IMPLEMENTASI BIM 5D UNTUK PERHITUNGAN GALIAN-TIMBUNAN BENDUNGAN CIJUREY MENGGUNAKAN METODE *SUBASSEMBLY COMPOSER*

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ABSTRAK

Perkembangan dalam bidang industri konstruksi yang semakin pesat, sehingga penerapan beberapa sistem teknologi mulai sering digunakan. Berbagai macam kendala yang dialami dalam perencanaan maupun pelaksanaan pembangunan proyek konstruksi membuat penggunaan teknologi semakin digalakkan. Sebagai jawaban daripada itu penggunaan teknologi seperti *Building Information Modeling* (BIM) memberikan dampak yang cukup besar dalam membantu mengatasi masalah yang ada pada saat proses pelaksanaan pembangunan proyek konstruski. Pada pembangunan sebuah Bendungan penerapan BIM sangatlah berpengaruh pada pelaksanaan konstruksi, salah satunya merupakan penerapan *Subassebly Composer* dalam melakukan perhitungan galian dan timbunan pada konstruksi bendungan. Dalam penelitian ini dimaksudkan untuk mengetahui metode penerapan *Subassembly Composer* pada perhitungan *Quantity take off* (QTO) galian dan timbunan pada area maindam. Metode yang digunakan penyusun dalam penelitian ini merupakan metode studi kasus (*case study*). Melalui metode ini, penulis dapat melakukan analisis mendalam pada proyek Bendungan Cijurey yang telah mengimplementasikan BIM. Berdasarkan hasil penelitian yang telah dilaksanakan, penerapan implementasi BIM 5D pada metode *subassembly composer* untuk mendapatkan perhitungan volume galian – timbunan melalui beberapa tahapan diantaranya metode fotogrametri, metode QTO dengan *civil 3d* serta *subassembly composer* serta metode pembuatan RAB. Berdasarkan hasil analisis yang telah dilakukan, didapatkan juga volume galian sebesar 974.163,49 m^3, dan volume timbunan pada setiap zona sebesar 367.367,90 m^3 zona inti, 104.648,91 m^3 zona filter, 1.179.172,61 m^3 zona kerakal kerikil, 1.066.486,87 m^3 zona timbunan tanah, 196.542,16 m^3 zona timbunan rip – rap, dan 21.614,04 m^3 pada timbunan zona *rocktoe*. Pada analisis metode perhitungan RAB didapatkan jumblah anggran biaya pada zona timbunan random tanah sebesar Rp. 217,615,090,602.43.

Kata Kunci : *BIM, Subassembly Composer,* Bendungan

IMPLEMENTATION OF 5D BIM FOR CUT-AND-FILL CALCULATION OF CIJUREY DAM USING THE *SUBASSEMBLY COMPOSER* METHOD

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ABSTRACT

The development in the construction industry is increasingly rapid, causing several technology systems to be implemented. Various kinds of obstacles experienced in the planning and implementation of construction projects make the use of technology increasingly encouraged. In answer to that, the use of technology such as Building Information Modeling (BIM) has a considerable impact in helping to overcome problems that exist during the implementation process of construction projects. In the construction of a dam, the application of BIM is very influential on the implementation of construction, one of which is the application of Subassebly Composer in carrying out excavation and pile calculations in dam construction. In this study, it is intended to find out the method of applying the subassembly composer in the calculation of Quantity take off (QTO) excavation and landfill in the maindam area. The method used by the compilers in this study is a case study method. Through this method, the author can conduct an in-depth analysis on the Cijurey Dam project that has implemented BIM. Based on the results of the research that has been carried out, the application of BIM 5D implementation in the subassembly composer method to obtain the calculation of the excavation – stockpile volume through several stages including the photogrammetry method, the QTO method with civil 3d and subassembly composer and the RAB making method. Based on the results of the analysis that has been carried out, it was also obtained that the excavation volume was 974,163.49 m3, and the volume of the landfill in each zone was 367,367.90 m3 in the core zone, 104,648.91 filter zones, 1,179,172.61 gravel fractal zones, 1,066,486.87 soil embankment zones, 196,542.16 rip-rap embankment zones, and 21,614.04 in the rocktoe zone embankment. In the analysis of the RAB calculation method, the total cost estimate in the land random embankment zone was obtained of Rp. 217,615,090,602.43.

Keywords : *BIM, Subassembly Composer, Dam*