

# Review Of Implementation Of Rigid Pavement Cement Clamping Work On The Reconstruction Of The Road Access To Tol Palaran

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**Abstract** – The East Kalimantan Provincial Government carried out reconstruction work on the Palaran Toll Access Road (Palaran Main Stadium). This work is very strategic considering that the route is one of the accesses to national vital objects (obvitnas) of the Samarinda-Balikpapan Toll Road. In addition to providing comfort for road users, the path will be a storefront for Samarinda City. This path will provide access in and out of and to the Palaran Toll Gate. Previously, the two-lane road section was only used for one lane on the right side of the Palaran Main Stadium. The lane was partially destroyed and scrubbed, and it only became a parking lot for trucks and containers. But considering that this road is a provincial road, the existing road conditions are considered unable to accommodate the capacity of vehicles going through this route. So it is necessary to rebuild and improve roads on the East Kalimantan Main Stadium Road Section at Sta. 1+644–Sta. 3+405 to facilitate economic traffic and also avoid traffic accidents in the area. The methods used to obtain data are direct observation methods of activities that occur in the field, secondary data collection in the form of test result data, and work plan drawings. The purpose of writing this article is to find out the stages of implementation and supervision of cement concrete pavement road work, especially in ironing work. Rigid pavement uses concrete as a material. main pavement, where the quality of concrete used is  $F_s$  45 MPa. Same with lean work. concrete; this work is carried out using a truck. The mixer is for bringing the concrete mixture to the location. In rigid pavement construction, the pavement is not made continuously along the way as it is done. on flexible pavement. This is done to prevent A large expansion occurs at the surface. pavement, which can cause cracking. pavement, and apart from that, construction like this is also carried out. to prevent continuous cracking. pavement, one of the methods used to prevent the above from happening is by creating segment construction on rigid pavement with a joint system to connect each segment. In this project, the length per segment is agreed to be 5 m, and the height of the pavement is 28 cm. Palaran Toll Access Road Reconstruction Project using iron  $\varnothing$  32 mm for dowel rods with a length of 450 mm and a distance of 300 mm, iron  $\varnothing$  16 mm for tie bars with a length of 700 mm and a distance of 750 mm, as well as iron  $\varnothing$  12 mm for dowel filler for cement and a tie bar.

**Keywords:** Ironing, Dowel, Tie bar, Palaran Main Stadium.

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## 1. Introduction

The development of infrastructure in the East Kalimantan province is an economic momentum that is another sector. In addition to this, the public sector has a very important role to play in connecting cities and production areas with marketing areas and other growth centers. Prasarana infrastructure in the field of civil service is a very important prasarana for surfing economic activities. Increasing development efforts

also require increased infrastructure development to facilitate the mobility of the population and relay the flow of goods from one region to another [1].

The Law No. 38 of 2004 on the Road requires road operators to be able to establish a reliable, safe, comfortable, profitable, and efficient road network that is sustainable and in the public interest. Implementation of Act No. 38 of 2004 is how to create reliable and safe roads, which means being more susceptible to the force of roads that can serve the repetition of the load of traffic vehicles until the planning life is reached without

serious damage so that it is effective in its evaluation [2].

To support the plan, it is necessary to develop a network of roads to stimulate economic growth and open up land routes for isolated areas by reconstructing roads for streets that have lost the function of the road itself. Especially on Main Stadium Street, East Kalimantan.

## 2. Research Method

There are four methods used in data collection: direct observation methods of activities taking place on the ground of the reconstruction of the Tol Palaran Access Road (Palaran Main Stadium), Palaran Samarinda. The method of interviewing (discussions or interviews) involves asking directly all parties involved in the field at the time the project is being implemented, such as field supervisors, contractors, and employees in the project. Documentation methods include photographs of each project being implemented. An indirect retrieval of data about the required project. For example, test data as well as work plan pictures

## 3. Result and Discussion

### 3.1. Specifications of Cement Concrete Clamp Sealing

In accordance with the scope of the observation on the implementation of the project of reconstruction of the Tol Palaran Access Road (Palaran Main Stadium), the discussion work in this chapter does not cover the entire work carried out from the beginning to the end of the work.

In this case, the author is more focused on explaining the work of cement concrete clamping on Sta. 1+950 s/d and Sta. 2+423,4. The author will provide a report of implementation as observed in the field, so here the author focuses on explaining the implementation of the clamping of concrete cement.

In analyzing the connections and bones, the project is planned with one type of jointed plain concrete pavement (JPCP). The required specification is in line with the one in the drawing shop that has been specified. Non-Bone Concrete Clamping (BBTT/JPCP)

- a. Concrete plate thickness (h) = 28 cm = 0.28 m
- b. Concrete plate width = (2x3.5m) + (1x3,0m) = 10 m
- c. Concrete plate length (L)= 5 m

From this data, the geometry of the tie bar and the dowel connections for the Non-Bone Concrete Clamping (BBTT/JPCP) can be seen in the following picture:

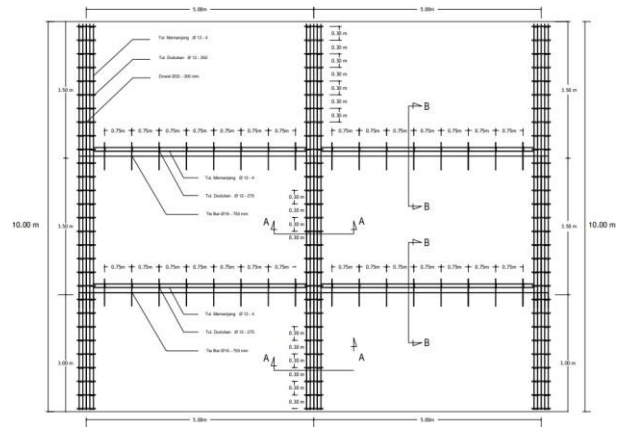


Figure 1. Geometri Tie Bar dan Dowel

As for the Dowel and Tie bar suspension specifications

With its focus referring to the Construction and Building Guidelines of the Department of Kimpraswil [3] as follows:

### 3.2. Dowel (ruji) cross-sectional connectivity:

- Diameter: 32 mm pure steel
- Length : 450 mm
- Distance : 300 mm

“Ref. [4] The Ministry of PU and PERA mentioned that the focus for the dowel bone should be formed from a light iron rod. In this work, the provisions for the use of the focus bone for the dowel bone consisted of two bones, namely the elongating bone and the positioning bone. The dimension of the bone can be seen below..

### 3.3. Elongated Bones

- Diameter : 12 mm
- The amount of iron: 4 bars

To measure the length of the iron on the thighs, follow the breadth of each body of the road, where the width has varying sizes, namely 3.5 m and 3.0 m.

### 3.4. Position Bones

- Diameter : 12 mm
- Distance : 28 cm
- Height : 140 mm
- Width: 150 mm
- Flooring: 90 (Siku-siku)

Based on the calculation of the dowel (Batang ruji) of the cross-sectional connection with the use of the plain rod and the spine bone, the details can be seen in Figure 4 below:

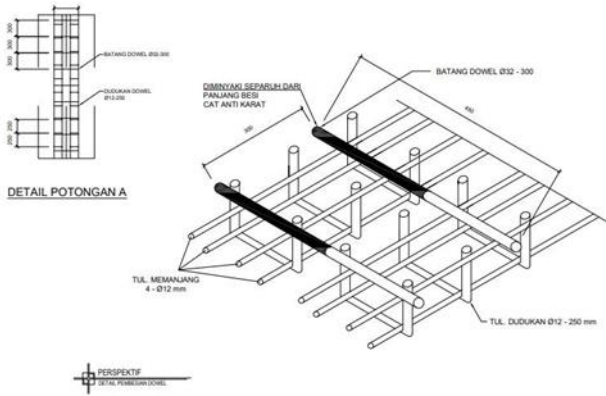


Figure 2. Dowel Suspension Details

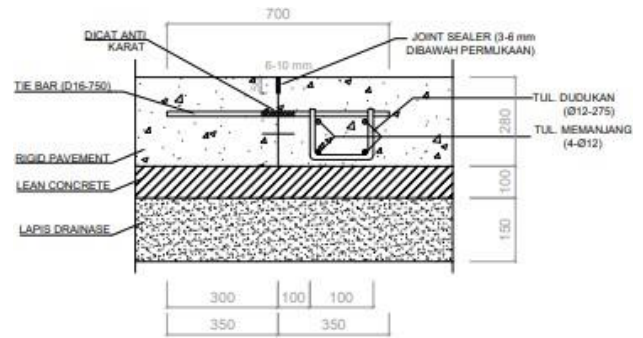


Figure 5. Show Tie Bar Repeat

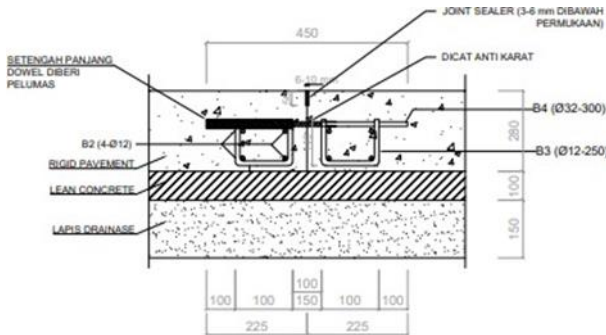


Figure 3. Show Dowel Repeat

### 3.5. Tie bar

- Diameter = 16 mm of reed steel
- Distance = 750 mm
- Length = 700 mm

Tie bar also requires bone focus as in Dowel. (ruji). The specification of the iron used is the same, which distinguishes only in the number of spikes. Tie bars use only one focus while Dowel uses two focus. Based on the calculation of the tie bar, the lengthy connections of the steel and its axis can be seen in Figure 4 below

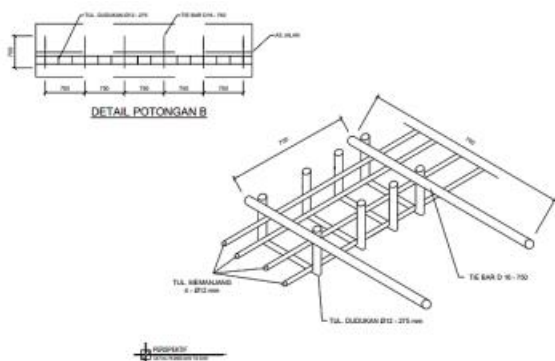


Figure 4. Tie Bar Disconnection Details

### 3.6. Cement concrete condensation process

The following are the steps of the work of cement concrete clamping removal on the reconstruction of the Tol Palaran Access Road (Palaran Main Stadium):

1. Set up and turn on the Diesel Engine.
2. Once the diesel engine is on, the cutting bar can be turned on.
3. Marking on the cutting bar area to obtain the dimensions of the piece of iron corresponding to the specification
4. Then the iron is cut according to the specification.
5. The iron that has been cut is then joined and stored on the sides of the steel bar, in order to facilitate the work on the iron swelling process later
6. Turn on and set up the steel bar comparison.
7. The surface area of the steel bar shall be free from dirt and interference.
8. Make marking on the steel bar surface comparison, to obtain the iron swelling dimensions that match the specification.
9. After the marking is completed, it is necessary to perform quality control by the supervisor so that the quality and quantity of the tools to be used can be checked.
10. The Contractor and the Supervisor made an agreement on a change in the width of the buckle bone. This change was made because the steel bar used has only a minimum size of 15 mm in the bucket bone, whereas in the drawing shop its width is 10 mm.
11. Once approved, then the iron swelling process can be done.
12. Along with the iron swelling process, the PVC pipe is cut according to the specification using iron bars and bars.
13. Then the end of the PVC pipe that has been cut is mounted a hole covering dop using a paper loop.
14. Then dowel assembly is performed, which is the first step in assembling is to assemble the



longitudinal bone that has been cut together with the iron cut for the previous clutch bone according to the specification of the cement concrete fastening.

15. Installing an embroidery that has been formed according to the distance that exists on the shop drawing
16. Bind the bones to each other using a bandwidth wire.
17. Stretch the bandwidth of the wire using the iron gear to ensure that the bone is not shifted at the time of casting later.
18. Once the focal rod is assembled firmly and firmly, then the dowel rod can be placed on it.
19. Before the dowel rod is tied with a focus, on one side of the dowell is wrapped with a 1 1/4" PVC pipe that has been given a hole covering dop.
20. After that, the dowel bars are bound to each other with the focal bones using a flagged wire
21. The rope that binds the dowel's rod must also be tightened with the iron strap.
22. Surveyor performs marking on each box on the field, in order to know the boundary of the segments to be mounted dowel with the distance on the shop drawing is 5 m each 1 segment
23. Before the dowel assembly is placed in the mall, the surveyor first performs a quality control on the ground to ensure that the concrete plastic has been perfectly mounted on the surface of the soil to be carved.
24. Then the dowel can be placed at the markup point of the segment that has been measured by the surveyor on the previous field.
25. Place a tire bar that has been mounted over a plastic concrete on one side of the cistern without any space between the focal bones of each other.
26. After the removal and demolition of the concrete surface simultaneously carried out the laying of the tire bar on the side of the column connector with a distance of 750 mm
27. If the casting is stopped and resumed tomorrow, then it is necessary to install construction connections at the ends of concrete.

### **3.7. Problems occurring at the project location**

In the implementation of activities in the project must be found problems - problems that interfere with the course of work. There are many factors that cause problems. These factors can be natural, technical, licensing, operational, or human. The result of a problem that occurs can cause a slowdown, interruption, even cause work to be temporarily stopped so that work becomes late and can not be completed as planned. Based on the observations made by the author and information obtained in the field, the problems that occurred on the Palarn Tol Access Road Reconstruction Project (Palarn Main Stadium) are as follows.

### **3.8. Natural factors (Rain)**

Rain is one of the natural factors that can hinder the execution of the work, especially the work of stopping because in the time of rain can not turn on the diesel engines used to turn on steel bar and bar cutting machines which are the main tools for cutting iron. The solution chosen by the project implementers is to stop the fireworks to avoid accidents such as the center or be exposed to lightning during rain, because the work is carried out in the open soil so vulnerable to be hit by lightning in the rain.

### **3.9. Delayed Delivery of Material**

Delays in delivery of material due to the limited quantity of material-carrying truck trailers, the material that is often exhausted is iron because the truck trailer has to turn around to serve other areas and often iron is empty manufacturing areas. The problem would interfere with the leakage and disposal schedules that have been drawn up by the supervisors of the sub-contractors in the Palaran Tol Access Road reconstruction project. So casting jobs are sometimes empty for a few days and sometimes result in workers having to work overtime.

As a result of the reconstruction of the Tol Palaran Access Road to be targeted so that it can be used, then the CV. Lundayeh Borneo Consultant as the Consultant Supervisor discussed with the PT. Pelita Shakti as the Contractor Implementing the availability of iron material, due to the procurement of the iron material is entirely the responsibility of the PT Pelita shakti as an Executor Contractant. So the solution chosen by the executive of this project is by coordinating with Pt. Pelitas Shakti when the amount of remaining iron is small in the manufacturing area then the supervisor of CV.

### **3.10. Tool Failed Factor**

Damaged tool factors also influence the process of disposal, casting and removal of work material, when the tool is damaged the casting process and material removal will be impeded because at the time of repairing the tool takes quite a long time. Just like the case with the Tol Palaran Access Road reconstruction project, this is a pick-up car damage. This car is the only tool that can facilitate the work of accessing material transfer such as cushions, dowel, tie bar as well as tools that are used for casting from Sta point one to Sta point. Other, which all these materials and tools can take quite a long time when using only human power.

### **3.11. Material size not suitable for shop drawing**

In this project, there is one material that does not meet the size specifications that have been set in advance, namely the size of the spindle width for the focus of the dowel and tie bar. In the drawing shop, the width of these spindles is set at 100 mm but, in the field, they use a spindle width at 150 mm. This is because the steel bar comparison tool used to swell the iron in this project is





only capable of swelling the iron at a minimum of 150 mm width.

## 4. Conclusions and Advice

### 4.1. Conclusion

In the implementation of this Practice Work, the writer gained a lot of real knowledge in applying the knowledge acquired on the college bench, so that it can be practiced in a maximum and optimal way when carrying out the Practical Work. Besides, the Practice Job is also a means for students to know the real world of work while also knowing the environment and working conditions that students will later face after graduation. Based on a direct observation of the Tol Palaran Access Road Reconstruction Project, it can be concluded as follows:

- a. The mechanism of work of the Tol Palaran Access Road Reconstruction Project has been very good in its performance both in the field and in the non-field, because each party involved in this project has clear duties, authority and responsibilities. This facilitates the process of implementation on the field.
- b. Problem handling on the project is done very well, but requires continuous monitoring to prevent the same problem from happening again.
- c. All work items on the site follow the agreed specifications. Although there is still something that is not in accordance with the work procedures such as the installation of the iron will be first cleaned from rust or organic material that is sticky on the iron wiremesh by using a brush or using a compressor but on the ground is not done.
- d. No test of mechanical properties such as the Traction Test and the Curve Test on the concrete bone steel used.

### 4.2. Advice

Improved education and tightened regulations for workers regarding the importance of safety during work by wearing complete K3 self-protection clothing.

- a. At the execution of the irrigation should be performed first cleaning when the iron used there is rust.
- b. Good coordination and communication between the parties involved in the project determines the success and smoothness of the project work.
- c. It is necessary to test the mechanical properties of concrete stainless steel to determine whether the quality of the iron used has met the standards specified in SNI 2052:2017 or not.

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