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MANAGEMENT ANALYSIS OF THE PROJECT OF MUHAMMADIYAH BANDUNG UNIVERSITY

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Abstract

Project management is all planning, implementation, controlling and coordination a project from early the (idea) the end project to en sure of the project appropriately time, money and quality. Selection method scheduling project is also one the very policy note in order to obtain result in according with the original plans.

This thesis specifically discuss how project management planning the construction of Muhammadiyah Bandung University. The research was conducted by means of a survey into the field and study of literature.

This thesis analysis includes volume calculation, Needs of labor, materials and equipment, Bar chart, Cash flow, S Curve, method of CPM (*Critical Path Method*) is a method of identifying critical work paths or items. Forwards calculation, backwards calculation, free float and total float.

Keyword: Project Management, Bar Chart, S Curve, Critical Path Method.

I. PRELIMINARY

A. BACKGROUND

Addition of population in Bandung City, West Java and development of mankind activity pushing implementation the development to fulfill mankind basic needs as property, offices and other infrastructure. Considering that problem Bandung City needs a proper university that can provide education service for society.

The University of Muhammadiyah Bandung realizes that the challenge in providing educational services is increasing, considering the number of residents in Bandung City and outside the city who want to get an education in Bandung City. Therefore the University of Muhammadiyah held UMB development to support education based Islamic facilities in Bandung.

B. FOCUS PROBLEM

Calculating the volume of work, the cost required for project implementation identifies the network in the Muhammadiyah Bandung University Development Project.

C. LIMITS of RESEARCH

In the proposed thesis entitled "CONSTRUCTION MANAGEMENT ANALYSIS OF MUHAMMADIYAH BANDUNG UNIVERSITY" there should be limitations of writing or scope of the following research conducted in the preparation of the thesis. Limitations of issues to be discussed include:

a. Volume calculation and cost budget plan (RAB) of work for the ground floor, 1st – 13th floor, rooftop structure;
b. The method of cost control analysis used are Barchart and S-Curve
c. The network analysis method used in the project research is Critical Path Method.

D. FORMULATION OF THE PROBLEM

a. How to analyze the calculation of the volume of work on the construction of Muhammadiyah Bandung University?
b. How are the time and cost performance of the Muhammadiyah Bandung University?
c. What is the form of the network Muhammadiyah Bandung University?

E. PURPOSE OF RESEARCH

1. Knowing the comparative analysis of the project with the analysis of the researcher ;
2. To determine the network or network implementation of Muhammadiyah Bandung University development ;
3. Knowing the project implementation is in accordance with the previously planned ;
4. To find out a job that includes a critical job.

F. USEFULNESS OF RESEARCH

1. The theoretical usefulness
2. The practical usefulness

II. BASIC THEORY

A. GENERAL DEFINITION

1. DEFINITIONS of ANALYSIS

Analysis is an effort in observing in detail on a matter or thing by way of outlining the constituent components or compile the component to be examined further. Analysis word is widely used in various fields of knowledge, science, chemistry, and linguistics.

2. DEFINITION of MANAGEMENT

A science about the art of leading organizations comprising the activities of planning, organizing, implementing and controlling towards source – limited resources in an attempt to achieve the goals and objectives effective and efficient (Ir. Abrar Husein., MT, Manajemen Proyek, p.2).

3. DEFINITION of PROJECT

Project an individual or collaborative enterprise that is carefully planned to achieve a particular aim. Planned set of interrelated tasks to be executed over a fixed period and within certain cost and other limitations.

A project consists of a concrete and organized effort motivated by a perceived opportunity when facing a problem, a need, a desire or a source of discomfort (e.g., lack of proper ventilation in a building).

4. PROJECT MANAGEMENT DEFINITIONS

According to the NINE (Project Management Body of Knowledge) in the book Budi Santoso (2009:3) project management is the application of knowledge (knowledge), skills (skills), tools (tools) and techniques (techniques) in project activities to meet needs – the needs of the project.

B. PLANNING, ORGANIZING, IMPLEMENTING AND MONITORING THE PROJECT

1. PROJECT PLANNING

Planning is a stage in project management are trying to lay the Foundation goals and objectives while preparing all technical and administrative programs to be implemented in the. The goal of planning is to do the effort to meet the requirements of the project specifications that are defined in terms of cost, quality, and time, plus provided the safety factor. All activities must meet the criteria of SMART to make it more effective and efficient.

Specific: the plan should be clear intent, should approach the goal should not be widened and sidetracked.

Measurable: all plans are made must be clearly measurable.

Achievable: the plan should be achieved.

Realistic: in accordance with the resources used from the existing budgetary and human resources.

Time: there is a limit on the time, day, month, or yearly that can be planned. can be evaluated for a better future.

2. PROJECT ORGANIZING

The Organization of the project is as a means in the achievement of the objectives by regulating and organizing resources, labor, materials, equipment, and capital effectively and efficiently by applying the management system according to needs of the project. (IR. Abrar Husein, MT, Manajemen Proyek, p. 20)

In order that the objectives of the organization can be achieved, the process is done as follows:

1. Identification and Division Activities
2. Grouping In Charge Of Activities
3. Determination of authority and Responsibility
4. Compile The Control Mechanism

3. PROJECT IMPLEMENTATION and MONITORING

This activity is the implementation of the plan has been established, with the real work of stage performing physical or nonphysical so that the end product conforms with the goals and objectives that have been set. Due to its planning conditions still forecast and subjective and still needs refinement, this often occurs in the stage of change – a change of plans that have been set. (IR. Abrar Husein, MT, project management, p. 3)

Controlling ctivities performed in this step is intended to ensure that the programs and work rules that have been set within the most minimal deviation and most satisfying results.

C. METHODS of DATA ANALYSIS

1. BARCHARTS

a. Bar Chart

Until the introduction of the method of beam by H.L. Gantt chart in the year 1917, considering there has never been a systematic and analytical procedure in the aspect of planning and controlling projects. Chart of the beam are arranged with the intent of identifying the elements of a sequence in time and plan an activity, which consists of the start time, the time of completion, and at the time of reporting.

Chart of the beam can be created either manually or by computer. This chart is arranged on the X and Y coordinates in an axis perpendicular to X, note the work or work packages or elements from the results of parsing the scope of a project, and drawn as a beam. While in a horizontal axis Y, written a unit of time, e.g. day, week or month.

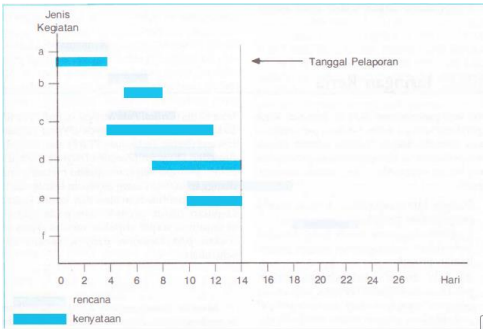


Figure 1. Bar Chart

b. S CURVE

Curve – S is a curve arranged to show the relationship between the value of the cumulative costs or hours-people (man-hours) that has been used or percentage (%) of completion of work over time. Thus on the curve – S can be described the progress of the volume of work completed throughout the project or work in a part of the project. By comparing the curve with similar curves drawn up on the basis of planning, it will soon be seen clearly in the event of irregularities.

NO	Pekerjaan	Harga pekerjaan	durasi	bobot (%)	hari						grafik
					1	2	3	4	5	6	
1	Persiapan	Rp 100,000.00	6	9.09	1.52	1.52	1.52	1.52	1.52	1.52	100
2	Galian tanah	Rp 150,000.00	2	13.64		6.82	6.82				80
3	Lantai kerja	Rp 200,000.00	2	18.18		9.09	9.09				60
4	Urugan pasir	Rp 150,000.00	1	13.64			13.64				40
5	Pasangan batu kali	Rp 400,000.00	3	36.36			12.12	12.12	12.12		20
6	Urugan kembali	Rp 100,000.00	1	9.09					9.09		0
	Jumlah	Rp1,100,000.00		100.00	1.52	17.42	43.18	13.64	22.73	1.52	
	jumlah akumulatif				1.52	18.94	62.12	75.76	98.48	100.00	

Figure 2. S Curve

c. CRITICAL PATH METHOD (CPM)

Critical Path Method (CPM) is project activity model is depicted in the form of a network.

Activities that are described as the point on the network and the event that marks the beginning or end of the activity described as a bow or a line between points. CPM delivers the following benefits:

- Provides a graphical view of the flow of the activities of a project,
- Predict the time required to complete a project,
- Shows the flow of activities where important in maintaining the schedule of completion of the project.

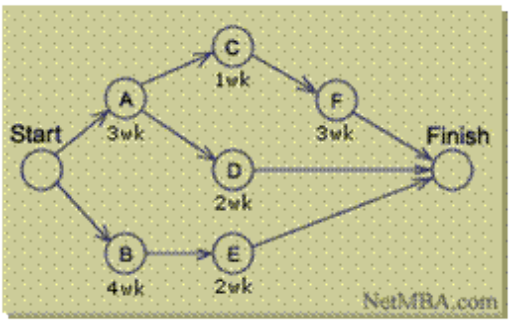


Figure 3. CPM

2. CASHFLOW

Cashflow is one of the planning product among other planning products in the construction planning, such as scheduling, construction method, and implementation budget (Asiyanto, 2005).

3. COST BUDGET PLAN

The cost budget plan is the calculation of the forecast of the many costs required for materials, wages, and

other costs associated with project implementation based on drawings and job specifications. A budget plan is required as a guideline for the implementation process of development to be carried out effectively and efficiently.

The cost-creation process should be carefully calculated, meticulously and in accordance with the terms. And basically, the budget of building costs have differences in each region due to differences in material prices and wages of labor.

III. METHOD AND OBJECT OF RESEARCH

A. RESEARCH METHOD

The research method used is a qualitative method. Qualitative research methods are word-shaped data, schematic, and the image is done by survey and observe directly to the Development Project University of Muhammadiyah Bandung.

B. WRITING METHODS

The planning method begins by collecting and studying the literature related to management. Collect field data to be used as data in the object. The method used in this writing as follows:

- Study the literature by collecting references and methods needed as a literature review either from books or other media (internet).
- Processing and analysis of data obtained.
- Taking conclusions and suggestions from the results of the study.

C. TYPES and SOURCES of DATA

1. Primary Data is a data created by researchers for the special purpose of solving the problems that are being handled. The data was collected by researcher directly from the first source or object where research is done.
2. Secondary Data is a data that has been collected for purposes other than to solve the problem at hand. This data can be found quickly. In this study, the secondary data source is literature, articles, journals and internet sites relating to research conducted.

D. COLLECTING DATA METHODS

In conducting the research, the data collected will be used to solve the existing problem so that the data must be trusted and accurate. The method used for collecting data used in this study are :

a. Interview as a search and information gathering technique are conducted by visiting trusted sources such as contractor executives at project sites, executive consultants, and other agencies. About the total of bricks, sand, metal, iron, etc.
b. Observatio Is to observe and record accurately and systematically the events and activities at the project site. About how to make tie beam, pile cap, columns, plate, beam, etc.
c. Literatur Review is the collection of data from the literature books, journals, the internet, and previous research related to the research.
   1) Legawa, Roza, 2016. Thesis. **ANALISIS MANAJEMEN KONSTRUKSI PEMBANGUNAN GEDUNG GRAMEDIA WORLD HARAPAN INDAH BEKASI**. Swadaya Gunung Jati University, Cirebon.
   2) Sanjaya, Andi, 2017. Thesis. **ANALISIS MANAJEMEN KONSTRUKSI PEMBANGUNAN GEDUNG PROMOSI dan PEMASARAN DINAS PERINDUSTRIAN, PERDAGANGAN, KOPERASI, dan UMKM CIREBON.** Swadaya Gunung Jati University, Cirebon.
   3) Ma'rifatullah, Hangger Muhammad, 2018. Thesis. **THE CONSTRUCTION MANAGEMENT ANALYSIS OF THE KARAWANG**

GOVERNMENT OFFICE. Swadaya Gunung Jati University, Cirebon.

4) Asiyanto (2010). **Construction Project Cost Management**, Jakarta: PT. Pradnya Paramitha.
5) Husen, Abrar (2010). **Manajemen Proyek, Yogyakarta**: Penerbit Andi.

E. RESEARCH LOCATION

The location will be used as a case study of Development Project University of Muhammadiyah Bandung at Jl. Soekarno - Hatta Numb.09, Cipadung Kidul, Bandung.

Figure 4. Research Location

F. RESEARCH FLOW

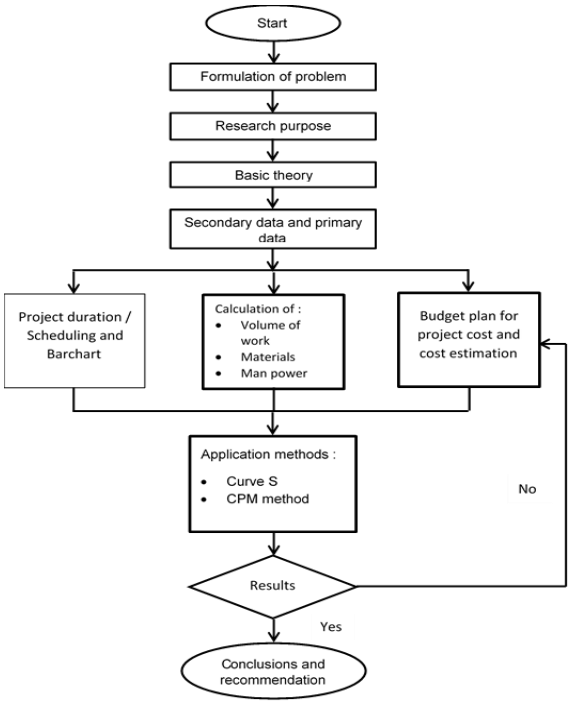


Figure 5. Cashflow

IV. RESULT OF RESEARCH AND DISCUSSION

A. OVERVIEW of THE PROJECT

The construction of the Muhammadiyah University of Bandung is located at JL. Soekarno – Hatta Bandung, the purpose-built building was to face competition and the growth of education in the city of Bandung. The building is composed of 15 floor that serves to do teaching and learning activities, administration, etc.

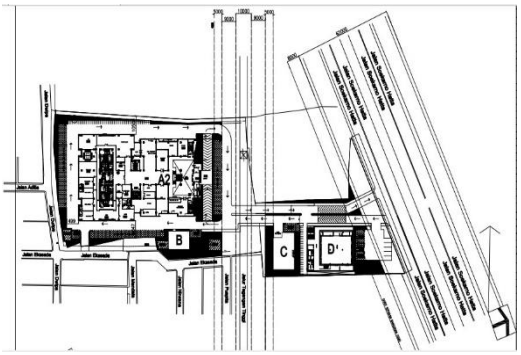


Figure 6. Site Plan of UMB

B. PROJECT DATA

Project data is data that describes the work of a project development. Project data can be either public data project and the technical data of the project. General project data is data that describes the work of development projects.

a. **Project Name:** The construction of Integrated Design and Build Campus Muhammadiyah Bandung University
b. **Project Location:** Jl. Soekarno – Hatta, Cipadung, Bandung, West Java
c. **Project Owner:** Muhammadiyah University Of Bandung
d. **The Contractor Designed and Build:** PT. PP URBAN
e. **Construction Management:** PT Fajar Nusa Consultant
f. **Contract Value :** Rp. 203.999.000.000
g. **The Implementation guarantee:** 10% of the contract value
h. **Type Of Contract:** Design and Build
i. **Type Of Contract:** Lumpsum and Unit Price (the stake)
j. **Time Of Implementation:** 540 days October 10th 2017 calendar – April 1st, 2019 (divided into 2 stages)

Phase I (October, 10th 2017 – January, 27th 2019)
Phase II (January, 28th 2019 – April, 1st 2019)

k. **Mass Maintenance:** 180 calendar days, April, 2nd 2019 –September, 29th 2019

Technical data is data that describes the technical specifications of the job.

a. Land Area: 13,543 m^2
b. Building Area: 36,834 m^2
c. Number Of Floors: 15 floors (GF, Lt. 1 – Lt. 13, Lt. roof)
d. Type of Building: Main Building (University) and the mosque
e. The Structure Of The Building: Reinforced Concrete
f. Foundation Type: Pile Foundation
g. The Quality Of The Concrete Material: K-350

Figure 7. Building Plan of UMB

C. JOB DESCRIPTION

a. Preparation Work
1. Cleanup the land
2. Measurement and installation of bouwplank

b. Bottom Structure
1. Installation of pile foundation
2. Excavation of pile cap and tie beam
3. Work floor under the pile cap and tie beam
4. Compacting

c. Upper Structure
1. Pile cap and tie beam
2. Column
3. Slab
4. Beam
5. Stairs

d. Architecture Work
1. Wall, concrete, and finish coat work
2. Ceramic installation
3. Sills, door and window installation
4. Plafond installation
5. Railing stairs installation
6. Front and behind view installation

e. Mechanical, Electrical, and Plumbing Work
1. Electrical installation
2. Clean, dirty and recycle water installation
3. TV antennas installation
4. AC installation
5. Fire alarm installation

D. METHOD OF WORK IMPLEMENTATION WORK

1. PREPATORY WORK

Cleaning Location, Measurement and Installation of Bowplank, Installation of Safety Fence, Scaffolding, Site Office/Warehouse,Mobilization,Documentation.

2. Land and Foundation Work

Further work is being undertaken is the earthwork and Foundation, this work is very important because the building that stands above the Foundation definitely. The Foundation itself is useful to pass on the burden to the ground and the two components must be precision in terms of size and composition

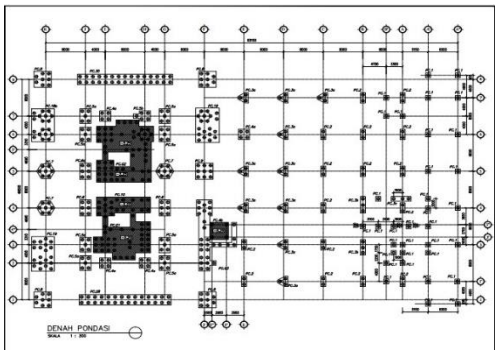


Figure 8. Foundation Plan of UMB

3. STRUCTURE WORK

a) PILE CAP

The job execution procedure of the pile cap in the project is entirely the same, although the dimensions and number of reinforcements in each type of pile cap are different.

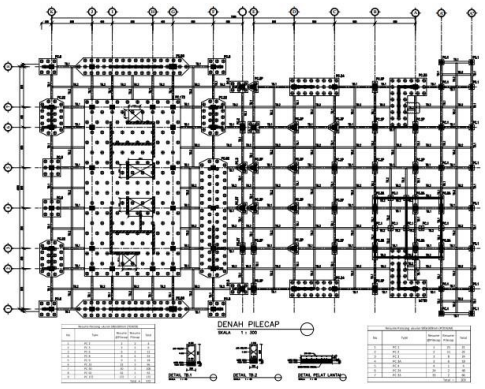


Figure 9. Pile Cap Plan of UMB

b) TIE BEAM

The job execution procedure of the sloof in the project is entirely the same, although the dimensions and number of reinforcements in each type of sloof are different.

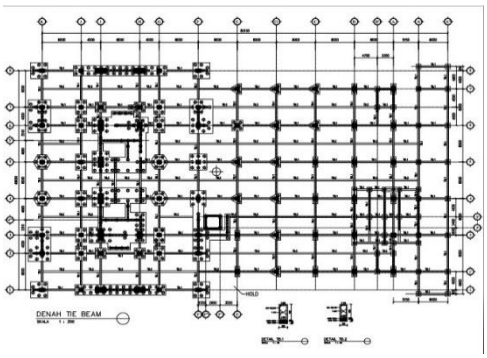


Figure 10. Tie Beam Plan of UMB

c) COLUMN

The job execution procedure of the columns in the project is entirely the same, although the dimensions and number of reinforcements in each type of column are different.

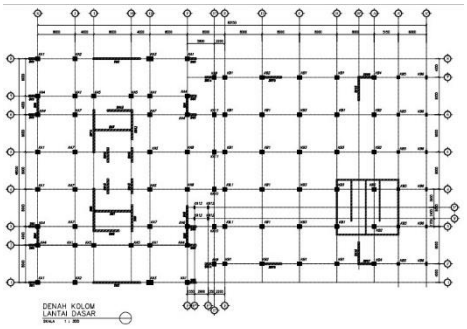


Figure 11. Column Plan of UMB

d) SLAB, BEAM, STAIRS

The job execution procedure of the beam in the project is entirely the same, although the dimensions and number of reinforcements in each type of beam are different.

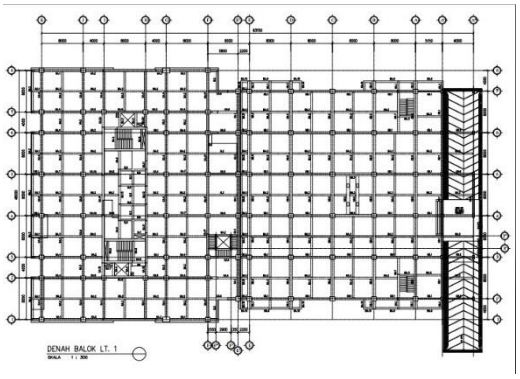


Figure 12. Beam Plan of UMB

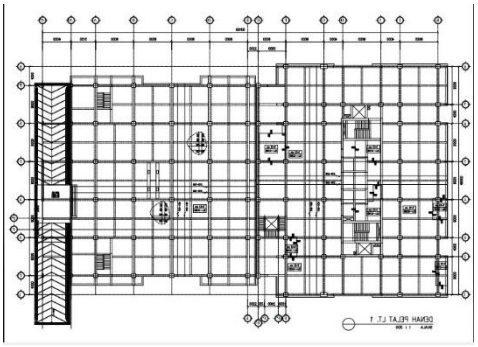


Figure 13. Slab Plan of UMB

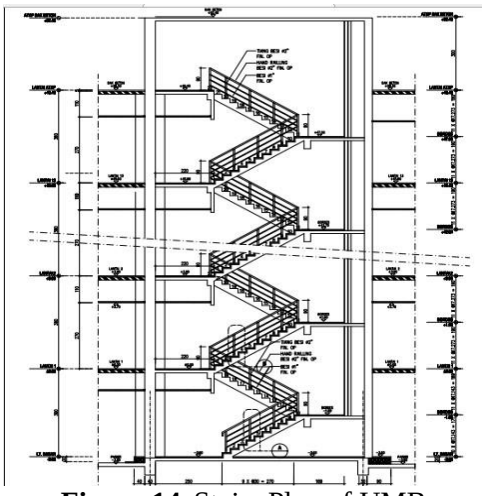


Figure 14. Stairs Plan of UMB

4. ARCHITECTURE WORK

a) Wall, Concrete, Finish Coat
b) Floor Installation
c) Sills, Door, Window
d) Plafond
e) Painting
f) Railing Stairs
g) Front and Back View
h) Rooftop

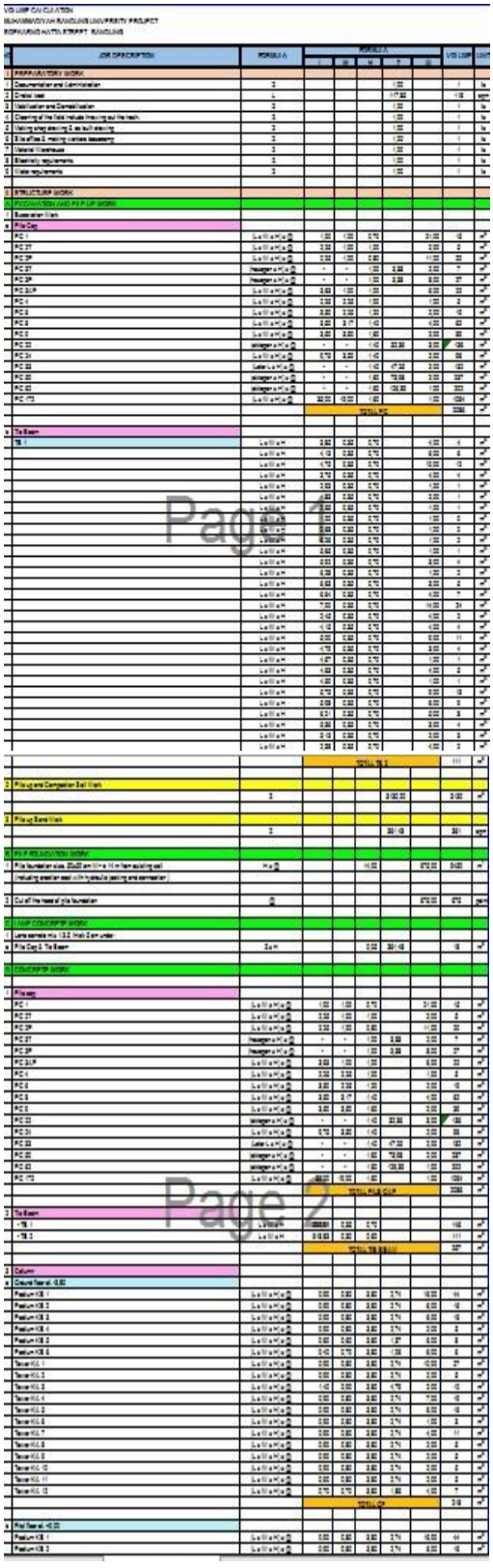
5. MECHANICAL and ELECTRICAL WORK

a) Electrical Installation
b) Dirty and Clean Sanitair
c) Mechanical Installation

E. CALCULATION of VOLUME, RAB, TIME, PROJECT SCHEDULE

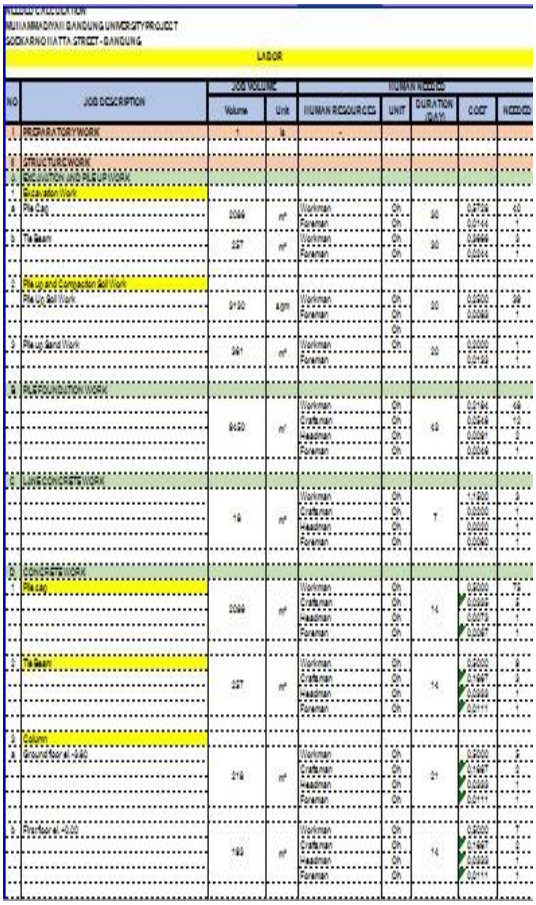
1. VOLUME CALCULATION

Table 1. *Sample of Volume Calculation*



2. BREAKDOWN MATERIALS, EQUIPMENT, and LABOR NEEDS

Table 2. *Sample Calculation of Labor*



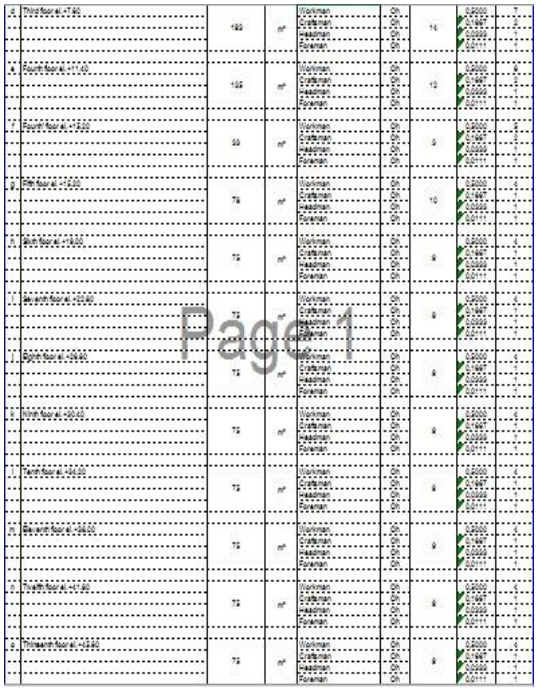


Table 3. *Sample Calculation of Material*

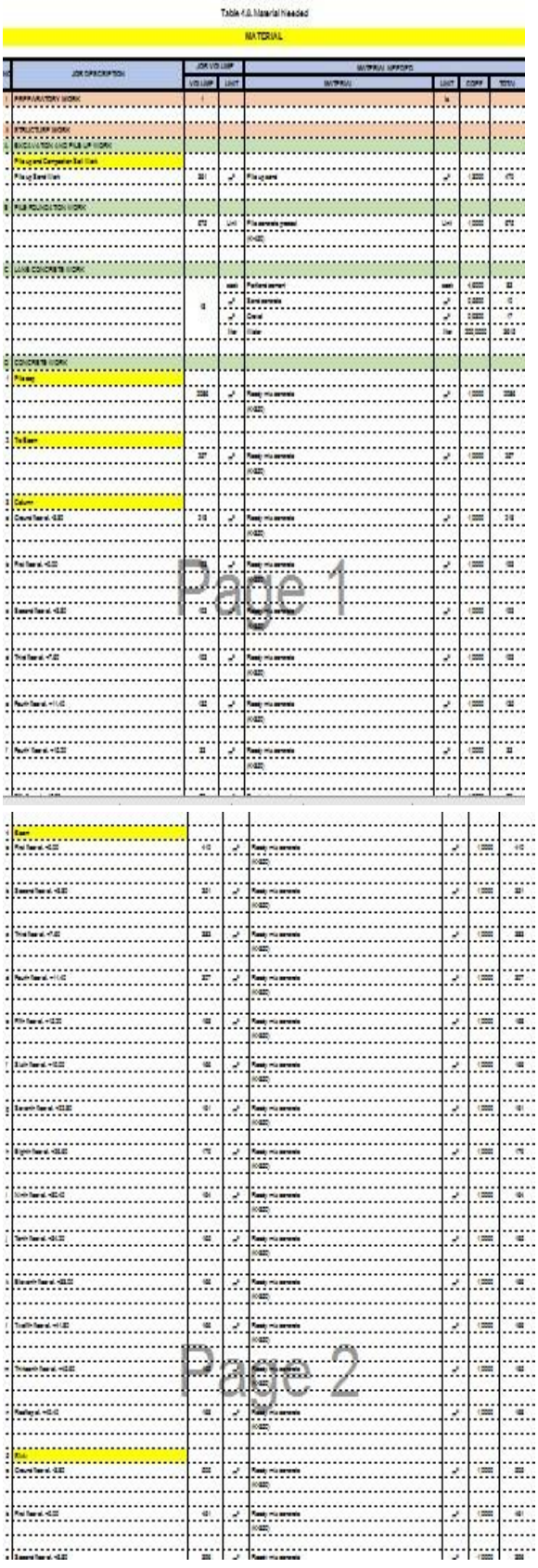


Table 4. *Sample Calculation of Equipment*

NEEDED CALCULATION
MUHAMMADIYAH BANDUNG UNIVERSITY PROJECT
SOEKARNO HATTA STREET - BANDUNG

EQUIPMENT

NO	JOB DESCRIPTION	JOB VOLUME		EQUIPMENT NEEDED			
		VOLUME	UNIT	TOOLS	UNIT	TOTAL	COST
I	PREPARATORY WORK	1			ls		
				Tower Crane	Unit	1	1,00
				Excavator	Unit	3	1,00
II	STRUCTURE WORK						
A	EXCAVATION AND PILE UP WORK						
1	Sloof and Pile Cap Excavation Work	2944	m3	Shovel	Unit	9	1,00
				Cart	Unit	9	1,00
				Pengki	Unit	9	1,00
				Dump Truck	Unit	3	1,00
2	Pile up and Compaction Soil Work						
a	Raise the building h.160 cm	9190	m3	Stamper	Unit	4	1,00
				Shovel	Unit	20	1,00
				Cart	Unit	6	1,00
				Dump truck	Unit	4	1,00
				Crowbar	Unit	10	1,00
				Pengki	Unit	5	1,00
3	Pile up Sand Work	391	m3	Shovel	Unit	2	1,00
				Cart	Unit	1	1,00
				Pengki	Unit	1	1,00
B	PILE FOUNDATION WORK						
		673	Unit	Jack in Pile machine	Services	673	1,00
				Crowbar	Unit	2	1,00
				Shovel	Unit	2	1,00
				Pengki	Unit	2	1,00
				Theodolite	Unit	1	1,00
C	LINE CONCRETE WORK						
		18	m3	Concrete mixer	Unit	1	1,00
				Spoon stirrer	Unit	3	1,00
				Bucket stirrer	Unit	3	1,00
D	CONCRETE WORK						
1	Pile cap	2086	m3	Trowel machine	Unit	1	1,00
				Vibrator	Unit	2	1,00
				Concrete pump	Unit	1	1,00
2	Tie Beam	237	m3	Trowel machine	m^3	1	1,00
				Vibrator	Unit	2	1,00
				Concrete pump	m^3	1	1,00
3	Column	1640	m3	Trowel machine	m^3	1	1,00
				Vibrator	Unit	2	1,00
				Concrete pump	m^3	1	1,00
4	Beam	9120	m3	Trowel machine	m^3	1	1,00
				Vibrator	Unit	2	1,00
				Concrete pump	m^3	1	1,00
5	Slab	2797	m3	Trowel machine	m^3	1	1,00
				Vibrator	Unit	2	1,00
				Concrete pump	m^3	1	1,00
7	GWT (Ground Water Tank)	60	m3	Trowel machine	m^3	1	1,00
				Vibrator	Unit	2	1,00
				Concrete pump	m^3	1	1,00
8	RWT (Rain Water Tank)	17	m3	Trowel machine	m^3	1	1,00
				Vibrator	Unit	2	1,00
				Concrete pump	m^3	1	1,00
9	Stairs	499	m3	Trowel machine	m^3	1	1,00
				Vibrator	Unit	2	1,00
				Concrete pump	m^3	1	1,00
10	Ramp and Drop Off	5	m3	Trowel machine	m^3	1	1,00
				Vibrator	Unit	2	1,00
				Concrete pump	m^3	1	1,00
F	FORMWORK WORK						
		66060	sqm	Scaffolding	Unit	6601	0,999
				Hammer	Unit	20	1,00
				Pliers	Unit	20	1,00
G	REINFORCED WORK						
1	Pile Cap	297714	kg	Bar cutter	Unit	1	1,00
				Bar bender	Unit	1	1,00
				Pliers	Unit	20	1,00
2	Tie Beam	68891	kg	Bar cutter	Unit	1	1,00
				Bar bender	Unit	1	1,00
				Pliers	Unit	20	1,00
3	Column	[illegible]	kg	Bar cutter	Unit	1	1,00
				Bar bender	Unit	1	1,00
				Pliers	Unit	20	1,00
4	Beam	719271	kg	Bar cutter	Unit	1	1,00
				Bar bender	Unit	1	1,00
				Pliers	Unit	20	1,00
5	Slab	499099	kg	Pliers	sheet	20	1,00
6	Shear Wall	296520	kg	Bar cutter	Unit	1	1,00
				Bar bender	Unit	1	1,00
				Pliers	Unit	20	1,00
7	GWT (Ground Water Tank)	19049	kg	Bar cutter	Unit	1	1,00
				Bar bender	Unit	1	1,00
				Pliers	Unit	20	1,00
8	RWT (Rain Water Tank)	3050	kg	Bar cutter	Unit	1	1,00
				Bar bender	Unit	1	1,00
				Pliers	Unit	20	1,00
9	Stairs	79909	kg	Bar cutter	Unit	1	1,00
				Bar bender	Unit	1	1,00
				Pliers	Unit	20	1,00

Page 1

F. BILL OF ITEM

Table 5. *Equipment Price*

No	Equipment	Unit	Price	
1	Tower Crane	Unit	IDR	1.731.280,00
2	Excavator	Unit	IDR	1.440.000,00
3	Dump truck	Unit	IDR	1.384.000,00
4	Jack In Pile machine	Services	IDR	37.000,00
5	Theodolite	Unit	IDR	200.000,00
6	Concrete mixer	Unit	IDR	294.000,00
7	Trowel machine	Unit	IDR	500.000,00
8	Vibrator	Unit	IDR	388.120,00
9	Concrete pump	Unit	IDR	1.859.520,00
10	Bar cutter	Unit	IDR	200.000,00
11	Bar bender	Unit	IDR	200.000,00
12	Welding generator	Unit	IDR	350.000,00
13	Katrol	Unit	IDR	295.000,00
14	Wrench	Unit	IDR	100.000,00
15	Scaffolding	Unit	IDR	50.000,00
16	Hammer	Unit	IDR	64.000,00
17	Pliers	Unit	IDR	43.000,00
18	Spoon stirrer	Unit	IDR	25.000,00
19	Bucket	Unit	IDR	5.000,00
20	Bucket stirrer	Unit	IDR	75.000,00
21	Shovel	Unit	IDR	50.000,00
22	Cart	Unit	IDR	352.110,00
23	Crowbar	Unit	IDR	56.130,00
24	Pengki	Unit	IDR	9.780,00
25	Stamper	Unit	IDR	100.000,00
26	Distance meter	Unit	IDR	60.000,00
27	String	Unit	IDR	5.000,00
28	Plummet	Unit	IDR	35.000,00
29	Sandpaper	Unit	IDR	9.000,00
30	Brush	Unit	IDR	20.000,00
31	Plamir	Unit	IDR	35.000,00
32	Mesin serut	Unit	IDR	300.000,00
33	Screwdriver	Unit	IDR	30.000,00
34	Couplers	Unit	IDR	75.000,00

(Source: Bandung City Government 2017)

Table 6. *Labor Price*

No	Labor	Unit	Price	
1	Workman	day	IDR	50.000,00
2	Excavate Craftman	day	IDR	55.000,00
3	Rough Stone Craftman	day	IDR	60.000,00
4	Soft Stone Craftman	day	IDR	50.000,00
5	Iron Craftman	day	IDR	55.000,00
6	Zinc Craftman	day	IDR	40.000,00
7	Rough Wood Craftman	day	IDR	45.000,00
8	Soft Wood Craftman	day	IDR	50.000,00
9	Paint Craftman	day	IDR	40.000,00
10	Pipe Craftman	day	IDR	40.000,00
11	Electric Craftman	day	IDR	40.000,00
12	Headman	day	IDR	60.000,00
13	Foreman	day	IDR	55.000,00

Table 7. *Sample Equipment Price*

No	Material	Unit	Price	
	STRUCTURE			
1	Pile Up Sand	m³	IDR	153.200,00
2	Pile concrete precast (K-450)	Unit	IDR	823.600,00
3	Pile up soil	m³	IDR	73.400,00
4	Bataco Formwork	sqm	IDR	109.900,00
5	Column, Shear Wall, GWT, and RWT Formwork	sqm	IDR	230.000,00
6	Slab and Ramp Formwork	sqm	IDR	235.000,00
7	Beam Formwork	sqm	IDR	246.000,00
8	Stairs Formwork	sqm	IDR	220.000,00
9	Deform Bar	kg	IDR	15.130,00
10	Concrete (K-125) Ready Mix	m³	IDR	862.470,00
11	Concrete (K-350) Ready Mix	m³	IDR	1.134.200,00
12	HB 350.350.12.19	kg	IDR	20.000,00
13	WF 400.200.8.13	kg	IDR	23.000,00
14	Pipe Ø2" Sch 80 t = 5,50 mm	kg	IDR	22.000,00
15	WF 300.150.6,5.9	kg	IDR	23.000,00

G. UNIT PRICE ANALYSIS

Unit price analysis is a method of calculating unit price construction work which was later elaborated in the need of building material, standard workers payment and rent or buy equipment for complete the construction work. Unit price analysis of this work is influenced by the number of coefficient that indicating the unit value of materials, unit value of tools, and unit value of labor wage. This is the example of project work unit price analysis:

Column formwork/m2 use plywood 12mm	Unit	Coef	Unit Price	Total Price
Material				
Plywood	m3	0,1909	120.000,00	22.908,00
Kaso Klam 4x6	m3	0,0306	1.000.000,00	30.600,00
Kaso Stut 5x7	m3	0,0091	1.000.000,00	9.100,00
Flax Yarn	gig	0,0500	2.500,00	125,00
Nails 5cm	kg	0,2440	8.500,00	2.074,00
Nails 10cm	kg	0,0916	7.500,00	687,00
			Total.a	65.494,00
Labor				
Workman	ht	0,2200	50.000,00	11.000,00
Craftman	ht	0,1100	45.000,00	4.950,00
Headman	ht	0,0220	60.000,00	1.320,00
Foreman	ht	0,0073	55.000,00	403,33
			Total.b	17.673,33
			Total .a+b	83.167,33

H. BILL of QUANTITY

RAB (Budget Plan) Building is the calculation of an estimate of the price required to build the building in terms of the needs of building materials and labor. RAB is the multiplication of the volume and unit price. While the unit price is from SNI which there is coefficient of work, materials, unit price and wage labors. RAB calculations as follows:

RECAPITULATION of BoQ			
NO	JOB DESCRIPTION	TOTAL PRICE	
1	Prepatory Work	IDR	361.747.400,00
2	Structure Work	IDR	74.606.997.186,62
3	Architect Work	IDR	73.842.574.091,94
4	MEP Work	IDR	31.300.370.335,00
5	Lift Work	IDR	3.593.520.000,00
TOTAL		**IDR**	**183.705.209.013,56**
PPN 10 %		**IDR**	**18.370.520.901,36**
TOTAL + PPN 10%		**IDR**	**202.075.729.914,92**
Rounding		**IDR**	**202.076.000.000,00**

I. PROJECT SCHEDULING

1. BARCHART

First is detailing the sequence of events by observing the start time and end time of the work.

Table 8. Work Duration

NO	Job Description	Duration (Week)
1	**Prepatory Work**	68
2	**Structure Work**	
a	Pile Concrete Precast	7
b	Excavation Work	
	Excavation Pile Cap	5
	Excavation Tie Beam	5
	Pile Up Soil Work	3
c	Bottom Structure	
	Pile Cap	8
	Tie Beam	8
	Pile Up Sand	3
	Land Concrete	1
d	Upper Structure	
	Ground Floor	10
	First Floor	8
	Second Floor	8

	Third Floor	8
	Fourth Floor	8
	Fifth Floor	8
	Sixth Floor	8
	Seventh Floor	8
	Eighth Floor	8
	Ninth Floor	8
	Tenth Floor	8
	Eleventh Floor	8
	Twelfth Floor	8
	Thirteenth Floor	8
	Rooftop Floor	8
	Steel Work	6
3	**Architect Work**	
	Ground Floor	12
	First Floor	12
	Second Floor	12
	Third Floor	12
	Fourth Floor	12
	Fifth Floor	12
	Sixth Floor	12
	Seventh Floor	12
	Eighth Floor	12
	Ninth Floor	12
	Tenth Floor	12
	Eleventh Floor	12
	Twelfth Floor	12
	Thirteenth Floor	12
	Rooftop	8
	ACP	25
4	**MEP Work**	36
5	**Lift Work**	5

To make the barchart, is by way of drawing a line or block starting from the first week and ended according the table above.

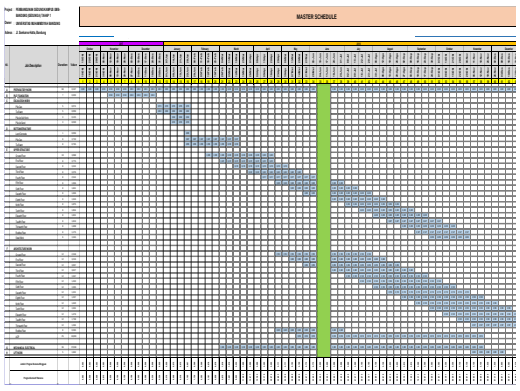


Figure 15. General Barchart

2. S CURVE

S curve graphically is the depiction of the progress of the work (in % value) on the vertical axis against the progression of time, on the horizontal axis is usually measured against the amount of money that has been spent by the project. Value of project activities can be calculated by :

$$\% \text{ Work Value} = \frac{Work\ Price}{Total\ price}\ x\ 100\%$$

Table 9. Work Value

NO	JOB DESCRIPTION	TOTAL PRICE		VALUE (%)
1	**Prepatory Work**	IDR	361.747.400,00	0,1971
2	**Structure Work**			
a	Pile Concrete Precast	IDR	555.930.000,00	0,3029
b	Excavation Work			
	Excavation Pile Cap	IDR	135.483.305,13	0,0738
	Excavation Tie Beam	IDR	16.706.039,06	0,0091
	Pile Up Soil Work	IDR	229.756.533,20	0,1252
c	Bottom Structure			
	Pile Cap	IDR	6.839.483.940,90	3,7270
	Tie Beam	IDR	1.456.877.511,94	0,7939
	Pile Up Sand	IDR	55.378.736,00	0,0302
	Land Concrete	IDR	15.588.369,03	0,0085
d	Upper Structure			
	Ground Floor	IDR	5.657.582.862,80	3,0830
	First Floor	IDR	6.916.177.612,65	3,7688
	Second Floor	IDR	6.089.683.425,75	3,3184
	Third Floor	IDR	6.184.229.244,16	3,3699
	Fourth Floor	IDR	4.623.948.334,66	2,5197
	Fifth Floor	IDR	3.583.532.730,72	1,9528
	Sixth Floor	IDR	3.373.234.441,61	1,8382
	Seventh Floor	IDR	3.363.957.069,17	1,8331
	Eighth Floor	IDR	3.510.916.429,07	1,9132
	Ninth Floor	IDR	3.435.023.235,58	1,8718
	Tenth Floor	IDR	3.396.433.394,40	1,8508
	Eleventh Floor	IDR	3.354.430.673,05	1,8279
	Twelfth Floor	IDR	3.332.944.851,57	1,8162
	Thirteenth Floor	IDR	3.495.422.313,65	1,9047
	Rooftop Floor	IDR	2.153.459.555,01	1,1735
	Steel Work	IDR	2.830.856.577,50	1,5426
3	**Architect Work**			
	Ground Floor	IDR	4.246.881.222,40	2,3142
	First Floor	IDR	5.892.454.964,67	3,2109
	Second Floor	IDR	5.618.665.286,34	3,0617
	Third Floor	IDR	6.644.543.463,15	3,6208
	Fourth Floor	IDR	2.871.155.866,00	1,5646
	Fifth Floor	IDR	2.735.058.622,00	1,4904
	Sixth Floor	IDR	2.756.767.062,00	1,5022
	Seventh Floor	IDR	2.420.185.143,84	1,3188
	Eighth Floor	IDR	2.376.872.660,00	1,2952
	Ninth Floor	IDR	2.967.376.084,25	1,6170
	Tenth Floor	IDR	2.748.919.220,25	1,4980
	Eleventh Floor	IDR	2.709.947.833,51	1,4767
	Twelfth Floor	IDR	3.183.533.885,52	1,7348
	Thirteenth Floor	IDR	2.352.718.014,00	1,2821
	Rooftop	IDR	724.090.584,00	0,3946
	ACP	IDR	23.630.028.300,00	12,8766
4	**MEP Work**	IDR	31.070.491.535,00	16,9310
5	**Lift Work**	IDR	3.593.520.000,00	1,9582
	TOTAL	IDR	183.511.954.333,56	100

Then, make the curve by plotting the value as seen in time schedule below

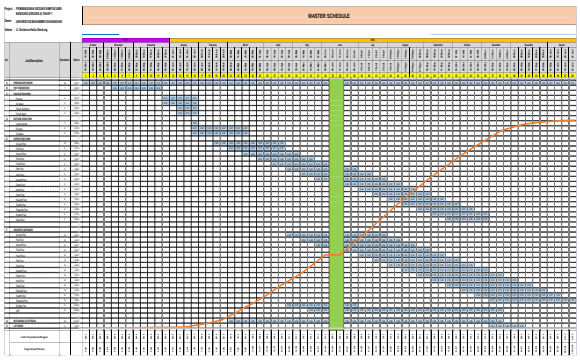


Figure 16. General S Curve

3. CPM

The first step taken in compiling network planning is by identifying activities, namely by doing work and identifying the project scope, outlining and solving it or also called the WBS (Work Breakdown Structure) into activities on the project. The WBS in the Muhammadiyah University Bandung development project is found in the following table:

Table 10. Activities Identification

NO	JOB DESCRIPTION	DURATION (WEEK)
I	PREPARATORY WORK	
II	STRUCTURE WORK	
A	Pile Foundation Work	7
B	Excavation Work	
1	Pile Cap Excavation	5
2	Tie Beam Excavation	5
3	Pile Up Soil Work	3
4	Pile Up Sand Work	3
C	Bottom Structure	
1	Land Concrete	1
2	Pile Cap	8
3	Tie Beam	8
D	Upper Structure	
1	Ground Floor	10
2.	First Floor	8
3.	Second Floor	8
4.	Third Floor	8
5.	Fourth Floor	8
6.	Fifth Floor	8
7.	Sixth Floor	8
8.	Seventh Floor	8
9.	Eighth Floor	8
10.	Ninth Floor	8
11.	Tenth Floor	8
12.	Eleventh Floor	8
13.	Twelfth Floor	8
14.	Thirteenth Floor	8
15.	Rooftop Floor	8
16.	Steel Work	6
III	ARCHITECTURE WORK	
1	Wall, Brick, Plestering	8
2	Floor Work	3
3	Painting Work	25
4	Door Frame, Window, Sills	5
5	Ceiling Work	7
6	Sanitation Work	5
7	Railing Work	2
8	Curtain Wall Frame Work	25
IV	MECHANICAL ELECTRICAL WORK	36
V	LIFT WORK	5

Table 11. Relationship between activity

NO	JOB DESCRIPTION	DURATION (WEEK)	ACTIVITY CODE	LAST CODE
I	PREPARATORY WORK			
II	STRUCTURE WORK			
A	Pile Foundation Work	7	A	
B	Excavation Work			
1	Pile Cap Excavation	5	B	A
2	Tie Beam Excavation	5	C	A
3	Pile Up Soil Work	3	D	A
4	Pile Up Sand Work	3	E	A
C	Bottom Structure			
1	Land Concrete	1	F	A
2	Pile Cap	8	G	A
3	Tie Beam	8	H	A
D	Upper Structure			
1	Ground Floor	10	I	B,C,D,E,F
2.	First Floor	8	J	B,C,D,E,F
3.	Second Floor	8	K	B,C,D,E,F
4.	Third Floor	8	L	G,H
5.	Fourth Floor	8	M	G,H
6.	Fifth Floor	8	N	I,J
7.	Sixth Floor	8	O	K
8.	Seventh Floor	8	P	L
9.	Eighth Floor	8	Q	M
10.	Ninth Floor	8	R	N
11.	Tenth Floor	8	S	O
12.	Eleventh Floor	8	T	P
13.	Twelfth Floor	8	U	Q
14.	Thirteenth Floor	8	V	R
15.	Rooftop Floor	8	W	S
16.	Steel Work	6	X	T
III	ARCHITECTURE WORK			
1	Wall, Brick, Plestering	8	Y	I,J
2	Floor Work	3	Z	L
3	Painting Work	25	AA	M
4	Door Frame, Window, Sills	5	AB	K
5	Ceiling Work	5	AC	AA
6	Sanitation Work	5	AD	N
7	Railing Work	2	AE	M
8	Curtain Wall Frame Work	25	AF	K
IV	MECHANICAL ELECTRICAL WORK	30	AG	J
V	LIFT WORK	9	AH	W,X

Table 12. Forward Calculation

NO	Activity	EET_i	DURATION (WEEK)	EET_j	NOTE
1	A	0	7	7	
2	B	7	5	12	The Largest Value is 12
	Dummy	12	0	12	
3	C	7	5	12	
	Dummy	12	0	12	
4	D	7	3	10	
	Dummy	10	0	10	
5	E	7	3	10	
	Dummy	10	0	10	
6	F	7	1	8	
7	G	7	8	15	The Largest Value is 15
	Dummy	15	0	15	
8	H	7	8	15	
9	I	12	10	22	The Largest Value is 22
	Dummy	22	0	22	
10	J	12	8	20	
11	K	12	8	20	
12	L	15	8	23	
13	M	15	8	23	
14	N	22	8	30	
15	O	20	8	28	
16	P	23	8	31	
17	Q	23	8	31	
18	R	30	8	38	
19	S	28	8	36	
20	T	31	8	39	
21	W	36	8	44	The Largest Value is 45
	X	39	6	45	
22	AA	24	25	49	
23	U	31	8	39	The Largest Value is 54
	V	38	8	46	
	Y	22	8	30	
	Z	23	3	26	
	AB	20	5	25	
	AC	48	5	53	

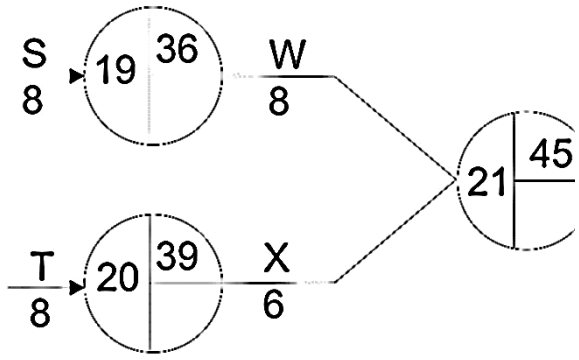


Figure 17. Forward Calculation

Table 13. Backward Calculation

NO	Activity	LET_j	DURATION (WEEK)	LET_i	NOTE
22	AC	54	5	49	
17	U	54	8	46	
13	Q	46	8	38	The Smallest Value is 24
	AA	49	25	24	
	AE	54	2	52	
21	AH	54	9	45	
20	X	45	6	39	
16	T	39	8	31	
12	P	31	8	23	The Smallest Value is 23
	Z	54	3	51	
19	W	45	8	37	
15	S	37	8	29	
11	O	29	8	21	The Smallest Value is 21
	AB	54	5	49	
	AF	54	25	29	
18	V	54	8	46	
14	R	46	8	38	The Smallest Value is 38
	AD	54	5	49	
8	L	23	8	15	The Smallest Value is 15
	M	24	8	16	
9	AG	54	30	24	The Smallest Value is 24
	N	38	8	30	
	Y	54	8	46	
3	I	24	10	14	The Smallest Value is 13
	Dummy	24	0	24	
	J	24	8	16	
	K	21	8	13	
1	B	13	5	8	The Smallest Value is 7
	Dummy	13	0	13	
	C	13	5	8	
	Dummy	13	0	13	
	D	13	3	10	
	Dummy	13	0	13	
	E	13	3	10	
	Dummy	13	0	13	
	F	13	1	12	
	G	15	8	7	
	Dummy	15	0	15	

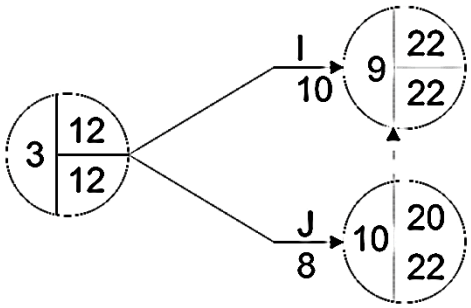


Figure 18. Backward Calculation

Table 14. Total Float Calculation

Activity	EVENT		DURATION (WEEK)	EVENT		FF	TF
	EET_i	LET_i		EET_j	LET_j		
A	0	0	7	7	7	0	0
B	7	8	5	12	13	0	1
C	7	8	5	12	13	0	1
D	7	10	3	10	13	0	3
E	7	10	3	10	13	0	3
F	7	12	1	8	13	0	5

G	7	7	8	15	15	0	0
H	7	7	8	15	15	0	0
I	12	14	10	22	24	0	2
J	12	16	8	20	24	0	4
K	12	13	8	20	21	0	1
L	15	15	8	23	23	0	0
M	15	16	8	23	24	0	1
N	22	30	8	30	38	0	8
O	20	21	8	28	29	0	1
P	23	23	8	31	31	0	0
Q	23	38	8	31	46	0	15
R	30	38	8	38	46	0	8
S	28	29	8	36	37	0	1
T	31	31	8	39	39	0	0
U	31	46	8	39	54	0	15
V	38	46	8	46	54	0	8
W	36	37	8	44	45	0	1
X	39	39	6	45	45	0	0
Y	22	46	8	30	54	0	24
Z	23	51	3	26	54	0	28
AA	23	24	25	48	49	0	1
AB	20	49	5	25	54	0	29
AC	48	49	5	53	54	0	1
AD	30	49	5	35	54	0	19
AE	23	52	2	25	54	0	29
AF	20	29	25	45	54	0	9
AG	22	24	30	52	54	0	2
AH	45	45	9	54	54	0	0

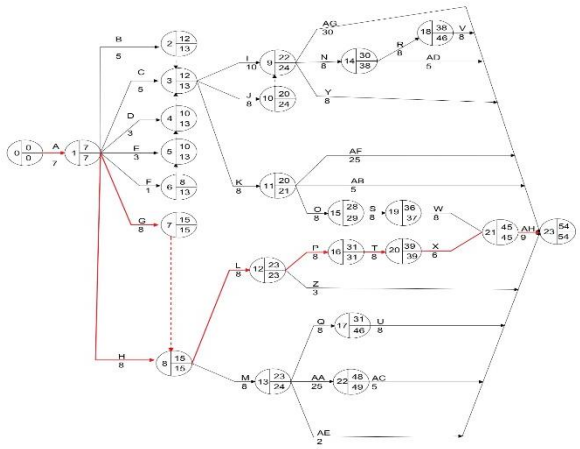


Figure 19. CPM

4. CASHFLOW

Cash Flow is an estimate of the flow of funds to be spent on project development in accordance with the Time Schedule that has been prepared previously.

Making this cash flow plan aims to regulate the owner's finances about the amount of expenditure each week. In its manufacture it is closely related to the S curve the main formula of the plan for making cash flows is:

Cashflow = Activities Value (%) x Total of BoQ

MONTH	WEEK	WEEK (%)	CUMULATIVE (%)	WEEK PRICE	CUMULATIVE PRICE
October 2017	1	0,003	0,003	IDR 6.062.298,00	IDR 6.062.298,00
	2	0,003	0,006	IDR 6.062.298,00	IDR 12.124.596,00
	3	0,003	0,009	IDR 6.062.298,00	IDR 18.186.894,00
		MONTH		**IDR 18.186.894,00**	
November 2017	4	0,003	0,012	IDR 6.062.298,00	IDR 24.249.192,00
	5	0,046	0,058	IDR 92.955.236,00	IDR 117.204.428,00
	6	0,046	0,104	IDR 92.955.236,00	IDR 210.159.664,00
	7	0,046	0,150	IDR 92.955.236,00	IDR 303.114.900,00
		MONTH		**IDR 284.928.006,00**	
December 2017	8	0,046	0,196	IDR 92.955.236,00	IDR 396.070.136,00
	9	0,046	0,242	IDR 92.955.236,00	IDR 489.025.372,00
	10	0,046	0,288	IDR 92.955.236,00	IDR 581.980.608,00
	11	0,046	0,334	IDR 92.955.236,00	IDR 674.935.844,00
	12	0,020	0,354	IDR 40.415.320,00	IDR 715.351.164,00
		MONTH		**IDR 412.236.264,00**	
January 2018	13	0,020	0,374	IDR 40.415.320,00	IDR 755.766.484,00
	14	0,072	0,446	IDR 145.495.152,00	IDR 901.261.636,00
	15	0,072	0,518	IDR 145.495.152,00	IDR 1.046.756.788,00
	16	0,647	1,165	IDR 1.307.435.602,00	IDR 2.354.192.390,00
		MONTH		**IDR 1.638.841.226,00**	
February 2018	17	0,569	1,734	IDR 1.149.815.854,00	IDR 3.504.008.244,00
	18	0,569	2,303	IDR 1.149.815.854,00	IDR 4.653.824.098,00
	19	0,878	3,181	IDR 1.774.232.548,00	IDR 6.428.056.646,00
	20	0,878	4,059	IDR 1.774.232.548,00	IDR 8.202.289.194,00
		MONTH		**IDR 5.848.096.804,00**	
March 2018	21	1,350	5,409	IDR 2.728.034.100,00	IDR 10.930.323.294,00
	22	1,350	6,759	IDR 2.728.034.100,00	IDR 13.658.357.394,00
	23	1,766	8,525	IDR 3.568.672.756,00	IDR 17.227.030.150,00
	24	1,200	9,725	IDR 2.424.919.200,00	IDR 19.651.949.350,00
	25	1,622	11,347	IDR 3.277.682.452,00	IDR 22.929.631.802,00
		MONTH		**IDR 14.727.342.608,00**	
April 2018	26	1,622	12,969	IDR 3.277.682.452,00	IDR 26.207.314.254,00
	27	2,507	15,476	IDR 5.065.049.979,00	IDR 31.272.364.233,00
	28	2,507	17,982	IDR 5.065.049.979,00	IDR 36.337.414.212,00
	29	2,213	20,195	IDR 4.471.955.158,00	IDR 40.809.369.370,00
		MONTH		**IDR 17.879.737.568,00**	

Table 15. Cashflow

May 2018	30	2,213	22,408	IDR 4.471.955.158,00	IDR 45.281.324.528,00
	31	2,295	24,703	IDR 4.637.657.970,00	IDR 49.918.982.498,00
	32	2,811	27,514	IDR 5.680.373.226,00	IDR 55.599.355.724,00
	33	2,875	30,389	IDR 5.808.691.867,00	IDR 61.408.047.591,00
		MONTH		IDR 20.598.678.221,00	
June 2018	34	2,875	33,263	IDR 5.808.691.867,00	IDR 67.216.739.458,00
	35	0,000	33,263	IDR -	IDR 67.216.739.458,00
	36	0,000	33,263	IDR -	IDR 67.216.739.458,00
	37	3,100	36,363	IDR 6.264.374.600,00	IDR 73.481.114.058,00
	38	3,100	39,463	IDR 6.264.374.600,00	IDR 79.745.488.658,00
		MONTH		IDR 18.337.441.067,00	
July 2018	39	3,171	42,634	IDR 6.407.848.986,00	IDR 86.153.337.644,00
	40	3,171	45,805	IDR 6.407.848.986,00	IDR 92.561.186.630,00
	41	3,297	49,102	IDR 6.662.465.502,00	IDR 99.223.652.132,00
	42	3,297	52,399	IDR 6.662.465.502,00	IDR 105.886.117.634,0
		MONTH		IDR 26.140.628.976,00	
August 2018	43	3,228	55,627	IDR 6.523.032.648,00	IDR 112.409.150.282,0
	44	3,228	58,855	IDR 6.523.032.648,00	IDR 118.932.182.930,0
	45	3,057	61,912	IDR 6.177.481.662,00	IDR 125.109.664.592,0
	46	3,057	64,969	IDR 6.177.481.662,00	IDR 131.287.146.254,0
	47	2,914	67,883	IDR 5.888.512.124,00	IDR 137.175.658.378,0
		MONTH		IDR 31.289.540.744,00	
September 2018	48	2,914	70,797	IDR 5.888.512.124,00	IDR 143.064.170.502,0
	49	2,662	73,459	IDR 5.379.279.092,00	IDR 148.443.449.594,0
	50	2,662	76,121	IDR 5.379.279.092,00	IDR 153.822.728.686,0
	51	2,684	78,805	IDR 5.423.735.944,00	IDR 159.246.464.630,0
		MONTH		IDR 22.070.806.252,00	
October 2018	52	2,684	81,489	IDR 5.423.735.944,00	IDR 164.670.200.574,0
	53	2,456	83,945	IDR 4.963.001.296,00	IDR 169.633.201.870,0
	54	2,456	86,401	IDR 4.963.001.296,00	IDR 174.596.203.166,0
	55	2,238	88,639	IDR 4.521.463.925,00	IDR 179.117.667.091,0
		MONTH		IDR 19.871.202.461,00	
November 2018	56	2,238	90,876	IDR 4.521.463.925,00	IDR 183.639.131.016,0
	57	2,018	92,894	IDR 4.078.714.094,40	IDR 187.717.845.110,4
	58	2,018	94,913	IDR 4.078.714.094,40	IDR 191.796.559.204,8
	59	0,826	95,739	IDR 1.669.961.022,40	IDR 193.466.520.227,2
		MONTH		IDR 14.348.853.136,20	
December 2018	60	0,826	96,566	IDR 1.669.961.022,40	IDR 195.136.481.249,6
	61	0,691	97,257	IDR 1.397.157.612,40	IDR 196.533.638.862,0
	62	0,691	97,948	IDR 1.397.157.612,40	IDR 197.930.796.474,4
	63	0,566	98,515	IDR 1.144.561.862,40	IDR 199.075.358.336,8
	64	0,566	99,081	IDR 1.144.561.862,40	IDR 200.219.920.199,2
		MONTH		IDR 6.753.399.972,00	
January 2019	65	0,443	99,525	IDR 896.007.644,40	IDR 201.115.927.843,60
	66	0,255	99,780	IDR 515.295.330,00	IDR 201.631.223.173,60
	67	0,110	99,890	IDR 222.284.260,00	IDR 201.853.507.433,60
	68	0,110	100,000	IDR 222.284.260,00	IDR 202.075.791.693,60
		MONTH		IDR 1.855.871.494,40	
TOTAL PRICE				IDR 202.075.791.693,60	IDR 202.075.791.693,60

V. CONCLUSIONS AND SUGGESTION

A. CONCLUSION

In this thesis, to control the time and cost of the Muhammadiyah Bandung University Project, the author uses scheduling techniques Barchart, S Curve, CPM (Critical Path Method), Bill of Quantity and calculates Cashflow to find out the costs to be incurred in each week. Here are the things that can conclude, among others :

1. The time required to complete this project is 68 weeks
2. Based on calculation of BoQ to complete this project requires more or less the cost Rp 202.076.000.000 (Devided in to 5 parts, Prepatory Rp 361.747.400, Structure Rp 74.606.997.186, Architecture Rp 73.842.574.091, Mechanical and Electrical Rp 31.300.370.335, Lift Rp 3.593.520.000). While the project cost is Rp 203.999.000.000
3. By using CPM method can be known the critical path occured in the project is A,G,H,L,P,T,X,AH (Pile Foundation – Pile Cap – Tie Beam – Third Floor – Seventh Floor – Eleventh Floor – Steel Work – Lift)

B. SUGGESTION

1. In construction management analysis, the complete data is very needed such as drawing plan data, and supporting data such as unit price analysis, labor prices, material prices, and equipment prices to be

able to quick and easily to complete the thesis.

2. In analyzing the amount of resource needs, do not just use the existing analysis from the government (SNI), but also use analysis based on your own experiences and observations in the field.
3. The use Microsoft project applications is also highly recommended in the project data processing. Easy of use and flexibility of worksheet and scope of project elements make this software very supportive of the administration of a project. Microsoft project can manage project more efficiently. Where we can get information controlling project work, schedules, financial reports and also be more productive and by integrating the familiar Microsoft office Program to make strong reports, controlled planning and flexible facilities.

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