

Walan Time Using the Grantchart Method Based on Microsoft Project 2013 in a Bridge Development Project Langgeng*

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ABSTRACT

Project scheduling is one of the planning elements that can provide information about the project schedule and project progress in terms of resource performance to complete the project. In this thesis we discuss the scheduling of time using the gant chart method based on microsoft project 2013 on the bridge – langgeng construction project in lumajang district, east java province. Scheduling using the Microsoft Office Project 2013 application program for the Langgeng Bridge construction project in Lumajang Regency is made by analyzing data and assuming the duration, construction project start time and other data. The implementation time of the Langgeng Bridge construction project in Lumajang Regency is 22 weeks. With the relationship between critical activities in week 16 and week 21, more attention needs to be paid so that the project is completed on time.

Keywords: Time Schedule, S Curve, Ms Project.

1. Introduction

Time management is an attempt to take advantage of time in planning, compiling and controlling schedules to carry out certain activities that have determined completion targets in a work activity that is used to control the amount of time spent completing these activities [1]. The implementation of construction project time management experiences many obstacles which cause the implementation is not in accordance with the plan [2], [3]. Some of these obstacles, according, are difficulties in getting parties who are committed to the schedule such as suppliers, subcontractors and foremen (supervisors). Some other obstacles include incomplete design drawings and poor coordination and communication in the field. In writing this final project, there are some problem formulations that the writer will discuss in the final project, namely, How to use Microsoft Project 2013 in making a schedule for a project using the Gantchart method, how to reschedule it so that it becomes an ideal schedule and how to influence the number The availability of realized workers and the number of workers available plans against the S Curve in the Langgeng Bridge construction project - Lumajang Regency [4], [5].

2. Research Methods

This research uses literature studies and field studies. These two studies are related to each other [6] [7]. From the literature study, a theoretical basis was obtained which was then applied in the project schedule process.

2.1 Research Methods Stage

The first stage is literature study by studying books, journals and other reference books that exist to support this final project in order to suit the problems discussed. The process of collecting data to determine a schedule. Then check the duration of the start and end, which is made according to the work plan. So that when inputting data in S Project [8], [9], the entered duration is not wrong and includes the start date of the project activity, the relationship between activities and the placement of an event from beginning to end.

2.2 Research Sites

This research was conducted on the Langgeng Bridge construction project - Lumajang Regency, the location is located in Rowokangkung Village, Lumajang Regency. The location of the land for the project can be seen in the following figure 1.

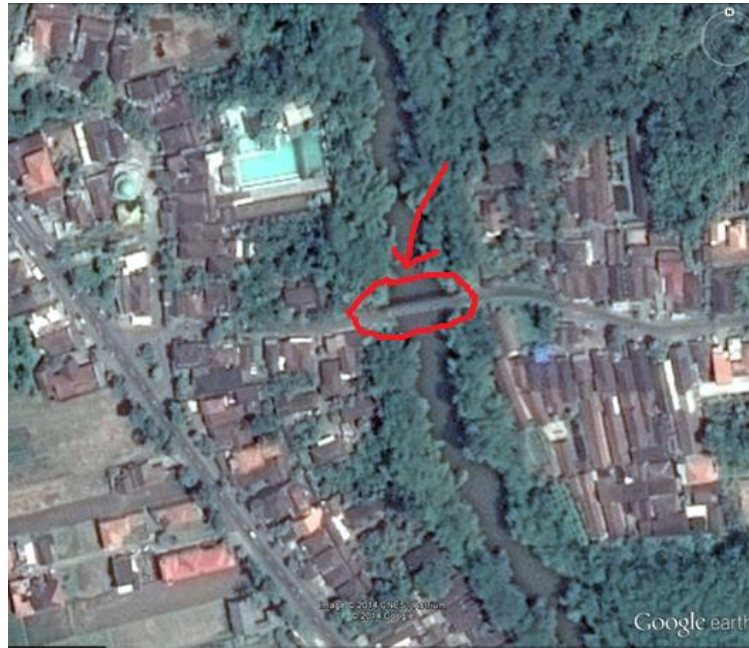


Figure 1. Study location

2.3 Data Collection Technique

Data collection is intended to obtain data that will be used in writing. The data collected is divided into the intended data in the form of direct observation of matters that affect the scheduling and allocation of resources such as money, materials, tools and labor. Apart from direct observation data in the field, data were also obtained in the form of RAB, an overview of the project, and other data obtained through direct interviews with various parties in the field.

2.4 Data Processing Methods

Data processing that has been obtained from the results of data collection is analyzed which is processed then presented in tabular form, and mathematically then inputted into Microsoft Project 2013. The data processing is adjusted to literature studies and the intent and purpose of writing, so as not to get out of the boundaries of the problems that have been made.

2.5 Expected Result

With this scheduling, it is hoped that the ideal S curve can be obtained and the calculation of the number of workers which facilitates the management of the number of workers required in the implementation of construction projects. MICROSOFT PROJECT 2013 software is expected to facilitate time scheduling and understanding of time schedules using the gantchart method. The result is like a network schedule that can show the dependency relationship between activities and critical work so as to solve the problem sequence of activities within the project complexity.

3. Analysis and Discussion

In this case study, the object of research is the Langgeng Bridge construction project - Lumajang Regency, which is located in Rowokangkung Village, Lumajang Regency. By collecting data supported by existing literature, the author will review the existing project schedule by

rescheduling assisted by Microsoft Project 2013 [10].

This chapter will describe the discussion regarding the Langgeng Bridge construction project - Lumajang Regency, which is located in Rowokangkung Village, Lumajang Regency. The results of this study will be presented in descriptive form.

3.1 Data Analysis

In making the analysis, the project data was obtained from PT. SUBUR JAYA MUKTI in the form of pictures, schedule of implementation, and weekly reports. These data are used in making scheduling with the help of Microsoft Project 2013.

3.2 Scheduling the Project

For scheduling the following assumptions are used:

1. Pay attention to which activities can be done together (when starting together).
2. Pay attention to which activities must wait for the completion of certain activities.

3.3 Manpower Requirement

Calculating the amount of labor needed to fit the S curve time planning is done by looking at the unit price analysis coefficient. This is very important because it involves the timeliness of project completion. So that the project is not late, it is necessary to have a workforce that fits the expertise and work to be done.

3.4 Scheduling Using Microsoft Project 2013

Project scheduling is planning the time an activity must start and end. After the dependency relationship between activities is arranged, then it describes the GantChart of all activities. The Microsoft Project program helps process and obtain project schedules using the Gant Chart method and its critical path.

3.5 Analysis of Actifities after Reschedule

In the Langgeng Bridge construction project - Lumajang Regency, which is in Rowokangkung Village, Lumajang Regency, the implementation period is 151 days (22 weeks).

3.6 Analysis of Worker Needs after Rescheduling

Old bridge steel frame

To complete 22,258.07 kg of dismantling the old bridge steel frame required labor:

Foreman:

= 22,258.07 kg x 0.003

= 8,068 people / day

We will complete the work within 14 days then:

= 8,068 people / day: 14 days

= 0.56 people / day (foreman)

Builders:

= 22,258.07 kg x 0.01

= 40.34 people / day

We will complete the work within 14 days then:

= 40.34 people / day: 14 days

= 2.88 people / day (builder)

Workers:
 = 22,258.07 kg x 0.12
 = 321.92 people / day

We will complete the work within 14 days then:
 = 321.92 people / day: 14 days
 = 22.99 people / day (worker)

3.7 Discussion

On the implementation schedule of the Langgeng Bridge construction project - Lumajang Regency, the S curve is not good. It can be seen on the S curve slowly at the beginning and in the middle and then fast at the end [4].

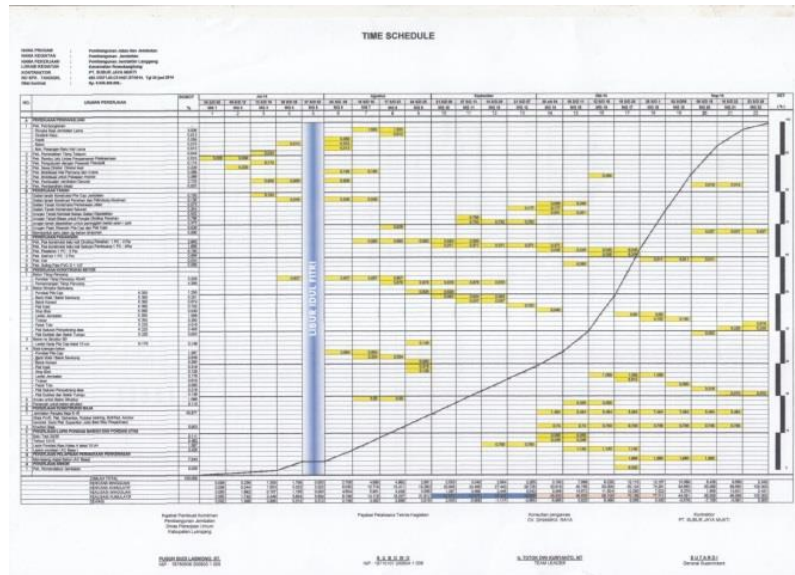


Figure 2. Curva- S

Realization Based on the results of data analysis as for the results obtained, the S curve is more ideal. Because a good S curve is slow at the beginning then fast in the middle and relaxes again at the end of the schedule.

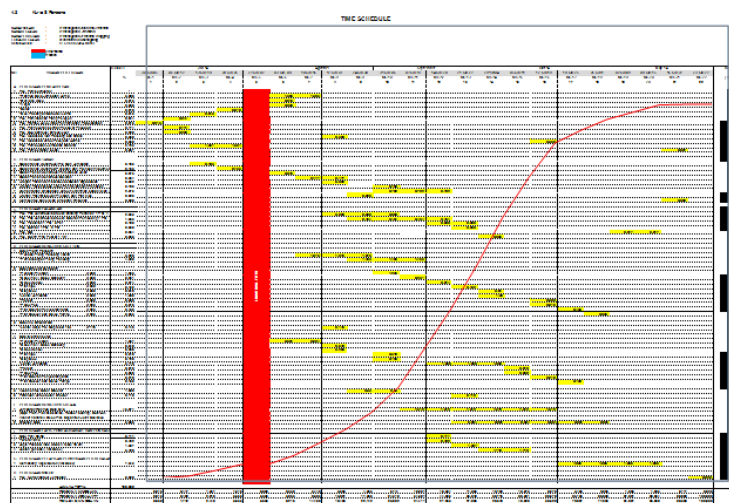


Figure 3. Curve S next reschedule

Analyzed the number of workers needed to complete the project on schedule. Then compared with the data on the number of workers obtained from the weekly report. From the weekly report on the number of workers to complete the project with an analysis of labor requirements.

Table 1. Total manpower

Minggu	Jam Kerja		Jumlah Tenaga Kerja	
			Realisasi	Rencana
Minggu 1	07.00	-	16.00	40
Minggu 2	07.00	-	16.00	120
Minggu 3	07.00	-	16.00	162
Minggu 4	07.00	-	16.00	186
Minggu 5	Libur Idul Fitri		7	0
Minggu 6	07.00	-	16.00	210
Minggu 7	07.00	-	16.00	294
Minggu 8	07.00	-	16.00	273
Minggu 9	07.00	-	16.00	275
Minggu 10	07.00	-	16.00	238
Minggu 11	07.00	-	16.00	112
Minggu 12	07.00	-	16.00	105
Minggu 13	07.00	-	16.00	275
Minggu 14	07.00	-	16.00	52
Minggu 15	07.00	-	16.00	196
Minggu 16	07.00	-	16.00	196
Minggu 17	07.00	-	16.00	175
Minggu 18	07.00	-	16.00	175
Minggu 19	07.00	-	16.00	77
Minggu 20	07.00	-	16.00	91
Minggu 21	07.00	-	16.00	147
Minggu 22	07.00	-	16.00	42

Relationships between jobs in these projects are not all the same, there are jobs that start or finish simultaneously. There are also jobs that start after a few days of work is completed. So that the relationship between work dependence on this project is a predecessor relationship, namely the relationship to the previous activity.

3.8 Microsoft Project

Scheduling using Microsoft Project 2013 is displayed in the form of a gant chart, with critical work on Pek. Mobilization for the Hotmix Work, Pek.Site cleaning, Shaping road shoulders with embankment material [10].

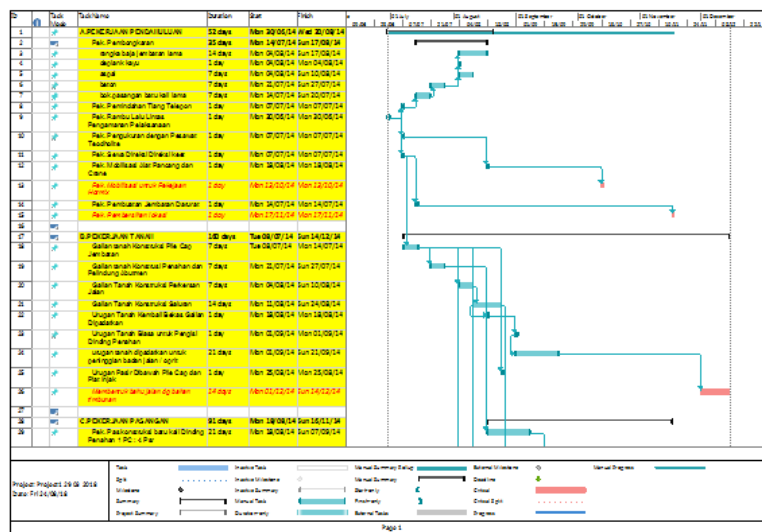


Figure 4. Curve bar chart

4. Conclusion

1. Scheduling using the Microsoft Office Project 2013 application program for the Langgeng Bridge construction project in Lumajang Regency is made by analyzing data and assuming the duration, construction project start time and other data.
2. The implementation time of the Langgeng Bridge construction project in Lumajang Regency is 22 weeks. With the relationship between critical activities in week 16 and week 21, more attention needs to be paid so that the project is completed on time. In accordance with the analysis of labor needs by calculating the unit price of work for the labor requirements in the Langgeng Bridge construction project in Lumajang Regency on week 6, the number of worker needs begins to increase and begins to decline again at week 17.

This is because the project slows down at the beginning then quickly and returns slowly at the end. Meanwhile, in the implementation, there was no significant increase in the number of workers at the end of the work, even though the project was running slowly at the beginning and midway, then quickly at the end, but the project was completed on time. This could happen the possibility of additional overtime or bonus hours so that labor productivity increases until the project is completed on time.

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