ABSTRACT

Cost and time analysis are most important on the contruction project. Optimal Time and minimal cost become standart to make profit benchmarks on a project. Therefore, it is necessary to optimize the cost and time by looking for work items that are included in the critical path. The purpose of this study is to know the change of cost and time due to the addition of working time, change of cost and time due to the addition of employee, as well as cost that needed if the projects experienced delays and penalty.. So it will be compared from all three to get the minimum cost with the optimum duration.

The data used in this study is secondary data obtained from contractor implementing. Data analysis using time cost trade off method with microsoft project 2010 program. The results of the study, From the time cost trade off with the addition of 1 hours of work per day conducted on first day on critical jobs during the project, obtained the reduction in the cost of Rp 39,552,394,71 and the reduction in the duration of 36.18 days. Addition of 2 hours of work per day obtained the reduction in the cost of Rp 57,532,834.66 and and the reduction in the duration of 62.61 days. Addition of 3 hours of work per day obtained the reduction in the cost of Rp 69,392,147,01 and and the reduction in the duration of 82.48 days. Meanwhile, for the addition of employee for 1 hours obtained the reduction in the cost of Rp 52.497.085,35 and the reduction in the duration of 36.18 days. Addition of employee for 2 hours obtained the reduction in the cost of Rp 91,349,394.80 and the reduction in the duration of 62.61 days. Addition of employee for 3 hours obtained the reduction in the cost of Rp 120,645,301,55 and the reduction in the duration of 82,48 days. So that, the optimal time and cost occur when addition employee is incurred for 3 hours, compared to overtime and overdue. Namely with the optimal cost of the project of Rp 2,418,408,305.45 and the optimal duration of the project for 57.52 days.

ABSTRAK

Analisis waktu dan biaya adalah hal yang paling penting pada perencanaan proyek konstruksi. Waktu yang optimal dan biaya yang minimal menjadikan tolok ukur keuntungan pada suatu proyek. Maka dari itu, perlu dilakukan pengoptimasian biaya dan waktu dengan mencari item pekerjaan yang masuk dalam lintasan kritis. Tujuan dari penelitian ini adalah untuk mengetahui perubahan biaya dan waktu akibat penambahan jam kerja, perubahan biaya dan waktu akibat penambahan tenaga kerja, serta biaya yang dikeluarkan apabila proyek mengalami keterlambahan dan dikenakan denda. Sehingga akan dibandingkan dari ketiganya untuk mendapatkan biaya yang minimum dengan durasi yang optimum.

Data yang digunakan pada penelitian ini adalah data sekunder yang didapat dari kontraktor pelaksana. Analisis data menggunakan metode Time Cost Trade Off dengan bantuan program Microsoft Project 2010. Dari hasil penelitian didapatkan perubahan biaya dan durasi akibat lembur 1 jam menurun sebesar Rp 39.552.394,71 dan perubahan durasi menurun 36,18 hari. lembur 2 jam menurun sebesar Rp 57.532.834,66 dan perubahan durasi menurun 62,61 hari. lembur 3 jam menurun sebesar Rp 69.392.147,01 dan perubahan durasi menurun 82,48 hari. Sedangkan, untuk penambahan tenaga kerja selama 1 jam menurun sebesar Rp 52.497.085,35 dan perubahan durasi menurun 36,18 hari. penambahan tenaga kerja selama 2 jam menurun sebesar Rp 91.349.394,80 dan perubahan durasi menurun 62,61 hari. penambahan tenaga kerja selama 3 jam menurun sebesar Rp 120.645.301,55 dan perubahan durasi menurun 82,48 hari. Sehingga, waktu dan biaya yang optimal terjadi apabila dilakukan penambahan tenaga kerja selama 3 jam, dibandingkan menambah jam lembur dan biaya keterlambatan akibat denda. Yaitu dengan biaya optimal proyek sebesar Rp 2.418.408.305,45 dan durasi optimal proyek selama 57,52 hari.