Fajar Afrianto, 2023. **PENGARUH PENAMBAHAN LIMBAH BAJA STRAND DAN CONSOL P213 BETON MUTU K-750 TERHADAP NILAI KUAT TEKAN DAN KUAT LENTUR UNTUK PENGAPLIKASIAN PADA PELAT JEMBATAN**. Skripsi. Jurusan Teknik Sipil, Fakultas Teknik, Universitas Jenderal Soedirman. Pembimbing : Ir.Hery Awan Susanto, S.T., M.T dan Ir. Dani Nugroho Saputro, S.Pd.T., M.Eng.

ABSTRAK

Beton memiliki kekuatan berbeda-beda tergantung jenis penggunaannya. Semakin tinggi beban yang ditopang maka semakin tinggi mutu beton yang harus digunakan. Untuk meningkatkan mutu beton banyak cara dapat dilakukan salah satunya dengan penambahan limbah baja strand. Produk beton *Corrugated Concrete Sheet Pile* (CCSP) dan *Full Slab* pada PT Waskita Precast Plant Karawang mampu menghasilkan banyak limbah baja strand. Penambahan limbah baja strand diharapkan dapat memperbaiki kualitas beton baik dari kuat tekan maupun kuat lentur. Penelitian dilakukan menggunakan beton *self compacting concrete* (SCC) mutu tinggi umur 7, 14 dan 28 hari dengan penambahan limbah baja strand kadar 0%, 1%, 2%, 3% dan 4%. Sampel yang digunakan dalam penelitian ini yaitu 45 kuat tekan dan 45 kuat lentur. Hasil pengujian diperoleh nilai kuat tekan maksimal pada umur 28 hari yaitu pada SFRC 1% dengan nilai mutu beton 67.80 MPa. Peningkatan nilai kuat tekan pada umur 28 hari dari mutu maksimal SFRC 1% dengan SFRC 0% yaitu sebesar 5.51 MPa atau meningkat 8.84% dari SFRC 0%. Pada pengujian kuat tarik lentur didapat nilai maksimal pada umur 28 hari yaitu pada kadar SFRC 4% dengan nilai 6.90 MPa. Nilai kuat tarik lentur bertambah seiring dengan bertambahnya persentase baja strand. Selisih peningkatan nilai kuat tarik lentur maksimal pada SFRC 4% terhadap SFRC 0% yaitu sebesar 2.36 MPa atau meningkat 51.96%. Pada pengujian *workability* SFRC 0% memiliki nilai slump 65 cm sedangkan pada SFRC 4% memiliki nilai slump 55 cm. Nilai slump menurun seiring bertambahnya persentase baja strand.

Kata Kunci: Limbah baja strand, *self compacting concrete*, kuat tekan, kuat tarik lentur, *workability*, pelat jembatan.

ABSTRACT

Concrete has different strengths depending on the type of use. The higher the load that is supported, the higher the quality of the concrete that must be used. There are many ways to improve the quality of concrete, one of which is by adding steel strand waste. Corrugated Concrete Sheet Pile (CCSP) and Full Slab concrete products at PT Waskita Precast Plant Karawang are capable of producing a lot of strand steel waste. The addition of strand steel waste is expected to improve the quality of concrete both in terms of compressive strength and flexural strength. The study was conducted using high-quality self compacting concrete (SCC) aged 7, 14, and 28 days with the addition of steel strand waste content of 0%, 1%, 2%, 3%, and 4%. The samples used in this study were 45 compressive strength and 45 flexural strength. The test results obtained the maximum compressive strength at the age of 28 days, namely at SFRC 1% with a concrete quality value of 67.80 MPa. The increase in the value of compressive strength at 28 days of age from the maximum quality of SFRC 1% with SFRC 0% is 5.51 MPa or an increase of 8.84% from SFRC 0%. In the flexural tensile strength test, the maximum value was obtained at the age of 28 days, namely at SFRC 4% content with a value of 6.90 MPa. The value of flexural tensile strength increases with the increasing percentage of steel strands. The difference in the increase in the maximum flexural tensile strength value at SFRC 4% against SFRC 0% is 2.36 MPa or an increase of 51.96%. In the SFRC 0% workability test, it has a slump value of 65 cm while at SFRC 4% it has a 55 cm slump value. The slump value decreases as the percentage of strand steel increases.

Keywords: Waste steel strand, self-compacting concrete, compressive strength, flexural tensile strength, workability, bridge slab.