JOURNAL OF GREEN SCIENCE AND TECHNOLOGY

ANALYSIS OF PLANNING CONSTRUCTION MAIN ROAD DEVELOPMENT PLTU TANJUNG JATI A

Tubagus Cipta Perdana Harta*, Martinus Agus S.**

*) Student of Civil Engineering Major, Faculty of Engineering, University of Swadaya Gunung Jati Cirebon
**) Lecturer of Civil Engineering Major, Faculty of Engineering, University of Swadaya Gunung Jati Cirebon

ABSTRACT

Construction of Main Road at Tanjung Jati steam power plant which is currently being implemented does not yet have pavement structure, moving the writer to make the research object by analyzing the rigid pavement thickness planning by paying attention to vehicle load repetition factor because the average daily traffic (LHR) the road is not much. In addition to the analysis of pavement thickness planning in this study will also analyze the construction management for road construction in PLTU Tanjung Jati be efficient, effective and have good quality.

The method used in this research is qualitative method by emphasizing secondary data, Vehicle Load Repetition Analysis, Rigid Pavement Thickness Analysis, Volume Calculation Analysis, Cost Analysis, Bar Chart Method, S Curve and Critical Path Method.

Keywords: Highway, Rigid Pavement, Concrete Pavement, Project Management, Bar Chart Method, S Curve and CPM.

I. INTRODUCTION

I.1 BACKGROUND

Saw was the rapid development of the city of Cirebon, one of which manufacture Main Street to access the main power plant, I try to analyze the road that is strong enough to withstand the weight of the vehicle by calculating the load axis of the vehicle and to analyze the project management of the construction of the main power plant ,

On the construction of the main road Tanjung Jati to be carried out then I try to design and analyze the rigid pavement with regard reps axle vehicle happens to the road, because the LHR or vehicles coming into the power plant is not much. In addition to the analysis of pavement used herein also needed a time management (time management) that in addition to sharpen priorities, also seek to improve the efficiency and effectiveness of project management in order to achieve the most out of the available resources. Everything was to achieve the goal of a highway which is the successful project that meets the criteria of time (schedule), cost (budget), and quality (quality).

I.2 PROBLEM FORMULATION

1. The Pavement Analysis Used In Major Road Construction Tanjung Jati A.
2. Analysis Calculation of Thick Plates Pavement necessary On Main Road Construction Tanjung Jati A
3. Work Volume Calculation Analysis On Major Road Construction Tanjung Jati A.
4. Calculation of Cost Analysis In Development Main street Tanjung Jati A.
5. Preparation Schedule On Main road Construction Tanjung Jati A

I.3 PROBLEM FOCUS

1. Analyzing Pavement Design matched according to the needs and parameters of the problem.
2. Calculate the Volume of Work,
3. Counting Time Performance and
4. Cost Weekend in project implementation, identify network and scheduling jobs on Main Street Development Project Tanjung Jati A.

I.4 PURPOSE AND RESEARCH OBJECTIVES

I.4.1 Research Purpose

The purpose of doing research Analysis of Main Road Building Construction Planning Tanjung Jati A namely to analyze Pavement Design in accordance with ISO guidelines and meet the needs of the power plant sector as a supporting activity of industrial activities to be traversed by trucks carrying coal with good quality and the right cost.

I.4.2 Objective

The objective of the Research Analysis Main Road Building Construction Planning Tanjung Jati A:

1. Analysis Repetition Axes Vehicle Expense
2. Analysis Rigid Pavement Thickness
3. Analysis Calculation of Volume of Work.
4. Cost Analysis.
5. Analysis of Project Scheduling and Job Methods.

I.5 FRAMEWORK FOR THINKING

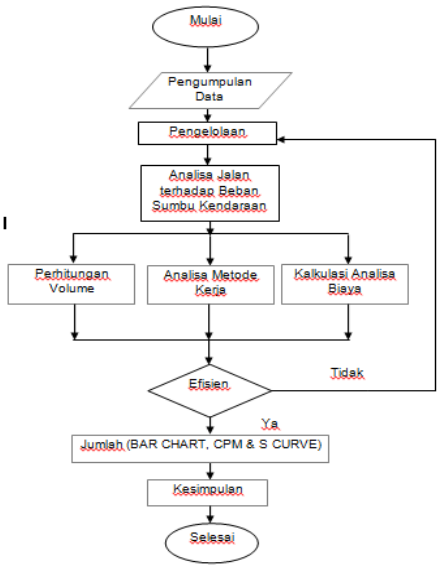


Figure 1. Framework

II. THEORETICAL

1. THEORETICAL RIGID PAVEMENT

a. Pavement Cement Concrete

Pavement planned to carry traffic loads safely and comfortably as well as over the life of the plan no significant damage occurred.

Cement concrete pavement structure is composed of a cement concrete slab that is connected (not continuous) without or with reinforcement, or continuously with reinforcement, is located above the layer subbase or subgrade, without or with a surface layer of asphalt. Cement concrete pavement structure is typically shown at

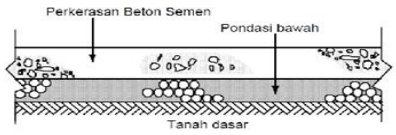


Figure 2. Typical Cement Concrete Pavement Structure
Source: cement concrete pavement planning, guidance T-14-2003

b. Criteria and Principles - Planning Principles

The following are the criteria - planning criteria that should be considered in the planning of road construction ,

1) Road Classification

(a) Classification according to road function is divided into:

(1) Arterial
(2) Road Collector
(3) Road Local

Arterial way which serves the main transport with traits - traits long-distance travel, the average speed is high, and the number of driveways is limited in an efficient,

Jalan collectors the way which airport shuttles collector / divider with traits - traits medium distance trips, the average speed - average being the number of driveways is limited.

Local roads are roads that serve local transportation with traits - traits travel a short distance, average speed - low price, and the number of driveways is not restricted.

(b) Classification according to the class

(1) classification by the class associated with the ability to accept the burden of road traffic, expressed in the heaviest axle load (MST) in tonnes.
(2) Classification according to road class and its requirements and its relation to classification according to the function of the road can be seen in Table 2.3 below.

Table 1. calcifications according to the class.

Fungsi	Kelas	Muatan Sumbu Terberat MST (ton)
Arteri	I	>10
	II	10
	IIIA	8
Kolektor	IIIA	8
	IIIB	

Source: cement concrete pavement planning, guidance T-14-2003

(c) Classification accordingroad terrain

(1) Jalan Medanclassified by the condition of most of the slope of the measured field perpendicular to the contour lines.
(2) The classification of roads according to road terrain for geometric design can be seen in Table 2.4

Table 2. Classification according to road terrain

No	Jenis Medan	Notasi	Kemiringan Medan (%)
1	Datar	D	< 3
2	Perbukitan	B	3-25
3	Pegunungan	G	> 25

Source: cement concrete pavement planning, guidance T-14-2003

c. Section - sectionRoads

1) Benefits RegionalRoads

Regionalbenefit road (DAMAJA) bounded by:

(a) Width between safety threshold limit road construction on both sides of the road.
(b) Height of 5 meters above the surface of the pavement on the axis of the
(c) depth of the free space of 1.5 meters below the road surface.

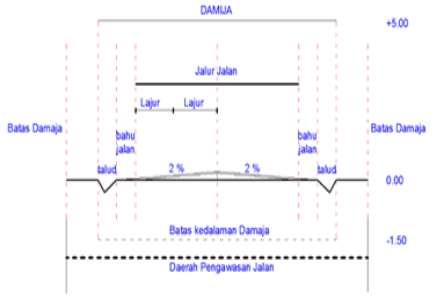


Figure 3. Damaja, Damija and Dawasja in inter-urban road environment
Source: cement concrete pavement planning, T-14-2003 guidelines

2) of WayRegions

Spacethe right of way (Damija) is limited by the width equal to damaja plus a safety threshold road construction with a height of 5 meters and a depth of 1.5 meters

3) Regional Supervisor roads

Regional space Control path (Dawasja) is a space along the street outside the Damaja bounded by high and a specific width, measured from the axis of the road as follows:

(a) Arterial minimum of 20 meters
(b) Collector road minimum of 15 meters
(c) Local road minimum 10 meter
(d) for Safety Users road, Dawasja in the area of the bend is determined by the viewing distance free

2. THEORETICAL CONSTRUCTION MANAGEMENT

a. Definition of Management Construction

Management is a process of planning, peng organisasian, leadership, and control efforts of members of the organization and use all the resources of the organization to achieve the goals set , (According to James AFStoner)

Management is a method / technique / process to achieve a certain goal using existing resources effectively through actions, such as:

- Planning (planning)
- Organizing (Organizing)
- Implementation (actuating)
- Supervision (controlling)

b. Data analysis methods

There are three methods of data analysis performed in this study, the method Bar Chart, method S Curve and methods Ms.Project as corrective measures to analyze the network for the implementation of the project to be ideal.

III. RESEARCH AMETHODOLOGY.

A. RESEARCH METHODS

1. Research Design

Research Design starts with collecting and studying literature related to the research or planning.

2. Research methodsDiguanakan

Research methods usedie quantitative and qualitative methods.

3. Types and Sources of Data

for reference data from relevant sources such as books, journals, similar research, legislation, internet and media lainguna get a clear picture of the research to be studied.

4. Data Collection Techniques

Data collection methods used for the analysis of Construction Management at the Main Road Construction Tanjung Jati A.

5. Data Analysis Methods

The analysis used in this study are:

1. Reps Analysis on Vehicle Expense
2. Analysis Pavement Thickness Planning
3. Job Analysis VolumeCalculation
4. AnalysisMethod of work
5. Cost analysis

B. RESEARCH LOCATION

Research Area Development Main Street Tanjung Jati A pangenan located in the district of cirebon regency west Java province.

Figure 4. Main Road Construction Project Location Tanjung Jati A

IV. RESULTS AND DISCUSSION

A. OF LAND AND ENVIRONMENTAL CONDITIONS

Table 3. Basic Land CBR Data

Data CBR Per 100 M

No.	1	2	3	4	5
STA	0+020	0+120	0+220	0+320	0+420
CBR	5	4,5	3	4	3,5

No	5	7	8	9	10
STA	0+520	0+620	0+720	0+820	0+920
CBR	2,4	4,5	1,5	2,4	4

No.	11	12	13	14	15
STA	1+020	1+120	1+220	1+320	1+420
CBR	4	2,4	3	1,5	2,4

No.	16	17	18	19	20
STA	1+520	1+620	1+720	1+820	1+920
CBR	3	3	1,5	3,5	1,5

No.	21	22	23	24	25
STA	2+020	2+120	2+220	2+320	2+420
CBR	1,5	4	1,5	3	3,5

No.	26	27	28	29	30
STA	2+520	2+620	2+720	2+820	2+920
CBR	1,5	2,4	2,4	1,5	1,5

No.	31	32	33	34	35
STA	3+020				
CBR	2,4				

Table 4. Determining CBRDesign

CBR (%)	JUMLAH YANG SAMA ATAU LEBIH BESAR	PRESENTASE SAMA ATAU LEBIH BESAR
1,5	31	31/31 x 100% = 100
2,4	30	30/31 x 100% = 96.8
3	18	18/31 x 100% = 58.1
3.5	8	8/31 x 100% = 25.8
4	5	5/31 x 100% = 16.1
4,5	2	2/31 x 100% = 6.5
5	1	1/31 x 100% = 3.2

CBR GraphicDetermination

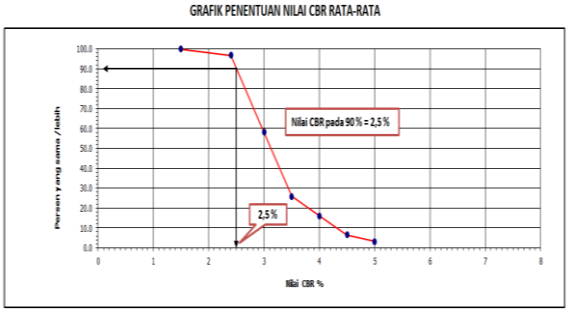


Figure 5. CBR Graph 90%

From graphic design CBR determination above, obtained by CBR of 90% was 2.5%

B. TRAFFIC

Based on survey results of direct observation in the field during the three months from March to May in Jalan Utama Tanjung Jati A may be viewed in accordance with the table 4.3 below.

Table 5. Data Traffic Vehicle In Car, Truck Roads Tanjung Jati A

No.	1	2	3	4
	19	4	145	286

Source: Survey Direct

Specification:

1. MPV, Sedan, Jeep, Pick Up
2. Water Tank Car
3. Truck 2 As
4. Truck 3 As

C. CALCULATION OF CEMENT CONCRETE THICK PLATE

1. Unknown Parameter Data Planning As follows:

- CBR Land basis = 2.5%
- Strong Pull Bending FCF = 4 Mpa (Fc '= 300kg / cm2)
- Material Foundations Down = 125 mm MaterialsFastener

- Reinforcement SteelQuality = BJTU 24 (Fy: Voltage melting 2400 kg / cm2) for BBDT
- coefficient of friction between concrete plate with the foundation (u) = 1,5
- Shoulders = Shoulder concrete
- Trellis (Dowel) = yes
- Average Daily Traffic Data - Average
  - MPV, Sedan, Jeep, Pick Up: 19 units / day
  - Water Tank Cars: 4 pieces / day
  - As the truck 2: 145 pieces / day
  - truck 3 As: 286 pieces / day
  - Traffic Growth (i): 0% / year
  - Age Plan (UR) : 10 year

Planned Cement Concrete Pavement for Road 4-lane 2-way for Collector Roads. Concrete pavement with continued planning with Reinforcement (BBDT)

2. Measures Calculation of Thick Plates

a. Traffic Analysis

Table 6. Calculation of Total Wick based on the type and the load

Jenis Kendaraan	Konfig. beban sumbu (Ton)		Jml. Kend. (bh)	Jml. Sumbu Per Kend. (bh)	Jml. Sumbu (bh)	STRT (bh)		STRG (bh)		STdRG (bh)	
	RD	RB				BS (ton)	JS (bh)	BS (ton)	JS (bh)	BS (ton)	JS (bh)
(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
MP, Pick Up.	1	1	19	-	-	-	-	-	-	-	-
Mobil Tangki Air	2	4	4	2	8	2 4	4 4	- -	- -	- -	- -
Truk 2 As	5	8	145	2	290	5	145	8	145	-	-
Truck 3 As Td.	6	14	286	2	552	6	286	-	-	14	286
Total					850		439		145		286

Ket. RD = roda depan, RB = roda belakang, BS = beban sumbu, JS = jumlah sumbu, STRT = sumbu tunggal roda tunggal, STRG = sumbu tunggal roda ganda, STdRG = sumbu tandem roda ganda

amount Axis Commercial Vehicles (JSKN) during the life of the plan (10 years).
$JSKN_{UR}$ JSKN= 365 x_H x R

Where:
$JSKN_{UR}$ = The total number of commercial vehicle axis during the design life
$JSKN_H$ = Total number of Axis Vehicles daily maximum, when the road is opened.

R = Factor traffic growth over the life of the plan.
Factors traffic growth can be seen in Table 4.5. below where i ≠ 0

Table 7. Traffic growth factor (R)

Umur Rencana (Tahun)	Laju Pertumbuhan (i) per tahun (%)					
	0	2	4	6	8	10
5	5	5,2	5,4	5,6	5,9	6,1
10	10	10,9	12	13,2	14,5	15,9
15	15	17,3	20	23,3	27,2	31,8
20	20	24,3	29,8	36,8	45,8	57,3
25	25	32	41,6	54,9	73,1	98,3
30	30	40,6	56,1	79,1	113,3	164,5
35	35	50	73,7	111,4	172,3	271
40	40	60,4	95	154,8	259,1	442,6

Source: cement concrete pavement planning,

guidance T-14-2003

$JSKN_{UR}$ = 365 x 850 x 10
= 3.1025 million
= 3.1 x 10^6

JSKN plan = JSKN x C
= 3.1 x 10^6 x 0.45 = 1,396,125
=1.3 x 10^6

Table 8. The number of lanes based on the width of the pavement and the distribution coefficient (C) for commercial vehicles on the track plan.

Lebar perkerasan (L_p)	Jumlah lajur (n_l)	Koefisien distribusi	
		1 Arah	2 Arah
$L_p < 5{,}50$ m	1 lajur	1	1
$5{,}50 \text{ m} \le L_p < 8{,}25$ m	2 lajur	0,70	0,50
$8{,}25 \text{ m} \le L_p < 11{,}25$ m	3 lajur	0,50	0,475
$11{,}23 \text{ m} \le L_p < 15{,}00$ m	4 lajur	-	0,45
$15{,}00 \text{ m} \le L_p < 18{,}75$ m	5 lajur	-	0,425
$18{,}75 \text{ m} \le L_p < 22{,}00$ m	6 lajur	-	0,40

Source: cement concrete pavement planning, guidance T-14-2003

To determine the value of the coefficient of friction between the surface of the subbase layer can be seen in Table 4.7. below:

Table 9. Coefficient of friction

No.	Lapis pemecah ikatan	Koefisien gesekan (μ)
1	Lapis resap ikat aspal di atas permukaan pondasi bawah	1,0
2	Laburan parafin tipis pemecah ikat	1,5
3	Karet kompon (*A chlorinated rubber curing compound*)	2,0

Source: cement concrete pavement planning, guidance T-14-2003

b. Repetition CalculationOccurs axis

Calculationaxis repetition occurs, it can be seen in Table 4.8. below:

Table 10. Repetition AxesPlan calculation

JENIS SUMBU	BEBAN SUMBU (TON)	JUMLAH SUMBU	PROPORSI BEBAN	PROPORSI SUMBU	LALU LINTAS RENCANA	REPETISI YANG TERJADI
(1)	(2)	(3)	(4)	(5)	(6)	(7)=(4)x(5)x(6)
STRT	2	4	1%	51%	1.396.125	7.120
	4	4	1%	51%	1.396.125	7.120
	5	145	33%	51%	1.396.125	234.967
	6	286	65%	51%	1.396.125	462.815
JUMLAH		439	100%			
STRG	8	145	100%	16%	1.396.125	223.380
JUMLAH		145	100%			
STdRG	14	286	100%	33%	1.396.125	460.721
JUMLAH		286	100%			
KOMULATIF					1.396.123	1,4 x10^6

c. CalculationThick Plates Concrete

- Load Data Sources: Survey Results
- Pavement type BBDT with trellis (dowel)
- plan Age: 10 years old
- JSK: 1.4 x 10^6
- load safety factor (FKB): 1.1

In determining the load safety factor plan, axle load multiplied by the safety factor (FKB).

Table 11. Load Safety Factor (FKB)

No.	Penggunaan	Nilai F_{KB}
1	Jalan bebas hambatan utama (*major freeway*) dan jalan berlajur banyak, yang aliran lalu lintasnya tidak terhambat serta volume kendaraan niaga yang tinggi. Bila menggunakan data lalu-lintas dari hasil survai beban (*weight-in-motion*) dan adanya kemungkinan route alternatif, maka nilai faktor keamanan beban dapat dikurangi menjadi 1,15.	1,2
2	Jalan bebas hambatan (*freeway*) dan jalan arteri dengan volume kendaraan niaga menengah.	1,1
3	Jalan dengan volume kendaraan niaga rendah.	1,0

Source: cement concrete pavement planning, guidanceT-14-2003

- Strong Pullconcrete Bending (F_{cf})Age 28 days: 4 Mpa
- type and thickness of layers of foundation: 125mm Fastener Material
- subgrade CBR:2.5%
- CBR effective:11%
- Estimated Plates Concrete thickness: 160 mm

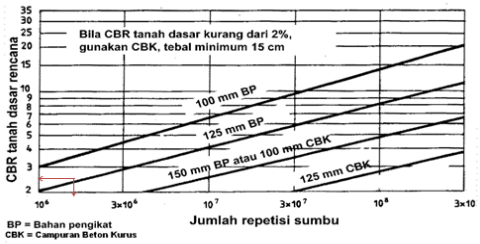


Figure 6. The foundation thick below the minimum forpavement cement concrete

based on the determination of the effective CBR CBR thick subgrade and subbase planned such determination can be seen in the picture below.

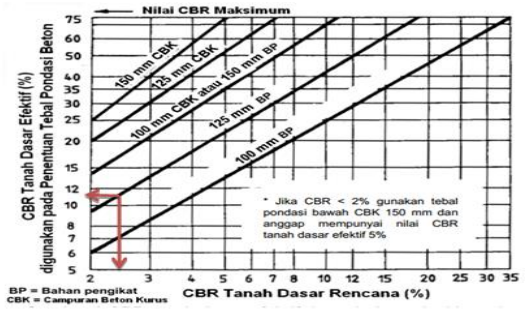


Figure 7. Basic Land CBR effective and thick subbase

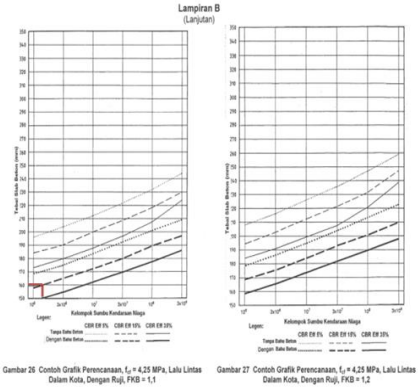
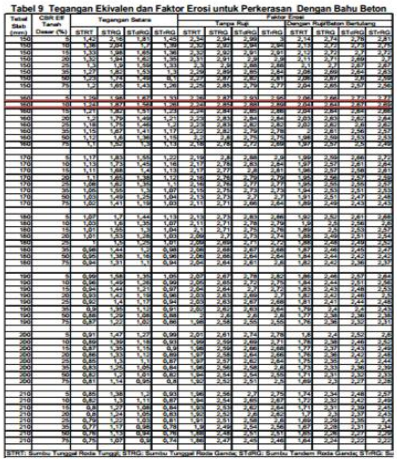


Figure 8. graphic design pavement thickness FCF = 4 MPa, traffic in the city, with a trellis, FKB = 1.1

To determine the voltage and erosion factors are based on estimates of CBR effectively and pavement thickness that can be seen in Table 4.10. below:

Table 12. Equivalent voltage and erosion factor for Pavement with concrete shoulders



By determining the voltage equivalent (TE) and Erosion Factor (FE) can be determined factor stress ratio (FRT) for each - each load per wheel such detention plan table 13 following:

FRT = TE / FCF

Table 13. Fatigue and Erosion Analysis

Jenis Sumbu	Beban Sumbu ton (kN)	Beban Rencana Per Roda (kN)	Repetisi yang terjadi	Faktor Teg. Dan Erosi	Analisa Fatik		Analisa Erosi	
					Repetisi Ijin	Persen Rusak (%)	Repetisi ijin	Persen Rusak (%)
(1)	(2)	(3)	(4)	(5)	(6)	(7)=(4)*100 /(6)	(8)	(9)=(4)*100 /(8)
STRT	2 (20) 4 (40) 5 (50) 6 (60)	11,00 22,00 27,50 33,00	7.120 7.120 234.967 462.815	TE = 1,24 FRT =0,31 FE = 2,04	TT TT TT TT	0 0 0 0	TT TT TT TT	0 0 0 0
STRG	8 (80)	22,00	223.380	TE = 1,87 FRT = 0,47 FE = 2,64	TT	0	TT	0
STdRG	14 (140)	19,25	460.721	TE = 1,56 FRT = 0,39 FE = 2,67	TT	0	TT	0
TOTAL					0% < 100%		0% < 100%	

Keterangan: TE = tegangan erosi; FRT = faktor rasio tegangan; FE = faktor Erosi; TT = tidak terbatas

E. CALCULATION OF REINFORCING

- Thick Plate (h) : 16 cm
- width of the plate (L) : 4 x 3.5 m (for 4 lanes) Without median
- roadside : concrete shoulders (1 m)
- Length Plates (P) Continued concrete category (BBDT) variation of 8-15 m Here taken:15 m
- coefficient of friction between the concrete slab with the subbase(μ):1.5
- Voltage plan of melting steel (Fy) : 240 MPa
- $F_s = 0.6 \times F_y = 0.6 \times 240 = 144$ MPa
- E_s / E_c : 6
- Gravity (g) : 9.81 m / s
- weight content of reinforced concrete: 2400kg / m^3

1. Reinforcement elongated

$$As^{needed} = \frac{\mu .L .M .g\ h}{2\ Fs}$$

$$As^{necessary} = \frac{1,5\ x\ 16\ x\ 2400\ x\ 9,81\ x\ 0,16}{2\ x\ 144}$$

As^{needed} = 340.284 mm^2/ m wide.

As_{min} = 0.14% x Size Plates (SNI 91 ')

As_{min} = 0.14% x 16 x 1000 = 259 mm^2/ m

Width < $axles^{need}$

Used reinforcement diameter □ 12 to 300 mm → As = 377 mm^2/ m '> As^{needed} = 340.284 mm^2/ m' ok!

2. Transverse reinforcement

$$As^{need} = \frac{\mu .L .M .g\ h}{2\ Fs}$$

$$As^{necessary} = \frac{1,5\ x\ 16\ x\ 2400\ x\ 9,81\ x\ 0,16}{2\ x\ 144}$$

As^{needed} = 362.97 mm^2/ m wide.

As_{min} = 0.14% x Size Plates (SNI 91 ')

As_{min} = 0.14% x 185 x 1000 = 259 mm^2/ m

Width <$axles^{need}$

Used reinforcement diameter □ 12 to 300 mm → As = 377 mm^2/ m '> As^{needed} = 362.97 mm^2/ m ok!

Use wire mesh □ 10-200 mm → As = 393 mm^2/ m in width (transverse or longitudinal)> 362.97 or 340.284

F. CALCULATION OF VOLUME OF WORK

Table 14. Calculation of Volume

PERHITUNGAN VOLUME
PROYEK PEMBANGUNAN JALAN UTAMA PLTU TANJUNG JATI A
DESA PENGARENGAN KEC. PANGENAN KAB. CIREBON

NO	URAIAN PEKERJAAN	RUMUS	RUMUS					VOLUME PEKERJAAN	
			P	L	T	Σ	@	JUMLAH	SATUAN
I.	**PEKERJAAN PERSIAPAN**								
1	Pengukuran dan pemasangan bouwplank	P	3,300.00					3,300.00	M'
2	Pembuatan direksiket dan gudang	PxL	8.00	5.00				40.00	M2
3	Dokumentasi dan Pelaporan	Σ				1.00		1.00	Ls
4	Pembuatan papan nama proyek 1 x 1,2 m	@					1.00	1.00	buah
II.	**PEKERJAAN LAPIS PONDASI BAWAH**								
1	Pek. Lean rolled concrete (beton kurus)	PxLxT	3,300.00	16.00	0.13			6,600.00	M3
2	Pek. Sound Sreaker (Plastik)	PxL	3,300.00	16.00				52,800.00	M2
III.	**PEKERJAAN PEMBESIAN / TULANGAN**								
1	Pembesian dan Pemasangan Weirmesh Φ16 Tulangan memanjang dan melintang	Σ				612,054.00		612,054.00	Kg
2	Pembesian Dowel Φ28	Σ				11,422.95		11,422.95	Kg
3	Pembesian Tie Bar Φ16	Σ				37,445.06		37,445.06	Kg
IV.	**PEKERJAAN PERKERASAN**								
1	Perkerasan Jalan Beton K-300	PxLxT	3,300.00	16.00	0.16			8,448.00	M3
2	Pek. Joint Sealer	Σ				6,804.00		6,804.00	M'
3	Curing Compound	PxL	3,300.00	16.00				52,800.00	M2
V.	**PEKERJAAN FINISHING**								
1	Pek. Marka Jalan Thermoplastic	Σ				1,254.00		1,254.00	M2

G. BUDGET PLAN (RAB)

Table 15. Recapitulation BudgetProject

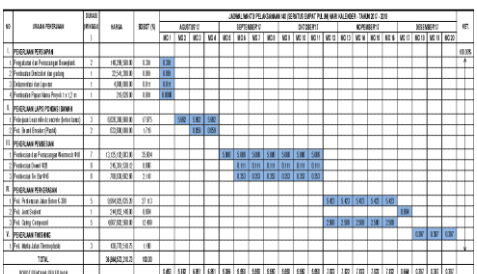
RENCANA ANGGARAN BIAYA PERKERASAN KAKU (RIGID PAVEMENT)
JALAN UTAMA PLTU TANJUNG JATI A

No	Uraian / Item Pekerjaan	Jumlah Biaya (Rp)	Keterangan
I	PEKERJAAN PERSIAPAN	167,060,326.00	
II	PEKERJAAN LAPIS PONDASI BAWAH	7,259,968,980.00	
III	PEKERJAAN PEMBESIAN	14,151,384,144.78	
IV	PEKERJAAN PERKERASAN	14,847,380,341.20	
V	PEKERJAAN FINISHING	438,778,518.75	
	JUMLAH	36,864,572,310.73	
	PAJAK PERTAMBAHAN NILAI (PPN) = 10 %	3,686,457,231.07	
	JUMLAH TOTAL	40,551,029,541.80	
	DIBULATKAN	40,551,030,000.00	
	Terbilang : *EMPAT PULUH MILYAR LIMA RATUS LIMA PULUH SATU JUTA TIGA PULUH RIBU RUPIAH*		

H. SCHEDULING PROJECT PREPARATION

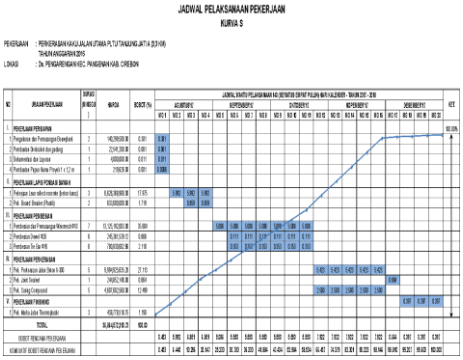
1. analysis Bar Chart

Based Planning and the results count so if using analysis bar chart is as follows:



2. analysis of the S curve

Based Planning and Calculation result Weight then if using analysis of S curve is as follows:



3. Network / Network Planning using analysis CPM

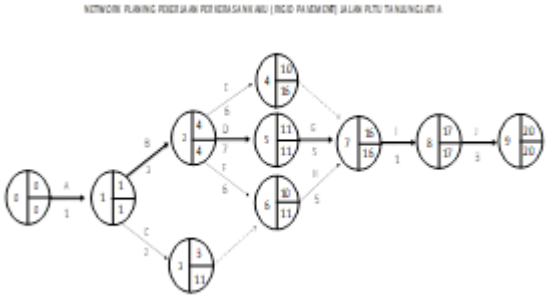


Figure 9. Calculation result Diagram network CPM

I. PLANNING CALCULATION OF CASH FLOW PROJECT

Table 16. Cash flow Project / Cashflow

ARUS KAS (*CASHFLOW*)
PROYEK PEMBANGUNAN JALAN UTAMA PLTU TANJUNG JATI A
Ds. PENGARENGAN KEC. PANGENAN KAB. CIREBON

PERIODE : AGUSTUS s/d DESEMBER 2017
DURASI : 20 Minggu
RAB : Rp 36,864,572,310.73

PERIODE		RENCANA PROGRES		RENCANA ARUS KAS		KUMULATIF
AGUSTUS - DESEMBER 2017		MINGGU %	KUMULATIF %	MINGGU	BULANAN	
AGUSTUS 2017	1	0.453	0.453	167,060,325.14		167,060,325.14
	2	5.992	6.445	2,208,789,658.69		2,375,849,983.83
	3	6.851	13.296	2,525,589,674.00		4,901,439,657.83
	4	6.851	20.147	2,525,589,674.00	7,427,029,331.83	7,427,029,331.83
SEPTEMBER 2017	5	5.086	25.233	1,875,027,442.64		9,302,056,774.47
	6	5.550	30.783	2,046,059,446.21		11,348,116,220.68
	7	5.550	36.333	2,046,059,446.21		13,394,005,057.66
	8	5.550	41.884	2,046,059,446.21	8,013,205,781.28	15,440,235,113.11
OKTOBER 2017	9	5.550	47.434	2,046,059,446.21		17,486,294,559.32
	10	5.550	52.984	2,046,059,446.21		19,532,354,005.53
	11	5.550	58.534	2,046,059,446.21		21,578,413,451.75
	12	7.922	66.457	2,920,505,644.30	9,059,683,982.94	24,498,919,096.05
NOPEMBER 2017	13	7.922	74.379	2,920,505,644.30		27,419,424,740.35
	14	7.922	82.301	2,920,505,644.30		30,339,930,384.65
	15	7.922	90.223	2,920,505,644.30		33,260,436,028.96
	16	7.922	98.146	2,920,505,644.30	11,682,022,577.21	36,180,941,673.26
DESEMBER 2017	17	0.664	98.810	244,852,129.96		36,425,793,803.21
	18	0.397	99.207	146,259,490.22		36,572,053,293.43
	19	0.397	99.603	146,259,490.22		36,718,312,783.65
	20	0.397	100.000	146,259,490.22	683,630,600.60	36,864,572,273.86
JUMLAH					36,864,572,310.73	36,864,572,310.73

V. CONCLUSIONS AND RECOMMENDATIONS

V.1 Conclusion

From the study of the analysis that has been done can be drawn some conclusions as follows:

1. Construction of Main Street Tanjung Jati A use Planning rigid pavement (rigid pavement) using this type of concrete pavement cement bersam bung with reinforcement in accordance with the Planning Guidelines Cement Concrete Pavement 2003 Department of Housing and Infrastructure Wliayah.
2. In accordance with CBR Effective and Expense Repetition Calculation axis has been calculated, the obtained plate thickness for rigid pavement 160 mm or 16 cm. The thick, were considered because of the result of analysis Fatigue and erosion have been calculated, percent (%) less damaged than 100%.
3. Under the Budget Plan (RAB) Main Road Construction Tanjung Jati A less costly for Rp.36,864,572,310.73 Spelled*(ThirtySix Billion Eight Hundred Sixty Four Million Five Hundred Seventy Two Thousand Three Hundred*Ten)
4. based on schedule and the weight of the job which had been planned, cash flow or cash flow that most expenditure is in november and must be considered (cost control) that does not exceed a predefined aruskas schedule and the weight of the job.
5. In accordance with the Network Planning Diagram Sheduling has been made apparent that the work which crosses the critical path that preparatory work, lean concrete subbase (lean concrete), weirmesh work, Pavement Concrete K-300, sealent joint work and the work of thermoplastic road markings.

V.2 RECOMMENDATIONS

Based on the analysis the authors can provide suggestions as follows:

1. Methods - practical methods that have been implemented in the field, should continue to refer to the ISO standards have been set to avoid a technical failure.
2. At the time of execution in the field are expected to conform to the image of planning that has been planned.
3. Budget planning and execution time should be well planned so that the timely and efficient implementation costs.
4. On the Cost Calculation stats need for evaluation of the prices enacted government and private, be it the price of materials and wages of workers in the city of Cirebon.
5. Need for studies on the identification of the problems that will occur in the project because it will affect the project implementation time scheduling and planning fees.

REFERENCES

DEPARTMENT Infrastructure, *Planning Cement Concrete Pavement*(PdT-14-2003),BSN 2003

Saodang, Hamirhan. 2005 *Design of Pavement*Road,Nova, Bandung.

MOHAMAD ANAS ALY, 2004. *Teknolngi Cement Concrete*Pavement, 2004,and the Technology Development Foundation Manaiemen.

MWWITCZAK, *Pavement Design Seminars*1979

Setiawan, Dani. 2016. *Analysis of Construction Management Toll Flyover (FLY OVER) Tanjung Priok Package NSSection* Cirebon5:Technical library

Alkarim, Nurfatah. 2016. *Building Project Management Analysis of Financial Asset Management Revenue of City of Cirebon.* Cirebon: Mechanicallibrary.

http://pengertianbahasa.blogspot.co.id/2013/02 /pengertian-analisis.html

http://www.sipilpoin.com/2016/11/rencana-anggaran-biaya-rab-proyek html

http://kangnas.blogspot.co.id/2013/05/pengerti an-manajemen-proyek.html