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Flood Management Implementation of Box Culvert Drainage Channel

(*Case Study Jalan D.I. Panjaitan-Mugirejo, Samarinda City, East Kalimantan***)**

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ABSTRACT
Changes in land use and inadequate channel conditions can be seen in areas that are flooded. As in the area of Jalan Mugirejo, when the rainy season comes, is prone to flooding. The problem is caused by various things such as the area of Jalan Mugirejo is an expanse that tends to be flat, and part of the end of Mugirejo has hills so that the rainwater flow is quite heavy and the volume of water is very large, and the quality of the channel is inadequate to accommodate the discharge that comes from the primary channel from the housing of local residents and hilly terrain. is in that area. This study aims to determine the method of implementing the work in the field. The results of this study can be found how the process or stages of the method of implementing box culvert work on Jalan Mugirejo.

Keywords: Jalan Mugirejo, Drainage, Flood, Channel.

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I. Introduction

In general, the growth and development of cities has a considerable impact on the hydrological cycle. The development of the city includes mapping of residential areas, trade, public facilities, commercial facilities, offices, other urban facilities and infrastructure including road network facilities. The change in land use clearly greatly affects the run-off coefficient, so that the value or price of the flow coefficient also changes. The occurrence of flooding or inundation in urban areas that often occurs is one indication of the consequences of changes in land use in the area, in addition to the condition of the existing canal system.

Area Jalan Mugirejo is an expanse that tends to be flat, and part of the end of Mugierejo has hills so that the rainwater flow is quite heavy and the volume of water is very large, and the quality of the channel is inadequate to accommodate the discharge that comes from the primary channel from the housing of local residents and hilly terrain. is in that area . Another problem that exists in the area of Jalan Mugirejo is a traffic jam. This is because this channel can also cause other problems, namely congestion problems due to flooding that overflows the road.

With preventive measures, the city government of Samarinda has taken the problem of flooding that every year hits the North Samarinda area, especially the Jalan Mugirejo area. The Mayor of Samarinda City created a project to overcome this problem by using a drainage channel made of concrete which is expected to provide a solution to the problem of flooding and traffic jams in the Jalan Mugirejo. Box culvert concrete channel can be a solution if it is seen from the land and work time efficiency.

Based on the results of direct observations in the field during field work practices, the limitation of the problem is only regarding the steps for implementing the Box Culvert Drainage Channel work on the Drainage System Management and Development project that is directly connected to the river in the Regency or City area Jalan Mugirejo Implementation of Box Culvert Drainage Channel Work. This is intended so that the discussion does not expand and deviate from the intended discussion.

II. RESEARCH METHOD

Place and time of research.

In data processing, the author conducted research at the job site, Samarinda City, East Kalimantan Province.
Implementation time for the project of Management and Development of Drainage Systems that are Directly Connected to Rivers in Regency or City Areas Jalan.

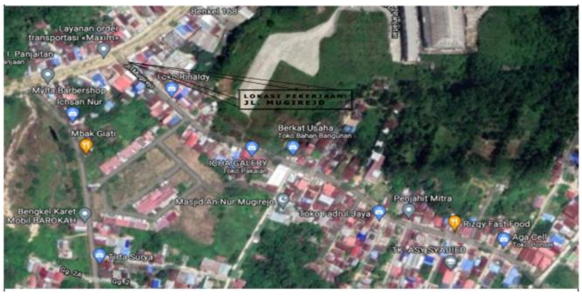

Figure 1. Location Map.

Stages of Work Implementation Method Box Culvert

In the research project of Management and Development of Drainage Systems that are Directly Connected to Rivers in the District or City of Jalan Mugirejo district. North Samarinda to meet the requirements, economical and efficient, the schematic that will be carried out in this research is presented in Figure 9.

III. RESULTS AND DISCUSSION

Field Work Preparation

Before the work begins, the location of the area to be worked on must be free from residents' equipment around the drainage canal, such as vehicles, plants or wooden bridges belonging to residents. Do not forget to also prepare land to store materials needed in project activities.

Drainage Excavation

1. Measurement

Measurements are carried out to determine the dimensions to be built using a reference from the zero point that has been mutually agreed upon by the relevant agencies.

2. Excavation

The excavation process uses the help of a single PC200 excavator, as well as a water pump machine to facilitate the excavation process. As well as 1 DT for Disposing of Excavated Soil Out of Location

3. Procurement of Dewatering To Dampen Part of the Volume of Water.

Figure 2. Excavation of Drainage Channels.

Piling Work

Stages of Implementation of Ulin Stake Works

1. Identify the piling points at the location after that make a sequence of piling points which are poured in the drawings then ask for the approval of the supervisory consultant.
2. Preparing iron poles (8/8)- 4m including piling labor.
3. Preparation of piling equipment at the work location and then arranging the equipment according to the drawings of the sequence of piling points.
4. The driving process continues until the piles reach the limits of hard soil and the desired compressive strength and/or have been required according to the technical specification data and have received the approval of the Supervisory Consultant.
5. The implementation of the work floor cast is carried out on sand fill that has been carried out previously with provisions according to technical specifications and drawings.

Figure 3. Erection.

Ironworks
Stages of Implementation of concreting:
1. The work begins with analysis and calculation of iron (iron requirements) as well as measurements to determine the location and dimensions of concrete reinforcement.
2. The results of the analysis, calculations and measurements are stated in the form of working drawings, submitted by the General Superintendet to the Supervisory Consultant for approval.
3. After obtaining the approval of the Supervisory Consultant, the next work is the procurement of material (iron) according to calculations, then fabrication (cutting and shaping) of concrete reinforcement is carried out in accordance with technical specifications and drawings.
4. Concrete reinforcement that has been formed is then brought to the installation site, installed according to technical specifications and drawings.
5. The installation of reinforcing steel is carried out using bendrat wire, with connection distances adjusted to technical specifications and drawings to ensure structural stability.
6. Installation of reinforcing iron in accordance with technical specifications and drawings of work execution, reinforcing iron functions so that the concrete has tensile strength against the load.
7. After the concrete reinforcement is installed, all inspections are carried out by the Structural Field Implementer and the Supervisory Consultant for approval.
8. After obtaining approval, the remains of scrap metal, bendrat wire and other waste are immediately cleaned from the foundry work location.


Figure 4. Reinforcing.

Implementation of Formwork Making in Drainage Channel Works .
1. The rafters used must be of good quality in terms of their straightness and not deformed or rotten because it will affect the casting results so that segregation or porousness does not occur.
2. Studying and understanding working drawings, as well as preparing tools and materials to be used.
3. Check the position of the road body to be casted with formwork.
4. Assemble the formwork boards as shown in the formwork drawings.
5. Reinforcement of formwork using rafters.
6. Clean the formwork from dirt such as soil, traces of concrete that are still attached and others.

Figure 5. Forming.

Implementation of Concrete Works

The stages of laying concrete are as follows: .

1. Installing cast plastic
2. Concrete material is supplied from the baching plant in the form of ready mix which is transported to the field using a mixer truck.
3. Before spreading the concrete, it is necessary to do a slump test so that the concrete that is spread is not too runny and not too hard, the slump limit is 10-12 cm.
4. Standard Slump Test Sampling (SNI Instructions for Acceptance of Concrete in the Field)

a. Once per day for each quality of concrete cast, or not less than
b. Once for Every 120 m^3 Of Each Quality Of Concrete Cast, Or Not Less Than
c. Once for Every 500 m^2 Of Each Wall Or Floor Surface Area That Is Casted Every Day, Or Not Less Than.

5. Pouring K-300 concrete into the existing formwork.

Figure 6. Concrete Overlay.

6. After the castings are poured into the formwork, the walls of the formwork are pounded so that the concrete becomes solid.
7. For compaction, during casting, the castings must be pricked with iron so that the formwork is fully filled and so that no corrosion occurs.
8. Then the top is leveled using concrete shoes until it is flush with the top formwork.
9. Groving/Brushing surface texture, so that the road surface is not slippery.

IV. CONCLUSION

1. The implementation of the work at the project location is quite smooth but in its implementation there are still delays. this is due to the slow pace of the implementing party in bringing in materials, as well as the lack of management of workers in the work, so it seems like they don't have a daily work completion target.
2. In the iron work the contractor has carried out well only in some segments of the iron spacing the iron is not in accordance with the plan drawing
3. Sampling of the concrete test is only carried out once during the working period, which is not in accordance with the standard of taking the Slump Test.
4. There is no utility pipe work that aims to drain water from the road body to the drainage, resulting in the potential for stagnant water on the road.

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