International Journal of Engagement and Empowerment
Vol.1, No. 3, December 2021
https://doi.org/10.53067/ije2.v1i3

IMPROVEMENT OF DRAINAGE AS ONE OF THE SOLUTIONS FOR FLOOD CONTROL IN RT 12 RW 06 CAKUNG PENGGILINGAN EAST JAKARTA

Cahyo Wibowo[1], Dibyo Setiawan[2], Fathan Mubina Dewadi[3], Bantu Hotsan S[4]
[1,2] Mpu Tantular University Jakarta, Indonesia, [3]Buana Perjuangan University Kerawang West Java, Indonesia, [4]Budi Utomo Institut of Technology Jakarta, Indonesia
Email: cahyowibowo@mputantular.ac.id[1], dibyosetiawan@mputantular.ac.id[2], fathan.mubina@ubpkarawang.ac.id[3], bantuhotsan@itbu.ac.id[4]

Abstract
Flooded is a classic thing in every area, especially in the capital city. Floods in Jakarta cannot be separated from the role of the community in urban areas and villages within the town. People's behavior in everyday life, the condition of infrastructure in the community is critical in overcoming flood problems and external causes such as high rainfall, global warming, and climate change. People's behavior that ignores environmental cleanliness such as littering, changing the function of infiltration land as a residence without thinking about environmental impacts, community participation in the maintenance, and lack of concern for the condition of drainage infrastructure in the environment has a vital role. The absence of supervision, respect and local government's role is also one of the causes of the poorly maintained drainage system in settlements.
Keywords: *drainage, planning, maintenance, repair, participation*

INTRODUCTION

The drainage system is an important part of people's lives wherever they live, both in urban and rural areas. Good drainage is one that can accommodate both rainwater and household wastewater, draining the water in accordance with its capacity with a good flow without obstacles. The quality of the drainage must be able to withstand abrasion, while maintaining the quality and function of the drainage is one of the things that is maintenance. Drainage that is not maintained will result in a reduced ability to drain water. Damage to the drainage can cause erosion or erosion of the sides so that the surrounding soil will be eroded, causing siltation and blockage along the drainage.

METHOD AND PROCEDURES

The drainage system is an essential part of people's lives wherever they live, both in urban and rural areas. Good drainage can accommodate rainwater and household wastewater, draining the water under its capacity with a good flow without obstacles. The drainage quality must withstand abrasion while maintaining the quality and function of the drainage is one of the things that is maintenance. Drainage that is not maintained will reduce the ability to drain water. Damage to the drainage can cause erosion or erosion of the sides so that the surrounding soil will be eroded, causing siltation and blockage along the drainage.

METHOD AND PROCEDURES

Surveying several drainage points at a critical level and then conducting an assessment to determine the capacity and capacity for implementation. Area Situation Analysis RT 12 RW 06 is located in Penggilingan Village, Cakung District, East Jakarta City. The place is below the road surface to receive an overflow of water from the Milling Road. This area already has a perfect drainage system starting from the entrance from Jl. Raya Penggilingan came out of RT 12/RW 06 neighborhood, but some of the drainages were blocked by buildings making it difficult to maintain. On the east side, there used to be a wide enough ditch, but the condition is very worrying because residents have intentionally closed it for settlements. They were causing the water flow to be interrupted. The following describes the development of the situation in RT 12/RW 06 since 2005.

Figure 1. The Situation of the Permata Penggilingan Area in 2005

Figure 2. The Situation of the Permata Penggilingan Area in 2008

Figure 3.The Situation of the Permata Penggilingan Area in 2012

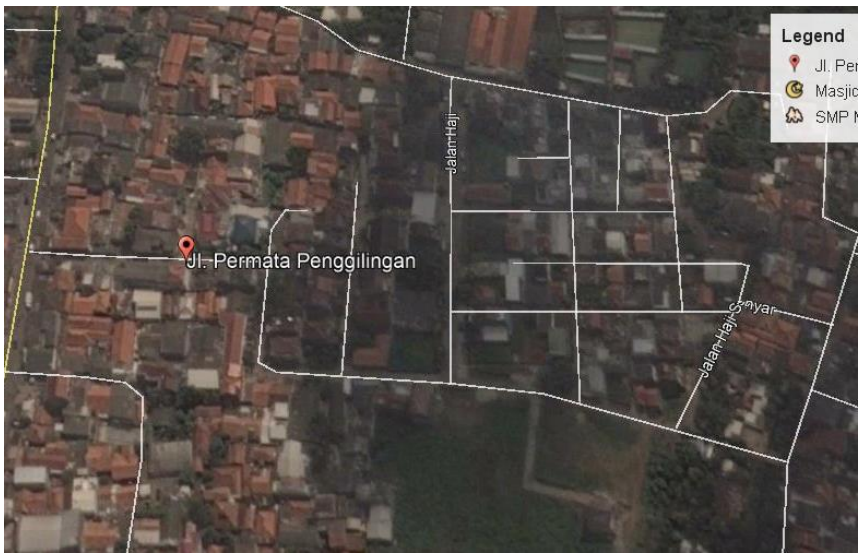

Figure 4.The Situation of the Permata Penggilingan Area in 2018

Figure 5. The Situation of the Permata Penggilingan Area in 2020

Formulation of the problem:

1. Man, The subordinate role of the regional government and the community in maintenance and repair.
2. Method, the way the community works in managing and using drainage is not appropriate so that it damages and eliminates the function of the drainage. There is no government role in environmental management related to drainage
3. Material: The material used is not according to specifications, so it is short-lived.

4. Machine/Tools/Tools, work tools used improvised due to limited capabilities do not match the existing work capacity. The drainage is small, and the tone is significant, requiring unique mechanisms like mini excavators.
5. Environment: The environment in this area is quite supportive, but because many drainages are closed, not maintained, the drainage function has changed, so social problems arise that residents cannot quickly solve.

Activity Location Environmental Drainage Block B beside Secretariat RT 12 RW 06 Cakung. The Goal of the Activity Increasing the role of community fiber in improving drainage as a flood-control and environmental-preservation solution.

Activity Benefits, Right on target, cheap, and fast

Stages of training, planning, planning activities by involving all components of the community

Making Plan Drawings and Calculating Material & Cost

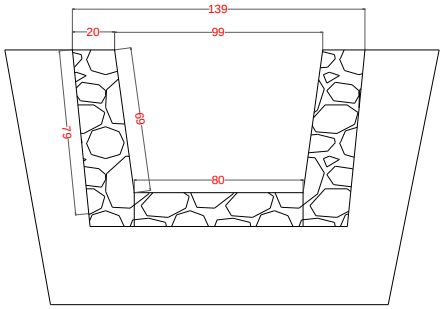

Figure 6. Drawing drainage plan

Table 1. Table of budget plan

Rencana Anggaran Biaya (RAB) Perbaikan Drainase Blok B RT 12 / RW 06
Periode 24 - 31 Oktober 2021

No	Nama Barang	Jumlah	Satuan	Harga	Total
1	Tukang	5	Hari	140.000	700.000
2	Kenek	5	Hari	100.000	500.000
3	Batu Belah	2	Truk	1.900.000	3.800.000
4	Batu split	1	M3	130.000	130.000
5	Pasir hitam	1	M3	130.000	130.000
6	Pasir banka	1	truk	2.000.000	2.000.000
7	Pasir mundu	1	Truk	1.800.000	1.800.000
8	Semen 45 kg	20	sak	45.000	900.000
9	Besi 10 mm	4	batang	45.000	180.000
10	Besi 12 mm	3	batang	75.000	225.000
11	Kawat bendrat	0,5	kg	22.000	11.000
12	Papan	1	lembar	120.000	120.000
13	Ember	2	buah	15.000	30.000
14	Paku 5 cm	0,5	kg	20.000	10.000
15	Benang	1	roll	10.000	10.000
16	Konsumsi	1	lot	250.000	250.000
					10.796.000

Procurement of materials following the ill of material that has been prepared prepares the central workforce, namely one handyman and one assistant. Disseminate information on invitations to community service activities to ease activities in terms of costs and speed up work.

Execution, cleaning the platform from the grass, digging the right side, left side, and bottom, preparing the line width and height of the ditch, preparing the material as close as possible to the activity. Make a mixture of cement and sand to start laying the river stone.

Figure 7. Soil excavation.

Figure 8. Photo of material transfer work.

Figure 9. Work Implementation Progress.

Activity time between 24 October – 31 October 2021 08:00 – 17:00

Summary of activities from the activities carried out for eight days, good results are obtained, as shown in the following figure.

Figure 10. Drainage conditions when it rains

RESULTS

This drainage repair activity concluded that the material needed was lacking due to differences in drainage conditions. The number of citizens participating is still deficient, so the work takes a long time.

Actual cost of activity calculated below

Table 2. Actual Cost of activity

Laporan Penggunaan Biaya Perbaikan Drainase Blok B RT 12 / RW 06
Periode 24 - 31 Oktober 2021

No	Nama Barang	Jumlah	Satuan	Harga	Total
1	Tukang	8	Hari	140.000	1.120.000
2	Kenek	8	Hari	100.000	800.000
3	Batu Belah	2	Truk	1.900.000	3.800.000
4	Batu split	1	M3	130.000	130.000
5	Pasir hitam	1	M3	130.000	130.000
6	Pasir banka	1	truk	2.000.000	2.000.000
7	Pasir mundu	1	Truk	1.800.000	1.800.000
8	Semen 45 kg	30	sak	45.000	1.350.000
9	Besi 10 mm	4	batang	45.000	180.000
10	Besi 12 mm	3	batang	75.000	225.000
11	Kawat bendrat	0,5	kg	22.000	11.000
12	Papan	1	lembar	120.000	120.000
13	Ember	2	buah	15.000	30.000
14	Paku 5 cm	0,5	kg	20.000	10.000
15	Benang	1	roll	10.000	10.000
16	Konsumsi	1	lot	500.000	500.000
					12.216.000

Actual man people participant calculated below

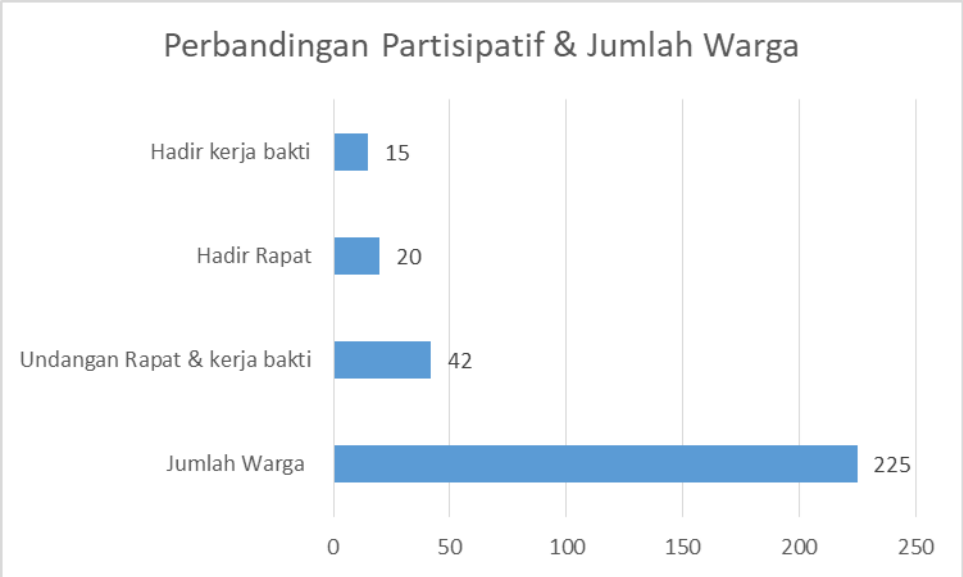

Figure 11. Participant of people for social activity

CONCLUSION

It is critical to increase community participation to maintain drainage. According to Government Regulation 156 of 2019 concerning the Organization and Work Procedure of the Water Resources Service, the Environment Service may educate the community about the importance of drainage or contribute to the maintenance of drainage. This study is because the community has limited tools, knowledge, limited funds for self-help, limited human resource capabilities, and limited capacity owned by the community.

ACKNOWLEDGMENTS

Thanks for all Support from All community who have helped and participated in this activity very well

REFERENCES

Agustulusnu, Kamiana, I.M., Saputra, R.H. (2019). Evaluasi dan Perencanaan Saluran Drainase di Jalan Sangga Buana II Kota Palangka Raya. Info Teknik 20 (2), 221-236

Darwis, H. (2017). Dasar-Dasar Teknik Perbaikan Tanah. Yogyakarta: Pustaka AQ

Lubis, F. (2016). Analisa Frekuensi Curah Hujan Terhadap Kemampuan Drainase Pemukiman di Kecamatan Kandis. Jurnal Teknik Sipil Siklus 2 (1), 34-46

Mina, E., Fathonah, W., Sari, F.D.C. (2019). Analisis Stabilitas Dinding Penahan Tanah untuk Perkuatan Tebing Badan Jalan Suradita – Kranggan. Jurnal Fondasi 8 (1), 12-21

Rosihun, M., Endaryanta. (2011). Analisis Stabilitas Talud Bronjong UIN Sunan Kalijaga Yogyakarta. INERSIA VII (2), 182-201

Suripin. (2004). Sistem Drainase Yang Berkelanjutan. Yogyakarta: Andi Offset Suripin. 2018.Mekanika Fluida dan Saluran Terbuka untuk Teknik Sipil. Yogyakarta: Andi Offset