ABSTRACT

WASTE ANALYSIS OF PLATE REINFORCEMENT MATERIAL USING BUILDING INFORMATION MODELING (BIM) IN THE NEW OFFICE BUILDING PROJECT FOR THE GEDONG TATAAN RELIGIOUS COURT

By

RAFIF ANSORI ATULLAH

Technological advances mean that humans must be able to adapt to technology such as Building Information Modeling (BIM). One of the problems in construction projects is the existence of waste material. This research was conducted at the Gedong Tataan Religious Court New Office Building Construction Project. The aim of this research is to produce the total volume and weight of slab reinforcement material, determine the comparison of type 1 and type 2 reinforcement material waste, and determine the causes of material waste in this project. The research method used is pure quantitative experimental and uses Autodesk Revit and 1D Cutting Optimization Pro software. Based on the analysis results, it was found that the total weight of the slab reinforcement was 34,808.74 kg for type 1 and 28,824.59 kg for type 2. For the weight percentage of reinforcement material, type 2 is 17,19% more efficient compared type 1. For the percentage of waste material, type 2 slab reinforcement was 84.12% more efficient compared type 1. Based on the waste level, the slab reinforcement type 1 D6 is 27.44%, D10 is 0.20% and slab reinforcement type 2 D6 is 3.08%, D10 is 0.48%. So that type 2 D6 slab reinforcement is 24.36% smaller than type 1. Type 1 D10 slab reinforcement is 0.28% smaller than type 2. The cause of material waste in this research is due to differences in cutting patterns in the reinforcement.

Keywords: *Waste, Building Information Modeling (BIM), Autodesk Revit, 1D cutting Optimization Pro Software, Material Volume*.

ABSTRAK

ANALISIS *WASTE* MATERIAL TULANGAN PELAT MENGGUNAKAN *BUILDING INFORMATION MODELING* (BIM) PADA PROYEK PEMBANGUNAN GEDUNG KANTOR BARU PENGADILAN AGAMA GEDONG TATAAN

Oleh

RAFIF ANSORI ATULLAH

Kemajuan teknologi membuat manusia harus bisa beradaptasi dengan teknologi seperti *Building Information Modelling* (BIM). Salah satu permasalahan dalam proyek konstruksi yaitu adanya *waste* material. Penelitian ini dilakukan di Proyek Pembangunan Gedung Kantor Baru Pengadilan Agama Gedong Tataan. Tujuan penelitian ini yaitu menghasilkan volume total dan berat material tulangan pelat, mengetahui perbandingan *waste* material tulangan tipe 1 dan 2, serta mengetahui penyebab terjadinya *waste* material pada proyek ini. Metode penelitian yang digunakan yaitu kuantitatif eksperimental murni serta menggunakan *software* Autodesk Revit dan 1D Cutting Optimization Pro. Berdasarkan hasil analisis didapatkan berat total volume material pelat sebesar 34808,74 kg untuk tipe 1 dan 28824,59 kg untuk tipe 2. Untuk persentase berat material, tulangan tipe 2 lebih hemat 17,19% dibanding tipe 1. Untuk persentase *waste* material, tulangan pelat tipe 2 lebih hemat 84,12 % dibandingkan tipe 1. Berdasarkan *waste level*, tulangan pelat tipe 1 D6 sebesar 27,44 %, D10 sebesar 0,20% serta tulangan pelat tipe 2 D6 sebesar 3,08%, D10 sebesar 0,48%. Sehingga tulangan pelat tipe 2 D6 lebih kecil 24,36 % dibandingkan tipe 1. Tulangan pelat tipe 1 D10 lebih kecil 0,28 % dibandingkan tipe 2. Penyebab terjadinya *waste* material pada penelitian ini karena adanya perbedaan pola pemotongan pada tulangan.

Kata kunci : Sisa Material, *Building Information Modeling* (BIM), Autodesk Revit, *Software* 1D Cutting Optimization Pro, Volume Material.