

## INTI SARI

Karena pentingnya ikatan yang kuat antara tiang pancang beton pratekan (*prestressed concrete pile / pc pile*) dengan struktur yang didukung, maka pengetahuan tentang perilaku sambungan sangatlah diperlukan yang dalam hal ini adalah sambungan antara tiang pancang beton pratekan dengan poer. Adanya faktor-faktor fisik, kimia maupun biologis yang merugikan beton dalam lingkungan di laut dimana tiang pancang beton pratekan banyak digunakan, membuat pengetahuan tentang sifat beton dan cara pengerjaannya sangat penting. Diantara tujuan penelitian ini adalah menghitung kekuatan sambungan *pc pile*-poer, menghitung kapasitas momen lentur, kekakuan dan daktilitas dari tiang pancang beton pratekan dan mengamati pengaruh pemberian bahan tambah beton *conplast-uw* pada perilaku silinder beton yang direndam dalam air laut.

Pada penelitian ini dibuat tiga benda uji berupa sambungan antara tiang pancang beton pratekan yang berbentuk bulat berlubang, diameter 450 mm, tebal 80 mm, jumlah *wire* 10 Ø 7 mm dengan poer ukuran 800 x 800 x 800 mm. *Conplast-uw* ditambahkan pada beton poer dan beton pengisi lubang tiang pancang dari benda uji P<sub>1</sub> dan P<sub>2</sub>. Dua puluh empat silinder beton dibuat untuk mengamati pengaruh penambahan *conplast-uw* pada beton keras yang direndam dalam air laut.

Hasil pengujian memperlihatkan bahwa kerusakan akibat beban lateral siklik terjadi pada tiang pancang beton pratekan bukan pada sambungan. Kapasitas momen lentur tiang pancang beton pratekan diperoleh sebesar 10,83 t m atau 17,9 % lebih rendah dari hitungan teoritis. Kekakuan dan daktilitas tiang pancang beton pratekan diperoleh berturut-turut sebesar 0,524 T/m dan 2,29. Beton dengan *conplast-uw* yang direndam dalam air laut relatif lebih cepat mengeras tetapi mempunyai kuat tekan akhir yang lebih rendah dari beton normal yang direndam dalam air laut.

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**Kata kunci :** tiang pancang beton pratekan, poer, beban lateral siklik, *conplast-uw*



## ABSTRACT

*Stength of the joint between pc pile and concrete poer is one of the critical factor in maintaining the structural integrity of the upper and lower structures. In many coastal structures the construction of the joint in situ is often difficult due to the disturbance of wave and fluctuation of sea water level. In the present study, the strength, stiffness and ductility of the joint subject to cyclic load is investigated.*

*Three full scale pc pile – poer joints made of concrete with conplast-uw admixture were tested. The pc pile diameter was 450 mm, while the thickness and the number of prestressing wires were 80 mm and 10Ø 7 mm, respectively. The concrete poer dimension was 800x800x800 mm<sup>3</sup>. A cyclic lateral load was applied to the pc pile tip up to failure, and the corresponding flexural stiffness, ductility and capacity of the joint were observed and recorded. Twenty five concrete cylinders were also made to study the influence of adding conplast-uw to the concrete strength moist cured in sea water.*

*The results indicated that the failure occure at the pc pile near the concrete poer face, which become the proof that the joint strength is larger than that of the pc pile. The flexural capacity of the pile was 10,83 t m, which was 17,9 % lower than that of the theoretical one. The stiffness and ductility were observed to be 0,524 t/m and 2,29, repectively. It was observed that by adding conplast-uw into the mix, the hardening process was relatively faster at the beginning compared to that of normal concrete, however, the final strength was somewhat lower.*

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*Key words : prestressed concrete pile, poer, cyclic lateral load, conplast-uw*