

ABSTRAK

PENGARUH PENGGUNAAN *FLY ASH* SEBAGAI BAHAN PENGGANTI SEJUMLAH SEMEN DAN BAHAN TAMBAH TERHADAP KUAT TEKAN PADA *SELF COMPACTING CONCRETE* (SCC)

Oleh:

CORRY JAYAPUTRI SAHAST

Self Compacting Concrete (SCC) merupakan suatu inovasi beton yang memiliki kemampuan untuk mengalir sendiri sehingga dapat mengisi rongga-rongga kosong pada tulangan dan bekisting tanpa menggunakan peralatan pemadatan untuk memperoleh pemadatan yang optimal. Pada penelitian ini, digunakan benda uji beton berbentuk silinder dengan diameter 15 cm dan tinggi 30 cm, dimana sampel dicampur dengan *fly ash* tipe C sebagai bahan pengganti sejumlah semen dan bahan tambahan dengan variasi 0%, 3%, 6%, 9%, dan 12% dengan nilai faktor air semen (fas) sebesar 0,41. *Slump flow test* dilakukan untuk mengetahui *flowability* dan *workability* beton, sedangkan uji tekan beton dilakukan untuk mengetahui kuat tekan beton yang dilakukan pada umur 35 hari dan 56 hari. Akibat kenaikan variasi persentase *fly ash*, nilai *slump flow test* mengalami penurunan, sedangkan kuat tekan betonnya mengalami peningkatan. Namun, penggunaan *fly ash* optimal terjadi saat *fly ash* digunakan sebagai bahan pengganti beton pada variasi senilai 3% dengan kuat tekan beton sebesar 35,98 MPa (35 hari) dan 33,68 MPa (56 hari), nilai berat volume beton sebesar 2313,21 kg/m³ dan 2279,66 kg/m³, serta nilai *slump flow test* dan nilai T₅₀ telah memenuhi standar.

Kata kunci: *Self compacting concrete*, *fly ash*, faktor air semen, kuat tekan, berat volume beton.

ABSTRACT

THE EFFECT OF USING FLY ASH AS A CEMENT PARTIAL SUBSTITUTE MATERIAL AND ADDITIONAL SUBSTANCE FOR COMPRESSIVE STRENGTH ON *SELF COMPACTING CONCRETE* (SCC)

By:

CORRY JAYAPUTRI SAHAST

Self Compacting Concrete (SCC) is an innovation of concrete which has an ability to flow on its own to fill the empty voids between reinforcement and formwork without support of compaction equipment to obtain its optimum compaction. In this research, concrete cylinder with dimension of 15 cm for diameter and 30 cm for height were used as a specimen and mixed with fly ash type C as cement partial substitute material and additional substance by variation of 0%, 3%, 6%, 9%, and 12% with water cement ratio of 0,41. Slump flow test was perform to identify concrete flowability and workability followed by concrete compression test to identify compressive strength which was conducted at the age of 35 days and 56 days. Due to the fact that percentage variation of fly ash increment, the value of slump flow test was experiencing degradation whereas the compressive strength was increased. Nonetheless, the optimum fly ash application appeared when fly ash was applied as a cement partial substitute at variation of 3%, which provide concrete compressive strength in the amount of 35.98 MPa (35 days) and 33.68 MPa (56 days), and the value of concrete density were 2313.21 kg/m³ and 2279.66 kg/m³, where the standard of slump flow test and T₅₀ values had accomplished.

Keywords : Self compacting concrete, fly ash, water cement rasio, compressive strength , concrete density.