the occurrence of puddles that can interfere with transportation activities and the condition of the road itself.
2. Prevents damage to rigid pavements and prevents waves from forming on flexible pavements.
3. Prevents the loss of strength of the covering material.
4. Maintain soil water content on the road body/foundation in order to reach the expected design life.
5. Reducing changes in subgrade volume.
6. Prevents soil erosion.
7. Prevents slope failure.
8. Adds to the beauty of the house.

CONCLUSION

From the results of the identification that has been carried out, several conclusions can be drawn as follows:

1. The roadside drainage on Jalan Cijahe IV is a problematic drainage \pm 40% of the drainage channel is not functioning properly.
2. The problems that exist on Jalan Cijahe IV, are:
 - The drainage dimensions are no longer appropriate because there is a lot of sediment at the end of the Cijahe IV road.
 - Landslide that closed the channel.
3. In accordance with the rehabilitation objectives of this case study, what can be done for damage to drainage channels on Jalan Cijahe IV are:
 - There is a plan to repair the drainage channel.
 - Regular cleaning and maintenance of drainage channels to prevent the same problem from happening again.

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