ANALISA PERHITUNGAN *QUANTITY TAKE OFF* (QTO) MENGGUNAKAN METODE BIM (*REVIT*) DENGAN PERHITUNGAN METODE KONVENSIONAL PADA STRUKTUR DAN ARSITEKTUR
(Studi Kasus : Gedung Poli Klinik Rumah Sakit Umum Rupat Utara)

Nama mahasiswa : Amanda Amelia

Nim : 4103211436

Dosen Pembimbing : Dedi Enda, M.T

Abstrak

Penelitian ini membahas analisis perhitungan *Quantity Take Off* (QTO) pekerjaan struktur beton dengan membandingkan metode *Building Information Modelling* (BIM) menggunakan Autodesk Revit dan metode konvensional berbasis gambar AutoCAD pada proyek Pembangunan Gedung Poli Klinik Rumah Sakit Umum Rupat Utara. Tujuan penelitian adalah mengetahui proses analisis QTO dengan BIM, hasil perhitungan QTO menggunakan Revit, serta perbedaan hasilnya dibanding metode manual. Data primer diperoleh dari *as built drawing* dan observasi lapangan, sedangkan data sekunder berasal dari dokumen proyek dan literatur. Pemodelan 3D pada elemen pondasi, pile cap, kolom, balok, dan plat lantai dilakukan di Autodesk Revit 2023, lalu dihitung volumenya dan dibandingkan dengan hasil perhitungan manual menggunakan Microsoft Excel. Hasil analisis menunjukkan perbedaan volume yang kecil: pembesian pile cap PC1 selisih 0,82%–3,48%, PC2 sebesar 1,82%–3,48%, dan PC3 rata-rata 1,5%. Pada elemen kolom selisih berkisar 0,5%–2,1%, balok 0,9%–2,8%, dan plat lantai 0,6%. Rata-rata selisih total berada di bawah 5%, sesuai toleransi SNI. Temuan ini membuktikan bahwa Revit memberikan hasil perhitungan yang akurat, lebih cepat, terintegrasi, dan meminimalkan *human error*, sehingga meningkatkan efisiensi waktu dan kualitas dokumentasi proyek konstruksi.

Kata kunci: *Autodesk Revit*, *Building Information Modelling* (BIM), Konstruksi Beton, Metode Konvensional, *Quantity Take Off*.

ANALYSIS OF QUANTITY TAKE OFF (QTO) CALCULATION USING BIM (REVIT) METHOD AND CONVENTIONAL METHOD IN STRUCTURAL AND ARCHITECTURAL WORKS (Case Study : Poli Clinic Building, Rupat Utara General Hospital)

Name	: Amanda Amelia
Number	: 4103211436
Advisor	: Dedi Enda, M.T

Abstract

This study analyzes the calculation of Quantity Take Off (QTO) for reinforced concrete structural works by comparing the Building Information Modelling *(BIM) method using Autodesk Revit with the conventional method based on AutoCAD drawings in the construction project of the North Rupat Public Hospital Outpatient Clinic Building. The objectives are to determine the QTO analysis process using BIM, obtain QTO results through Revit, and compare them with manual calculations. Primary data were obtained from* as-built drawings *and field observations, while secondary data came from project documents and literature. 3D modelling of structural elements such as foundations, pile caps, columns, beams, and floor slabs was carried out in Autodesk Revit 2023, followed by volume calculations and comparisons with manual calculations using Microsoft Excel. The analysis results showed small differences: pile cap PC1 reinforcement discrepancies ranged from 0.82% to 3.48%, PC2 from 1.82% to 3.48%, and PC3 averaged 1.5%. Column elements ranged from 0.5% to 2.1%, beams from 0.9% to 2.8%, and floor slabs at 0.6%. The overall average discrepancy was below 5%, in accordance with SNI tolerance standards. These findings demonstrate that Revit provides accurate, faster, and integrated results, minimizing human error and improving time efficiency and project documentation quality.*

Keywords: *Autodesk Revit, Building Information Modelling (BIM), conventional method, reinforced concrete construction, Quantity Take Off.*